R.C.S. EDGE LIN DUAL-WAVE DIAL. (K)

A high quality Dial, designed for those who require a first-class article at a reasonable price.

It features the new dual-colour lighting system, the short-wave portion being orange and the broadcast green. Colour changing is operated by the wave-change switch.

A new method of friction-drive gives powerful action, free from backlash and slips and ensuring ease of tuning on short-wave.

Broadcast section is calibrated in K.C., also main N.Z. and Australian stations. Short-wave in meters with principal stations.

Calibrated for clockwise condensers and fitted with double grub screws to obtain positive grip on condenser shaft.

Escutcheon of brown bakelite, and solid glass face. Supplied with mounting screws and spacers.

MOUNTING HOLE FOR ESCUTCHEON—7½in x 4½in...
DIAL PROJECTS BEHIND PANEL—2½in...
OVERALL DIMENSIONS—9½in. x 6½in.
RATIO—8:1
SHAFT—6½in...

Cat. No. ED614—29/6 EACH

New Switch (K)

WHAT EVER'S THAT?

Ah! That's got you guessing! Well! L.B.P. is the name given to a brand new idea originated by the Lamphouse which enables you to obtain the goods you want from the "Radiogram" or "Lamphouse Catalogue" and pay for them in a wonderfully convenient and easy manner. Space does not allow a fuller explanation, but if you are interested write and ask for our leaflet about L.B.P.

Just on 6,000 RADIOGRAMS Monthly Proves Its POPULARITY!

The consistent growth of the "RADIOGRAM" circulation is proof positive of its usefulness to Radio Amateurs, Experimenters, Servicemen and Radio Owners. Almost every mail brings us letters of appreciation from pleased subscribers. Every month the "RADIOGRAM" brings you the latest and best news regarding everything radio and electrical. Circuits appear regularly for both Electrical and Battery Sets, from small LOCAL receivers to powerful SUPERHETS. Articles of general interest include hints about better reception, better performance, aerials, static reduction, jokes, etc., etc. A Beginner's Page in each issue is proving wonderfully helpful. And all this for the modest subscription of 3/- a year. The next issue is worth the money alone.

Send your subscription NOW. The 3/- also entitles you to membership of the HOBBIES' CLUB, club badge, registration, and other benefits. Address your letter to Editor, "Radiogram," 27 Manners Street, Wellington.

You Can't Afford to Miss It!
"THANKS A MILLION!" Yes, many, many thanks for all the letters and telegram which flowed in when last year's Annual was published, and the proof of the pudding is in the eating, within two months we were busy preparing a second Edition! Need we say more?

And just as our Annual proved more popular than ever, so did our goods and services. Every month of 1937 was a record month for sales.

During 1938 we have no hesitation in preparing for larger sales than ever before, because we know that the values we offer are better than ever before. We know that our old customers will come back again and again, because they know the value of the Lamphouse unconditional money-back guarantee, which reads:

"Any goods that are in any way unsuitable may be returned within seven days (from receipt), and your money will be refunded in full."

The Electric Lamp House Ltd.
Manners Street - Wellington, C.1
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GENERAL INFORMATION

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 monies of regular customers in a deposit account for future purchases, otherwise any balance due will be returned with the goods.

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CATALOGUE NUMBERS.— The first letter (E) of the number is for our reference, and alters with each price list or advertisement published. The balance of the catalogue number will always remain the same for the same article.

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THE ELECTRIC LAMP HOUSE LTD.

MANNERS STREET —— WELLYINGTOM, C.1

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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.
WHERE IS IT?

How to find the Goods or Circuit you require

INDEX. On pages two and three you will find a complete index of all goods listed in the Catalogue portion of this book. A moment's glance at the index will save you looking through over 2000 items.

CATALOGUE ARRANGEMENT

The catalogue portion of this book has been divided up into 5 divisions, viz.:

1 Electrical Appliances, Fitters, Table Lamps, etc.—pages 6-19.
2 Electrical Accessories: Adaptors, Switches, Lamps, etc.—pages 20-30.
5 Radio Accessories—pages 44-83.

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POLARIS TIMEPIECE.

ARIAD ALARM.

Clever octagonal design. Solid brass case finished in ivory with polished brass trim. Heavy die-cast base. Height 4 1/2 in. Width 3 1/2 in. Patented bell alarm different from ordinary buzzer.

Cat. No. EE455 .......... Each 47/6

RIGEL TIMEPIECE.

Modern design. Metal case in choice of red, green, ivory or black finish. Height 8 1/2 in. Width 6 1/2 in. Depth 2 1/2 in. Two-tone dial, 4 1/4 in. wide and 5 1/8 in. high. Front set.

Cat. No. EE455 .......... Each 52/6

NORTH STAR ALARM.

Sturdy, small-proportioned Alarm Clock. Heavy cast-metal case finished in crinkled ivory. Height 4 1/2 inches. Width 3 1/2 inches. Patented bell alarm different from ordinary buzzer.

Cat. No. EE459 .......... Each 51/

New!

A PERFECT DRY SHAVE IN TWO TO FOUR MINUTES EASILY!

MOTOSHAVER

No blades, no lather, saves time, never needs sharpening, cannot cut yourself, shaves clean, improves the skin.

You shave as fast as you like. The cutter is driven with an extra fast motor, and you have TWO cutting surfaces working at once.

OUTSHAVES ANY COMPETITOR AT ANY PRICE.

After a year of laboratory research and development—after most thorough testing on practical use—MOTOSHAVER announces a revolutionary new head, which outshaves any electric shaver at any price.

It provides TWO cutting surfaces, which shave simultaneously, giving a faster, cleaner shave without the slightest pull or irritation. DUAL-HEAD MOTOSHAVER means a better FIRST shave for the beginner and much less practice to master its use. To the seasoned dry shaver it brings a new perfection in clean, clean, rapid shaving.

DUAL-HEAD MOTOSHAVER is self-cleaning, self-sharpening—free from all bother. It has the EXTRA STRONG, EXTRA FAST MOTOR which the actual experience of thousands of users has proved unsurpassed in efficiency and durability. The motor that will last a lifetime!

BEST SHAVER FOR WOMEN—Enables them to shave under arms and on limbs with ease. Does not enlarge pores or produce briskly regrowth. Absolutely will not cut the skin.

(Passed by the New Zealand Public Works Department.)

LONGEST GUARANTEE. — Warranted free from factory defect for 18 months—the longest guarantee, so far as we know, offered by any electric shaver manufacturer. Remember, MOTOSHAVER INC. is one of the pioneer manufacturers of electric shavers, and has a record for making its guarantee good.

DUAL-HEAD MOTOSHAVER makes an ideal Christmas gift. Women prefer it because it is a welcome gift for husband, father, son or brother, and one WHICH THEY CAN ALSO USE THEMSELVES.

Suitable for 230-volt A.C. current supply only.

Cat. No. EE275 ....... (D) 115/- each
MONARCH TOASTER. (G)
You will be proud to own this Toaster. Finished in highly polished nickel-plate. Has turnover feature. Just lower the side and the bread is automatically turned over. Element designed so that the bread toasts quickly and evenly. Supplied complete with cord, etc., ready for use.
Cat. No. EE750 19/6 Each

MONARCH DE LUXE TOASTER. (G)
An appliance of beauty and utility. Lowering the side automatically turns the toast. Toasts evenly and quickly. Supplied complete.
Cat. No. EE751 27/6 Each

MONARCH ELECTRIC IRON. (G)
Although priced within the reach of all, this Iron will compare very favourably with the much higher priced lines. Easy to hold without strain. Thumb rest. Element clear mica and highest grade resistance wire. Stand at back. Beautifully finished.
Weight 6 lbs., 2 years guarantee. Supplied complete ready for use.
Cat. No. EE710 18/6 Each

ALL
MONARCH APPLIANCES
Are Guaranteed for Twelve Months.

LAMPHOUSE GUARANTEE
Any goods that prove in any way unsuitable may be returned within seven days, and your money will be refunded in full.
MONARCH
Rheotherm Medical Hand-Lamp

Treatment by
INFRA-RED THERAPY
HEAT THERAPY
CHROME THERAPY

THE MONARCH SUN LAMP is designed to combine Heat Therapy with its concomitant Infra-red Therapy and Chrome Therapy. Any reliable medical dictionary will explain these terms with elaboration, but as this is not a treatise on the subject, we simply enumerate the diseases and tabulate the recommended duration of treatment.

INFRA-RED THERAPY is the treatment of disease by infra-red rays, an invisible emanation. Infra-red rays have a greater power of tissue penetration than Ultra Violet Rays and, therefore, are invaluable in affecting a deep, enduring hyperaemia. Locally infra-red rays produce increased circulation by the dilation of the blood vessels, and assists in effectively overcome.

HEAT TREATMENT is the treatment of disease by the suitable application of heat to the part affected. Radiant-heat embraces all instruments which give out a bright light as well as heat; in other words, soars amongst visible and invisible infra-red rays. One of the most outstanding forms of heat generators which are of practical medical value are Radiant Heat Lamps. Some of the medical uses to which the heat can be put are—

- (1) Dilution of superficial vessels and glands.
- (2) Removal of venous stasis and promotion of normal circulation.
- (3) Bactericidal on superficial treatments, and as a practical result of these you—
  (a) Get relief from pain.
  (b) Restoration of functional activity both in the skin and in the deeper glands.

CHROME-THERAPY is the treatment of diseases by filtered light, using coloured screens. In accordance with the nature of the malady and the desired therapeutic result, other a blue, red or white incandescent lamp of natural glass is used. The colouring of these lamps is actually in the glass itself, as artificial staining would not affect the desired therapeutic action. The colouring of the bulbs filters out certain rays not required for the particular treatment.

The "MONARCH" Sun Lamp diminishes the sensibility to pain and relieves congestion with remarkable speed. Because of these powers, the lamp is most valuable for treatment of joint injuries, and pains of an arthritic or rheumatic origin. This power to relieve pain quickly is also important in the treatment of non-articular manifestations of rheumatism, in cellulitis, torticollis, lumbar and tarsalgia.

The "MONARCH" Sun Lamp also produces excellent effects in all types of neuritis cases.

Cat. No. EE75—
39/6
With full instructions.
**LOW VOLTAGE MOTORS. (G)**

Low voltage Electric Motors. Work from 2-6 volt battery. For driving mechanical models, toys, etc. Cat. No. EE499 ........................... Each 4/11

**SAVE YOUR EYES. (G)**

This Sun-Shine Adjustable Reading Lamp will clamp on the bed-rail, and both the stand and shade can be adjusted so that the light is put just where it is wanted and avoids all eye strain. Complete with switch, adaptor, and 9 ft. of flexible cord. Assorted colours.

Cat. No. EE47
(Lamp Bulb extra.)

**GAS LIGHTERS. (G)**

"Matchless" Electric Gas LIGHTER

Simply hold over the gas and push the switch on the bottom of the lighter. The filament glows red and the gas lights. Use ordinary Bijou 2-cell torch battery, which lasts four to six months, and can be replaced at the cost of 6d. An excellent idea which will save you hundreds of boxes of matches.

Cat. No. EE36 ........................... Each 2/6
Spare tips.
Cat. No. EE43 ........................... Each 1/-

**CLAMP LAMPS. (D)**

A great job! And only 5/6. Plated Lamps, clips on to the bed rail, table, book case, etc. Adjustable reflector throws light just where you want it. Switch enables Lamp to be turned on and off. Supplied complete with fit of flex and bayonet adaptor, but not lamp.

Cat. No. EE65 ........................... Each 5/6

**UTILITY DESK LAMP. (D)**

A standard flexible arm reading lamp, 12in. goose-neck, heavy cast iron base. Large size reflector, with switch lamp socket. The flexible arm bends as required, putting the light just where it is wanted. Supplied with cord and lamp.

Cat. No. EE45 ........................... Each 12/6
Extra cord, 4D. yard (additional) 4/6

**STRAIGHT CORDS. (K)**

**LIGHTING EXTENSION CORDS. (K)**

Read in Comfort!

For taking the light where you want it. Ten feet long, and supplied with an insulated shockproof lampholder. Extra long lengths can be made up at 6d. yard extra.

Cat. No. EE51 .................................. 3/-
Cat. No. EE52 ............................... 4/9
(with switch holder)

**STAR ELECTRIC MASSAGE VIBRATOR. (G)**

The Star Massage Vibrator is safe to use by the most inexperienced and unequalled for home massage without the necessity of a professional masseur. It promotes the proper and steady circulation of the blood and revigorates the nervous system.

Absolute simplicity, no directions necessary. Operates without any expert knowledge. Supplied complete with three applicators, flexible cord and lampholder adaptor; push-bar switch fitted. Each of the three applicators has a different use according to individual requirements. For delicate, light, medium and general massage. Hard applicator for body; spiked applicator for scalp; flat cup applicator for face and eyes.

Cat. No. EE79 ............................. Each 19/6

**HOTPOINT ELECTRIC IRONS. (D)**

Genuine Hotpoint Electric Irons, complete with Plug and Cord.

Cat. No.

EE700—Hotpoint Utility Electric Irons 27/6 each
EE701—Hotpoint De Luxe Electric Irons 35/- each
EE702—Hotpoint Super Automatic Electric Irons 59/6 ea.
EE703—Hotpoint Automatic Electric Irons 45/- each

**SAVING YOUR EYES. (G)**

SAVING YOUR EYES. (G)

SAVING YOUR EYES. (G)
NEW! BETTER! (G)

Cat. No. EE34 19/6 each

The last word in Efficient ELECTRIC JUGS. Beautifully glazed earthenware, in modern colour effects, with very reliable element. Boils 3 pints in about 7 minutes. Complete with plug and cord.

TWO SHAPES AVAILABLE
BOTH 19/6 EACH

THE NIPPY COOKER (D)
Guaranteed All-Brithish.

With this useful device, a kettle or other vessel can be kept at the boil, and at one and the same time (with no extra current consumption) fish, bacon, chops, cutlets, etc., can be grilled. Crisp toast, evenly brown, can be quickly made. No flue or outlet is required, and the Griller-Boiler can be used anywhere, even on the meal table, by connecting to any lamp holder or plug connection. Current consumption is 650 watts per hour; thus all the advantage of Electric Cooking can be obtained at a very low cost. No time is wasted in waiting for griller to heat up. Simply switch on and the cooker is in full operation. With the Nippy Combination Cooker and Heater it will be realised that all the heat is available, grilling proceeding at the same time as boiling on the top.

SUPREME HAIR DRIERS. (D)

Supreme Hair Dryers are moulded in beautifully finished bakelite. They are British made, the fan being driven by a solidly constructed and trouble-free motor. A heating element is incorporated and a switch provided so that hot or cold air can be obtained at will. As a quick and efficient means of drying the hair, these electrical hair dryers are ideal.

Cat. No. EE18 49/6 each

Spare Heating Element for above
Cat. No. EE1d 3/6 each

"SPEEDEE" UNBREAKABLE ELECTRIC JUGS. (G)


Cat. No. EE33 Each 21/6

WESTINGHOUSE HAIR CURLERS.

DE LUXE CURLING IRON.
Extra large barrel. Switch mounted in handle. Five-foot flexible cord. Insulated button on handle of tong prevents burnt thumb. Black handle. 20 watts; barrel, 2½ in. dia. x 6½ in. long.
Cat. No. EE80 Each 15/9

MEDICAL COILS. (D)

Medical Coils, mounted on neat brown direct current. Works from 1½ to 3 volt dry batteries. Has high speed trembler, make and break contact, which ensures a steady soothing current, the strength of which can be regulated from mild to powerful. Supplied complete with handles.
Cat. No. EE67 Each 12/6 each

DE LUXE MEDICAL COIL. (D)

Specification: Polished case, fall-down front, containing powerful coil with regulating tube. The coil has a two-way switch which enables the operator to use one or two batteries as required. The batteries are fitted in the compartment at the back of the cabinet. Including two Lispen Dry Cells, and round plate, button and crimped brush electrode. Size 6¾ x 4¼ x 6¾ in.
Cat. No. EE68 £3 15/-

ELECTRIC URNS.

Prices on Application.
The Oxford Bed Warmer. (D)

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 six minutes. It is then disconnected, and will retain a comfortable heat under the bed clothes for about six hours. May be taken in your motor car to give comfort to travelling, or to the pictures as a foot warmer. Inexpensive to run and, of course, invaluable in the sick room. Costs abt. 14/ per week for current.
Cat. No. EE66 8/6 each

Item—your first ironing with it, you'll find how hot nor too cold. the right temperature for that kind of cloth.

Perfect Balance: When you lift one of these new irons, you'll realise at once that it has the proper "feel" for easy ironing. Perfect balance is an important feature of its design. Weight 6 lbs.
Cat. No. E27 44/6 each

Table Lamps which will stand on the table or clamp on the bed. Will tilt and bend so as to put the light just where it is wanted. Supplied complete with cord, but without lamp bulb. Rubber protection so lamp cannot harm furniture.
Cat. No. EE52—De Luxe Lamp with chromium plated shade 22/6 each

The luxury of reading in bed without the necessity of getting up to switch off at door, is one of the many advantages which this attachment will provide. Outfit is complete with Adaptor, 6ft. Twin Art Silk Flexible Cord and Pear Switch ready for Immediate use.
Cat. No. EG139 5/6 each

The lamp house ANNUAL—1938 13

PLUGS FOR APPLIANCES.

I

Parallel Type.

3-Pin Type.

Toe Type.

All appliances are quoted complete in every respect, even to plug tops. When ordering it is advisable to put in your order the type of plug required. The types of plugs in general use in New Zealand are shown in the accompanying diagram.

The third wire on the 3-pin plug is the earth wire, and the correct wire to connect to earth is the white one on the appliance. When wishing to use a light socket as the source of power supply (not advised, as this is against the electrical regulations) an adapter is used instead of the plug top.

SERVEX CLAMP LAMPS. (G)

Cat. No. EE63—Bronze or Silver finish 19/6 each

Cat. No. EE64—In various Duco pastel colours 15/6 each

READ IN BED!

Many houses and offices have been wired without provision of a Pear Switch near to light. The installation of additional wiring is expensive and interferes with the decorations.

By means of a Pear Switch Conversion Attachment, a light over bed, desk, or wherever required can be converted into a Pear Switch Attachment in a few minutes by taking off shade and bulb, inserting the adaptor, and replacing shade and bulb in the adaptor holder.

PEAR SWITCH CONVERSION ATTACHMENT. (G)

Battery for above (extra).
Cat. No. EB167 2/9 each

Battery for above (extra).
Cat. No. ET142 45/- per pair
New UNIVERSAL Mixer-Beater and Beverage Blender (D)

The ideal gift for Wife, Sweetheart or Mother—a UNIVERSAL mixer-Beater that will help with dozens of tiresome tasks—it beats eggs, mixes batters, whips cream, stirs beverages and mashes potatoes. Easy to clean and care for, there are no complicated adjustments. Powerful, quiet, air-cooled three-speed motor, is portable for convenient use over stove or anywhere else without the stand and in either large or small pans or bowls. Beaters and motor tilt back out of the way and batter drips back into bowl. Large bowl fits into revolving turn-table and is turned by the mixing action of the beaters.

Two French Ivory Heat Resisting Glass Bowls—one-quart capacity and three-quart capacity.

Chromium Plated beaters, which are easily and simply attached or removed by spring lock.

Finished in Ivory Enamel. Ebonized Handle.

Base has rubber feet which prevent marring of polished surfaces.

Six foot rubber covered cord. Operates on either A.C. or D.C. current.

Cat. No. EE239 ........... Each 31/6

COOL ELECTRIC FANS. (G)

Which can be used on table or hung on the wall. Wall ventilated motor. Wire guard over fan blades. Finishes in enameled finish. Diameter of fan blades 12 in. Diameter of base, 4½ in. Over all height, 16 in.

Cat. No. EE119—

27/6

G. E. C.

ELECTRIC FANS

(Made in England)

TABLE AND BRACKET FANS. (D)

These Fans are designed to give maximum air displacement for minimum current consumption. They are fitted with a swirl and trunion movement which permits the direction of the air disturbance to be altered quickly and easily. The adjustable base allows the fan to be used either as a table or bracket fan. Speed regulators are provided giving speed variations and an "off" position on 10-in. fans and speed variations and an "off" position on 12 and 16 inch fans. The standard finish is black enamel and oxidised copper.

Cat. No. EV106—10 in. Universal Fixed

£3 3/6

EV116—10 in. AC Oscillating

£4 19/6

EV121—12 in. Induction Fixed

£4 5/6

EV137—12 in. Induction Oscillating

£6 7/6

EV129—16 in. Induction Fixed

£5 2/3

EV145—16 in. Induction Oscillating

£7 4/6

CEILING (LARGE SWEEP TYPE)

EV227—44 in. Kingsway Junior

£8 15/6

Extra for Speed Regulator ........... 10/6

EV214—56 in. Kingsway

£11 3/6

Extra for Speed Regulator .......... 18/6

TILT BACK MOTOR

Bowls and Beaters easily removed—batter drips back into bowls.

Three-speed Motor.

PORTABLE

May be used over stove or elsewhere and in any bowl or pan.

SEPARATE BEATERS

Easily attached or detached by simple spring lock. Chromium plated.
The challenger bowl fire. This model represents the finest value for the money it is possible to obtain in electric bowl fires. 16in. solid copper bowl, hammerd finish, mounted by means of an adjustable support on cast iron base. Back of bowl is finished in Florentine bronze. Base and support black enamel. Each fire is supplied complete. Morphy Britiish.

Cat. No. EE301

Each 14/-

MORPHY-RICHARDS FIRE.

SENIOR SERIES. (D)
Scientific design, a carefully chosen colour range, and due regard for the strictest requirements of the electrical authorities combine to make the Morphy-Richards "Senior" reflector fire one of the most popular ever introduced in England.

CHROME REFLECTOR.
Height, 10in.; width, 171/2in.; depth, 7in.
Cat. No. EE309—1000 watts
Cat. No. EE310— 1000 watts + 1000 watts
Cat. No. EE313— 1500 watts + 1500 watts

40/-
56/-
69/-

JUNIOR SERIES. (D)
This Radiator is very efficient in performance and neat in appearance, and eminently suitable for use in living-room, bedroom, or dining-room. In addition an ingenious wall shoe is supplied which allows the fire to be fixed on the wall out of reach, in such places as nursery, bedroom, etc.

CHROME REFLECTOR.
Height, 11in.; width, 131/2in.; depth, 5in.
Supplied complete with 6ft. of 3-core flex.
Cat. No. EE307—750 watt
Cat. No. EE308— Twinbeam, 750 watt + 750 watt

35/6
45/-

SPEEDEE ELECTRIC RADIATORS
Are available from the LAMPHOUSE.
Write for Price List.

TUBULAR SERIES. (D)
Here is a new range of reflector fires to satisfy the most exacting demands of the moderns. The scientifically designed parabolic chrome reflector is mounted on a substantial frame of chromium plated tube forming both base and carrying handle.

The "Twinbeam" Models, which are designed on the "distributed heat-beam" principle, are supplied with a switch, enabling one or both of the heating elements to be used at will. Six feet of heat quality 3-core flex is supplied with each fire. The exclusive Morphy-Richards Safety features are, of course, incorporated.

On all "Twinbeam" Models a switch is provided to cut out one bar. To conform to I.E.E. regulations the second bar is controlled from the wall socket.

Cat. No. EE311—Twinbeam 1000 watts
Cat. No. EE312—Twinbeam 1000 + 1000 watts

£3/1/-
£4/2/-

"STOCKWELL"—1000 WATT. (D)
The British Fire is the outcome of exhaustive consideration as to the requirements of the great mass of electricity users, and its introduction is made possible only by the use of the most up-to-date equipment and carefully planned mass production methods. Light in weight, for use in moving from room to room, very reliable, the fire bar employed being precisely similar to those fitted to our most expensive designs, and of the utmost utility, a special feature being the provision of a Trevi effect over the fire bars which, in combination with the carrying-handle, allows the fire to be laid back for boiling a kettle, toasting or similar cooking operations. Consumption one unit per hour.
Cat. No. EE304

Each 19/6

"STOCKWELL"—2000 WATT. (D)
Precisely as Cat. No. EE304, but arranged with two Standard Fire Bars, having a fullon consumption of two units per hour, reducible by the switch provided to one unit per hour, being suitable for the heating of rooms of average size up to 16ft. x 14ft.
Cat. No. EE305

Each 35/-

BAKELITE LAMP BRACKETS. (G)

WALL BRACKET
WITH SWITCH

Handsome Bakelite Wall Bracket with Lampholder. Projects overall 31 inches.
Cat. No. EG250—With plain Lamp Holder

Each 3/-

Cat. No. EG261—With Switch Lamp Holder

Each 5/3
KNIGHT
SHOCK PROOF

ELECTRIC CLEANER. (K)

Electric cleaning is now within the reach of every home. The "Knight" is a thoroughly efficient, high-grade cleaner—a marvelous combination 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 only £7/10/-, because we know of similar makes of cleaners that sell for nearly twice as much.

COMPLETE EQUIPMENT INCLUDES:—

7in. Oval Brush; 8in. Nozzle; "Nosle Parker"; Curved and Straight Extension Tubes; 8ft. 6in. Covered Flexible Metallic Hose; 15ft. Flexible Heavily Braided Cord, with plug and switch connections.

ONLY £7/10/- CASH

HOMES CLEANER WITH LESS LABOUR.

No pushing, pulling, or lifting of heavy furniture, no stooping, no climbing, strain- ing, or back-breaking bending, no taking down of draperies or curtains if you own a "KNIGHT" ELECTRIC CLEANER. And the home will be cleaner—free from dust. The enormous suction power of the "Knight" extracts every particle of dust, grit, fluff, animal hairs, etc. from carpets, upholstered furniture, book cases, stairs, cupboards, etc.

Don't be a slave—let the "Knight" do the work. Send for one to-day. 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.

Cat. No. EE200 £7/10-

SUN-UP ELECTRIC KETTLES. (D)

Sun-up Kettles hold 3 pints and are made of cast aluminium and not ordinary spun metal, which is of much inferior quality and cheaper to manufacture. The element is in the kettle itself and not in a false bottom. It has been proven under test that where the element is in a false bottom 40 per cent of the heat is wasted. The element is enclosed in copper tubing, guaranteed for 12 months. British. Supplied complete with two yards cord and plug.

Cat. No. EE13 Each 36/-

"SPEEDEE" IMMERSION HEATERS. (G)

Here's the de luxe Immersion Heater. Very fast, safe, dependable and economical. A genuine "Speedee" product. Made in New Zealand. Will give you lasting satisfaction. Immersion Heaters can be used in any vessel containing water, either glass, porcelain, aluminium or other metal.

Cat. No. EE22—1000-watt Each 9/6
Cat. No. EE23—1500-watt Each 15/6

BRITISH WATER BOILER. (G)

The greatest boon to the housewife for years. These Immersion Heaters are the quickest means of bringing water to the boil. Place the boiler in any vessel containing water or other liquid, and in a few minutes you can make the tea, feed the baby, or wash the dishes. Very economical and can be used from any wall plug.

Here is another pattern of slightly different shape. Dimensions 5\(\frac{1}{2}\)in. x 2\(\frac{1}{4}\)in.
Cat. No. EP601 Each 6/6

SAVE YOUR EYES. (D)

Green and White Opal Shades will save you eye-strain. Green outside, white inside. Dimensions 5\(\frac{1}{2}\)in. x 3\(\frac{1}{2}\)in. To be used over desks, for writing, etc.

Cat. No. EP600 Each 6/6
Westinghouse Adjust-o-matic STREAMLINE IRON (D)

*Handlamps, Inspection. (G)*

For Garage and Workshop!

Inspection Handlamps are invaluable in the workshop or garage. The light can be taken to just where it is wanted. Bakelite handle—strong wire frame to protect the lamp. Fitted with bakelite shockproof lamp holder. British.

Cat. No. EE36 8/6 each

*Decoration Sets. (D)*

These Decoration Sets comprise 16 Insulated Lamp Holders, each with 16-volt Miniature Screw Lamps in assorted colours sprayed on clear glass. All completely wired and in box, with two extra lamps and with flexible cord and bakelite lamp holder adaptors. Ready to fit in electric light socket. Just the thing for dances, parties, Christmas trees and shop window decorations. Can be used anywhere where an inexpensive form of decoration is required.

Cat. No. EL111—Complete Sets as above.

Cat. No. EL112—Spare 9/6 each Lamps.

*SPECIAL VOLTAGES*

100 Volt Appliances.

All appliances quoted are for the 240 volt supply, which is practically standard throughout New Zealand. Many appliances can also be supplied for the few towns that have a 100 volt supply.

32 and 100 Volt Knight Vacuum Cleaners. (K)

These famous Cleaners are now available for 32 and 100 volt supply.

Cat. No. EE201—32-volt $8/10/-

Cat. No. EE262—100-volt $8/10/-

Smart streamline design—wide temperature range with positive, accurate Spencer disc thermostat heat control—new type base and heating element providing faster heat recovery and more even heat distribution—heat concentrated in the base where it belongs, providing a cooler top and handle—mirror-like chrome ironing surface that is almost self-gliding—one-piece Bakelite "Fatigue-proof" sloping handle insulated from the cover for extra coolness—lighter weight, only 4 pounds. All these features make this the best-looking, fastest and most convenient and finest quality iron ever produced. The cord is permanently attached to the iron handle, and made with highest quality, extra long-wearing covering.

Cat. No. EE711 63/—
THE LATEST IN ELECTRIC SHAVERS.

RAZOLETT. (G)
No power supply needed. The Razor has its self-contained battery in the handle. Battery drives a powerful motor which swings the blade 3000 times a minute. The Razolett ensures a fast smooth shave in all circumstances, specially suitable for tough beards. Can be used by ladies and youths without lathering. The battery is standard size 2-cell, lasts 2 to 3 months according to use.
Cat. No. EE276 Each 35/-

LAMPHOUSE GUARANTEE.
Try out any article purchased from the Lamphouse for 7 days. If, at the end of that time, you are not well pleased with your purchase, return it and we will refund your money in full.

EEDEE Electric MIXER & BEATER

Just the thing for Mother—for whipping cream, beating eggs, mixing drinks, etc., a hundred and one kitchen jobs can be done with this mixer. (Unsuitable for heavy cake mixins.) Portable, plugs in to any power point or light socket. Shock-proof, having no exposed metal parts.
Cat. No. EE142 25/-

“PIFCO” SHARPEX

(Solution of the Razor Blade Problem).

PIFCO Sharpex guarantees an incomparable clean shave, and one blade now lasts 12 months. PIFCO Sharpex supersedes every other kind of razor blade sharpener. It is simple, speedy and thorough. No complicated parts, nothing to get out of order, wear or break. It will put a keen edge on any Gillette type of blade instantly. Sharpex saves literally pounds in razor blades and ensures regular, smooth and easy shaves.

PIFCO Sharpex requires only the use of finger and thumb of each hand, whether attaching, stopping or detaching.

Construction and Description:
The carriage holding two stopping rollers runs along two spiral guides. The blade is easily attached or slipped on to the centre band, and the carriage in then run up and down the guides to their full extent, and the stopping rollers revolve at a high speed along the shaving edges of the blade. Running the carriage upwards one roller stops the top edge of the blade, and the other roller the under edge of the other side of the blade, and vice versa on the return action of the carriage.

To obtain most perfect results the use of a little paste on the rollers, and vaseline on spiral guides is strongly recommended. Suitable for all blades of the new and old Gillette pattern.

PIFCO Sharpex Stopper
Cat. No. EU200—PIFCO Sharpex Stapper 3/11 (G)
Cat. No. EU201—PIFCO Stropping 8d. (G)
THE HOME BEAUTIFUL

There's no place like home, but one of these bowl fittings will brighten up the best of homes. All prices are quoted complete with oxidised copper fittings similar to those illustrated with Catalogue No. EF300.

Semi indirect lighting such as obtained from the use of these fittings is ideal because it eliminates practically all shadows and at the same time it protects the eyes from the strain of sharp light beams by making an even diffusion of the light.

This glassware is British made and the finish is satin opal. All fittings illustrated are white.

BOWL FITTINGS.

Prices of all Bowl Fittings are quoted complete with oxidised chains; chromium fittings and chain can be supplied at an extra charge of 4/-.

Mail All Orders to the Electric Lamp House 27 Manners St WELLINGTON

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Cat. No. EF300—12in. diameter, Complete with fittings, as illustrated. Price 22/6

Cat. No. EF301—14in. diameter Price, complete 32/6

Cat. No. EF302—12in. diameter Price, complete 22/6

Cat. No. EF303—12in. diameter Price, complete 22/6

Cat. No. EF304—12in. diameter Price, complete 22/6

Cat. No. EF305—14in. diameter Price, complete 32/6

Cat. No. EF306—Complete set of chain fittings without bowl (G.C. Finish) 7/6

Cat. No. EF307—Ditto (Chrome) 11/6
ELECTRICAL ACCESSORIES

HIGH QUALITY ELECTRIC BELLS, ETC.  (G)

Round.  Sheep.  Church

For those requiring something a little better in the way of Electric Bells, etc. All these Bells and Buzzers have external adjusting screws. Double coil, cased in attractive bakelite. The various gongs give a different tone, so that several bells can be used in the same office, etc., and the tone will indicate which one is ringing.

Cat. No.  EG315—3 in.  Round Gong Bell  Each
EG318—3 in.  Church Bell  Each
EG319—High Quality Buzzers  Each

BAKELITE BUZZER. (G)

An attractively finished article with high, pleasing note. British. Operates from 3 to 6 volts or from transformer. Size 3 x 2 x 1.

Cat. No.  EG312—3 in. Round Gong Bell  Each
2/9 each
32/ dozen

BAKELITE BELL. (G)

A British made bell of moulded walnut bakelite. Good contacts. 2½-inch gong. Operates on 3 to 6 volts.

Cat. No. EG301—2/11 each
32/4 dozen

METAL CASED BUZZER. (G)


Cat. No. EG313—2/— each
22/— dozen

BELLS

Cat. No. EG324—Round Bakelite Bell Pushes.

80¢. Each
7/8 dozen

Cat. No. EG325—Bell Pushes. (G)

A new type of Bell Push of exceptionally attractive appearance suitable for inside or outside use. Moulded Bakelite, Size 2½ x 2½.

Cat. No. EG326—1/—
11/4 Doz.

DOOR BELL PUSH. (G)

Flush mounting barrel type Bell Pushes.

Cat. No. EG325—1/3 Each
13/8 dozen

BAKELITE PEAR PUSHES. (G)

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

Cat. No. EG330 Each
EG331—Rosettes for above Each
1/3
1/—

BELL STAPLES. (K)

Insulated staples for tacking up bell wire.

Cat. No. ES118 Each
6D. dez.; 9D. pkt. 50

BELL FLEX. (G)

Twin Twisted Bell Flex (7/012); Art. silk covered. For Bell Pear Pushes, etc. British.

Cat. No. EW117  per yard

BELL WIRE. (K)

Bell Wire, best British quality, insulated with rubber and double cotton covered. Paraffined over-all.

Cat. No. EW111—1/22 (100ft. coils)  1/10
EW113—1/22 (100 yd. coils)  5/3
EW112—1/20 (100ft. coils)  2/6
EW114—1/20 (100yd. coils)  7/3
EW115—2/20, Twin 100ft.  5/—

Cat. No. Per yard
EW113A—1/22  1D.
EW114A—1/20  1D.
EW115A—2/20  2D.

CONNECTORS FOR A.C. LEADS. (K)

Two-piece Cord Connectors (parallel pin) for mains flexing.

Cat. No. EG21—1/3 Each
11/6 dozen

Ditto—Polarized type
Cat. No. EG20 Each
1/3
14/— dozen

Two-piece Connectors similar to above, but for tee-pin plugs. British.

Cat. No. EG23—Complete Each
3/6
10/- dozen

CORD CONNECTORS (3-Wire). (G)

Two-piece Cord Connectors for joining three-wire cord. Moulded in bakelite.

Cat. No. EG23—Complete Each
4/6
51/— dozen

CONNECTORS FOR A.C. MAINS. (K)

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. PG24—complete 1/9
Three-pin Flat Cord Connector similar to above. Handy for special jobs. Heavy size.

Cat. No. EG25 Each
2/6

CONNECTORS—2-WIRE BLOCK. (K)

Porcelain Insulated Connector for joining twin wires, etc.

Cat. No. EG29—9D. Each
2/9 dozen
TWO-LIGHT ADAPTORS. (K)

New type two-light adaptor.
Cat. No. EG5 ............... Each 1/6
Dozen 16/-

TWO-LIGHT ADAPTORS. (D)

British Bakelite Adaptors. For
fitting on end of extension cord
for plugging into an electric lamp
socket.
Cat. No. EG1 ............... Each 3/-

ADAPTORS, MINIATURE. (K)

To fit miniature lampholders. Standard
motor-car size.
Cat. No. EG3—Single contact. Each 8 OD.
Cat. No. EG2—Double contact. Each 9 OD.

CONVERSION ADAPTORS. (D)

Sometimes it is found desirable to put a
lamp or other appliance with a bayonet
cap attachment, into a screw socket—or
vice versa.
These Adaptors overcome this difficulty.
Cat. No. EG14—BC to ES Adaptors. 2/-
Each
Cat. No. EG15—ES to BC Adaptors. 2/-
Each

LAMP HOLDERS. (G)

Lamp Holders for
electric light. O.C. fin-
ish cordgrip.
Cat. No. EG58—Each 1/-
dozened 10/-
O.C. finish with fin-
thread.
Cat. No. EG59—Each 1/-

BATTEN HOLDERS. (G)

Batten Type Lamp Hold-
ers, for screw-
ing down on wood
base.
Cat. No. EG62—Each 1/-

SWITCH LAMP HOLDERS. (G)

Cordgrip Lamp Hold-
ers, with push bar
switch.
Cat. No. Each
EG66 ............... 2/9

Holders, with push
bar switch, and fin-
thread, for table lamps,
etc.
Cat. No. Each
EG67 ............... 2/9
EG57—Chrome finish 3/ each

SWITCH BATTEN HOLDER. (G)

Holders with push bar switch, batten type for
screwing down on wood base.
Cat No. EG68— Each 2/9

LAMPHOLDERS. (G)

Angle Batten type.
Cat. No. EG65—
1/3 ea., 13/6 doz.

Lampholders, 3in. Brass
Conduit thread.
Cat. No. EG61—
1/- each, 10/- doz.

INSULATED BATTEN
HOLDER. (G)

Batten type Insulated
Holders with skirt.
EG54—
13/9 doz. 1/3 each

INSULATED BATTEN
HOLDERS—INSU-
LATED. (G)

Insulated (bakelite)
Lamp Holders are used
in bathrooms, kitchens,
etc.
Cordgrip, with skirt.
Cat. No. EG50—
Each 1/-

11/4 doz.

INSULATED ANGLE BATTEN HOLDER. (G)

An all Insulated
Holder with an
angle back plate. Handy
for walls, etc.
Cat. No. EG64—
3/ 34/- dozen

INSULATED PUSH
BAR SWITCH BATTEN
HOLDERS. (G)

Cat. No. EG66—
3/- Each
SCREW LAMPS HOLDERS.

Cord grip Lamp Holders for Edison screw type lamps.
Cat. No. EG63—
20/- doz. Each
As above, but to fit bin thread.
Cat. No. EG64—
20/- doz. Each

PARALLEL PIN GRIP TYPE PLUG CAPS.

Cat. No. EG83 5D. Each

PLUG CUBE.

Triple Plug Cube, with parallel pins. Enables 3 separate leads to be taken from one point.
Cat. No. EG102—
9/6 doz. Each

HOLDERS—MINIATURE. (G)

Miniature Lamp Holders, double contact. Fit standard size motor car lamps.
Cordgrip Miniature Lamp Holders.
Cat. No. EG70—
13/6 dozen.

MINIATURE LAMP HOLDER. (K)

For torch or fuse lamps. Well made out of moulded brown bakelite.
Cat. No. EG822 3D. 5/6 doz. Ea.

MINIATURE BRACKETS. (K)

Miniature Brackets, length 12in. over-all. Fitted with lamp holder to take torch screw lamp.
Cat. No. EG76 1/- Each

WALL PLUG CAPS ONLY. (G)

2-Pin Parallel Pin Type
Cat. No. EG84 3D. Each

2-Pin Parallel Type (Polarised)
Cat. No. EG87 4D. Each

2-Pin "T" Type
Cat. No. EG85 4D. Each

3-Pin Type
Cat. No. EG86 4D. Each

HEAVY TYPE BRITISH-MADE PLUG CAPS. (G)

For those who require a lasting job.
Two (T) Pins
Cat. No. EG96 1/6 Each
3-Pin Ditto
Cat. No. EG97 1/6 Each

Side Entry

3-PIN PLUGS.

(G)
Moulded in two pieces. Connecting screws completely covered.
Cat. No. EG88 99. Each
8/- doz.

PLUGS, DOUBLE THREE-PIN. (G)

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. EG100 3/3 Each

PLUGS, DOUBLE CONTACT.

Moulded in two pieces. Connecting screws completely covered.
Cat. No. EG88 99. Each
8/- doz.

HOLDERS—MINIATURE. (G)

Miniature Lamp Holders, double contact. Fit standard size motor car lamps.
Cordgrip Miniature Lamp Holders.
Cat. No. EG70—
13/6 dozen.

PARALLEL PIN GRIP TYPE PLUG CAPS.

Cat. No. EG83 5D. Each

PLUG CUBE.

Triple Plug Cube, with parallel pins. Enables 3 separate leads to be taken from one point.
Cat. No. EG102—
9/6 doz. Each

MINIATURE LAMP HOLDER. (K)

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Miniature Brackets, length 12in. over-all. Fitted with lamp holder to take torch screw lamp.
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2-Pin Parallel Pin Type
Cat. No. EG84 3D. Each

2-Pin Parallel Type (Polarised)
Cat. No. EG87 4D. Each

2-Pin "T" Type
Cat. No. EG85 4D. Each

3-Pin Type
Cat. No. EG86 4D. Each

HEAVY TYPE BRITISH-MADE PLUG CAPS. (G)

For those who require a lasting job.
Two (T) Pins
Cat. No. EG96 1/6 Each
3-Pin Ditto
Cat. No. EG97 1/6 Each

SIDE ENTRY PLUGS. (G)

Side Entry Electric Iron or Appliance Plugs.
Cat. No. EG108—
10°. Each
9/-. doz.
Ditto, with earth terminal
Cat. No. EG109—
1/- 11/8 doz.

DE LUXE IRON PLUGS. (K)

Many people require a better plug than the usual cheap grade supplied with irons, etc. This British plug will fit practically all makes. Made of heat bakelite, gives entrance coming out at an angle so as to keep the cord away.
Cat. No. EG110 2/3 Each

APPLIANCE PLUGS. (K)

Made of bakelite. Strong type that will fit practically all makes of electric irons and other appliances.
Cat. No. EG106 9D. ea. 8/6 dozen.

SHADE HOLDER. (K)

Shade Holders for table lamps. Oxidised finish. Hinged in the centre so that the shade can be tilted.
Cat. No. EG36—
1/3 Ea.

INSULATED SCREW EYES. (K)

The wiring regulations state that all flexible cords running along walls, ceilings, must be supported by an insulated screw eye every 12 inches. Well, here they are:
Cat. No. EG139—
1 D. each
11 D. doz. 10/6 gross
SWITCHES—INSULATED ELECTRIC. (K)
All-insulated Switch for use in bathrooms, kitchens, and near telephones, etc. British made.
Cat. No. EG110—5 amp. ....... Each 1/-
1 1/6 dozen
Cat. No. EG122—5 amp. ....... Each 1/3
3/-
5/-
Cat. No. EG129—10 amp. ....... Each 1/9

SUPER QUALITY SWITCHES. (K)
Genuine Crabtree Insulated Switches.
Cat. No. EG123—5 amp. 1-way .... Each 1/6
Cat. No. EG129—10 amp. ....... Each 4/6

SWITCHES, ELECTRIC. (G)
Cat. No. EGI25—5 amp. ....... Each 1/6
Cat. No. EGI26—10 amp. ....... Each 3/6

MINIATURE SWITCHES. (K)
Similar to above, but miniature for radio and motor cars. Nickel-plated.
Cat. No. EGI18 ....... Each 1/3

EGG CORD SWITCH. (K)
Switch (230 volt, 2 amp.) for hanging on end of cord. Handy for sick rooms, etc. British. Made of brown bakelite.
Cat. No. EG134 ....... Each 1/9

WOOD BLOCKS. (K)
Round and rectangular Wood Blocks for mounting switches, ceiling plates, etc. Carefully made and well finished. Recessed.
Cat. No. EG79—3 1/2in. round ....... Each 3/6
EG80—6 x 3 rectangular ....... Each 7/6
EG81—9 x 3 rectangular ....... Each 9/6
EG82—6 x 6 square ....... Each 1/6

LAMPHOUSE GUARANTEE.
Try out any article purchased from the Lamphouse for 7 days. If, at the end of that time, you are not well pleased with your purchase, return it and we will refund your money in full.

SWITCH OF THE FUTURE

THE NEW MORSON. (G)
A neat and extremely efficient Switch of modern design and perfect construction. Very positive make and break action. Electrically perfect. A product of Sperry. Size of basic 21 in.
Brown (Cat. No. EG127) ....... 1/8
Blocks (Cat. No. EG128) ....... 9/6

CEILING SWITCHES. (G)
Switch for fitting on the ceiling. Supplied complete with cord.
Cat. No. EGI14—3/6 each

CORDS FOR CEILING SWITCHES. (K)
Spare Cords for Ceiling Switches.
Cat. No. EGI16 ....... 6/4 ea.

SWITCHES, CORD. (K)
For through connection. Made of bakelite. This is a useful switch for fitting on the cords of vacuum cleaners, appliances, etc. Cat. No. EG131 ....... 2/- Each 22/- dozen.

MEND YOUR FUSE. (G)
Have a packet of each size of this Wire hand. You never know when you will have to renew your fuse.
Cat. No. EG46—5-amp. size .... 9/6 Each
Cat. No. EG47—10-amp. size .... 2/4 Each

BLACK INSULATING TAPE. (G)
Has Many Uses!
Has many uses, such as binding hockey sticks, axes, etc., besides being an excellent means of insulating. 2 oz. rolls.
Cat. No. ES237 ....... 3/4 a roll
Cat. No. ES238—8 oz., rolls .... 11/6 Each

CEILING ROSES. (K)
Bakelite Ceiling Roses for electric light pendants.
Cat. No. EG32 ....... 10/6 D.
Cat. No. EG33 ....... 1/- D.

FUSES, ELECTRIC RANGE. (G)
Screw Type Fuses are used on nearly all makes of electric ranges and other electrical appliances.
Catalog No. EG40—5-amp. 4D. each

3/4 dor.

Catalog No. EG41—10-amp. 4D. Each
EG42—15-amp. 3/6 D. Each
EG43—20-amp. 2/6 D. Each
600 meg. Grade 23/0076. AKROS FLEX. (G) Cat. No. EW86 6 3/4 D. yard; 23/6 50-yd. coil.

WIRE, CABLE FLEX. (G) Cat. No. EW76 12 ft. roll (50 yards)

WIRE CABLE FLEX. (K) Cat. No. EW118 4 D. yard

WIRES AND CABLES

FLEX for EXTENSIONS

For 230-volt supply. Handy for extending lights, etc. 23/0076 (G) Cat. No. EW70 ... 4 D. yard 12/8 coil (50 yards)

WIRE, FLAT CABLE. (D) Cat. No. EW77—1/044 (1/18), 15/- 100 yds. 3 D.
EW78—7/025 (7/24), 30/- 100 yds. 4 D.
EW79—3/036 (3/20), 26/- 100 yds. 5 D.
EW80—7/036 (7/20), 50/- 100 yards. 7 D.

SILK-COVERED FLEX. (K) Cat. No. EW118 4 D. yard

A small Torch with a Big Light!

FOUNTAIN PEN TORCH. (G) No larger than a pen. Just clips into the vest pocket. Nickel-plated finish. Supplied complete with battery and bulb. Cat. No. ET603 1/3 each

TORCHES. (G) These Torches are made by the famous British factory in Hong Kong. All are well constructed, the body being made of thick brass and well electroplated. The reflectors are silver plated and with a special focusing device. Will throw a beam of light for a long distance. When the head is removed any of these Torches can be used as an electric candle.

Cat. No. ET813—300ft. range focusing model with normal head, takes standard 2-cell battery. Each 2/6

Cat. No. ET814—Two-cell model as above, but with large head. 450ft. focusing range. 3 1/3
Cat. No. ET815—Three-cell focusing model with large head, 750ft. range. 4/6
Cat. No. ET816—Five-cell focusing torch with 1000ft. range and large head. Each 7/11

Tough rubber-covered Circular Flex for extensions in workshop. Flexible. 11/012. Cat. No. EW71—2-wire 71/2 D. yard
Cat. No. EW72—3-wire 9 D. yard

Heavy rubber-covered Circular Flex for extensions in workshop. Flexible. 11/012. Cat. No. EW73—2-wire 7 1/2 D. yard
Cat. No. EW74—3-wire 9 D. yard

(WIRES FOR RADIO—See page 51.) AUTO—See page 33.)

KLIPSIT BUCKLES. (K) Cat. No. ES130—Cards of 12 5 D. card 4/4 doz. cards
PORTABLE COMBINATION LAMP. (D)
Combination Table, Well and Hanging Lamp, all black finish, fitted with hanger for attachment to buttons or tent poles, etc. Suitable for Railswmen, Police and Scout use. Complete with standard size, 3-cell pocket lamp battery and globe.
Cat. No. ET915 .......................... 7/6

SMALL TORCHES FOR THE HANDBAG OR POCKET. (G)
For those not requiring a large torch, these low-priced torches will give years of service. Foreign manufacture.

BAKELITE 3-CELL TORCH.
Uses standard Bijou batteries. Supplied complete with batteries and bulb. Length overall 4½in. Diameter 1½in.
Cat. No. ET826  Each 1/3
Spare Batteries. Obtainable everywhere.
Cat. No. EB303 ......... Each 6d.

BAKELITE TORCH.
Size 5½in. x 1½in. Takes standard 2-cell battery. Throws broad beam. Supplied complete with battery and bulb.
Cat. No. ET829 ......... Each 2/6

USALITE—NEW AND NOVEL PENLIGHT. (G)
Solid brass case in handsome modern ribbed design. Reading house numbers and letter box names, locating keyholes and light switches, scanning programmes in theatres, finding articles under seats, and for use by doctors and nurses for mouth inspection.
Cat. No. ET825— 3/ each complete

NEW PIFCO TORCHES. (K)

Cat. No. ET817 ......... Each 1/6

TORCH BATTERIES. (K)

Vidor Torch Batteries. British made. Stocks arrive each month so as to ensure that you only get new first-class fresh stocks.

Standard Size Vidor Torch Cells.
Cat. No. EB301 ...... Each 4½d.
Baby Torch Unit Cells.
Cat. No. EB302 ......... Each 4½d.
Bijou 2-Cell Torch Batteries (Standard 3-Cell Flat)
Cat. No. EB303 ...... Each 6d.

Standard 3-cell Flat Pocket Lamp Batteries.
Cat. No. EB304 ...... Each 6d.
Pan Torch Batteries (2-cell)
Cat. No. EB305 ......... Each 6d.

Twin 2-cell Cycle Batteries
Cat. No. EB306 ......... Each 1/−

GNOME 3-CELL FLAT BATTERIES. (K)
For special Torches. Dimensions 2½in. x 2in. x ½in.
Cat. No. EB307 ......... 9d. each

COLUMBIA TORCH BATTERIES.
(G)
Standard size Columbia Torch Cells.
Cat. No. EB315— 6d. each

RAILWAY TORCH. (G)
Pocket Lamp Torch—metal case—red, white, or green light by just pushing lens across lamp. Takes standard 3-cell flat battery. Price complete with lamp and battery.
Cat. No. ET914 ............ 3/6
GUARANTEED NICKEL FLASHLIGHT. RELIABLE SWITCH.

Small Torch, Broad Beam.
Cat. No. ET818 Complete 4/6 each
Focus Spotlight 2-Cell Torch, 300 feet range.
Cat. No. ET821 Complete 4/9 each

Small Torch, focussing spotlight, 300 ft. range
Cat. No. ET819 Complete 4/6 each
Regular 2-Cell Torch, broad beam
Cat. No. ET820 Complete 4/9 each

USALITE TORCHES

LONG RANGE FOCUS TORCHES.
Very popular with hunters and fishermen and general outdoor use, where powerful light is needed. Will focus broad spreadlights or long penetrating beams.
3-Cell Focus Torch, 600 ft. range 8/6 each complete Cat. No. ET822
5-Cell Focus Torch, 1800ft. range 11/6 each complete Cat. No. ET823
8-Cell Focus Torch, 2500ft. range The longest Torch and longest range Torch ever imported into N.Z. 17/6 each complete Cat. No. ET824

2,500 Ft. Range

Pifco Lighthouse Lamp (G)
For Hall, Cloakroom, Bathroom, Bedroom, Lavatory, etc.

Pifco Lighthouse Lamp is a modern electric night lamp, beautifully designed, extremely well made in brass and handsomely finished in chrome plate. The satin frosted glass globe gives a soft light and pleasing effect. Hanger incorporated so that it can be suspended if required, and is always handy for any purpose. Lever action switch. Uses two baby unit cell batteries and 2.5 volt bulb. Dimensions: Height overall, 51in. Width overall, 31in. Complete with battery and bulb.
Cat. No. ET913 5/-

Pifco Electric Owlite Lamp (G)
Owlite is the new Pifco Electric Night Lamp combining brilliant lighting results with attractive appearance. The Owl is of figured satin frosted glass, and when lit is very effective. Hanger incorporated so that it can be suspended or carried with ease. Lever action switch. Handsomely finished in chrome plate. Uses two baby unit cell batteries and 2.5 volt bulb. Dimensions: Height overall, 51in.; diameter of base, 31in.
Cat. No. ET912 5/- Complete
There's a RIGHT Lamp
For Every Purpose!

This page has been prepared to enable you to choose your electric lamps wisely. Instead of buying "just a lamp," buy the RIGHT Lamp for the particular use, and you'll buy greater efficiency plus utmost economy...

Where electric lamps wisely. Instead of buying "just a lamp," buy the RIGHT Lamp for the particular use, and you'll buy greater efficiency plus utmost economy...

OSRAM
Standard Vacuum CLEAR BULB

This is the ideal lamp for halls, landings, passages, etc., where a low intensity light is required.

Cat. No. EL201—15 watt. 1/1 each
Cat. No. EL202—25 watt. 1/1 each
Cat. No. EL203—60 watt. 2/- each

OSRAM Gas-filled CLEAR BULB

This type of lamp is universally used for the kitchen, bathroom and for use in factories, stores and shop windows—it might be termed the "general purpose" lamp.

Cat. No. Each
EL205—40 w. 1/11
EL206—60 w. 2/-
EL207—75 w. 2/11
EL208—100 w. 4/-
EL209—150 w. 6/6
EL210—200 w. 9/-
EL211—300 w. 12/6
EL212—500 w. 18/-
EL213—1000 w. 29/-
EL214—1500 w. 40/6

OSRAM TURNDOWN LAMPS

These lamps can be dimmed by simply pulling a cord connection on the top of the lamp. Has two filaments—one dim, the other bright. Just the lamp for over the child's cot, the sick bed, or for front halls, etc.

Cat. No. EL209 8/6 each

OSRAM GAS-FILLED DAYLIGHT

These lamps have a special "blue" glass which filters out all red and yellow beams, and provides the nearest approach to daylight so far obtainable. Essential for colour matching in shops and warehouses, and also for window display.

Cat. No.
EL229—40 w. BC or ES cap Each 2/5
EL230—60 w. BC or ES cap 2/7
EL231—75 w. BC or ES cap 3/8
EL232—100 w. BC or ES cap 5/-
EL233—150 w. BC or ES cap 8/2
EL234—200 w. BC or ES cap 10/11
EL235—300 w. GES cap 15/6
EL236—500 w. GES cap 21/6

OSRAM Gas-filled OPAL

Pure opal glass lamps which give a soft white light. Particularly desirable for sewing, reading, "swotting," etc., where the worker is liable to suffer from eyestrain.

Cat. No. Each
EL221—40 w. 2/3
EL222—60 w. 3/3
EL223—75 w. 4/8
EL224—100 w. 7/6
EL225—150 w. 10/6
EL226—200 w. 14/5
EL227—300 w. 19/11

OSRAM Gas-filled PEARL

Just like the lamp above except that the inside of the glass is frosted just sufficiently to keep sharp light beams from the eyes, without impairing the efficiency of the light. Ideal for "close work" in offices or where work under artificial light is constant.

Cat. No. Each
EL215—40 w. 1/11
EL216—60 w. 2/-
EL217—75 w. 2/11
EL218—100 w. 4/-
EL219—150 w. 6/6
EL220—200 w. 10/6

Vacuum type sprayed colours.

These are used for special displays, electrical signs, and also for home decoration. We have them in pear shape, in red, blue, green, orange, white, yellow.

Cat. N. Each
EL239—40 watts 2/2
EL240—60 watts 2/3
EL241—small pilot 2/2

Vacuum type, as above, but natural coloured glass. Colours: Red, blue, green, amber.

Cat. No. Each
EL242—40 watts 3/-
EL243—60 watts 3/-

Gas-filled (4-watt), natural coloured lamps. Colours: Red, blue, green, amber.

Cat. No. Each
EL244—40 watts 4/1
EL245—60 watts 4/11
EL246—75 watts 5/6
EL247—100 watts 7/6

VACUUM TYPE SPRAYED COLOURS.
LAMPS—PHOTOGRAPHIC. (D)

The Duo Photo Lamp.

Special Lamps for darkroom use. This type has two filaments, one an ordinary lighting filament, the other gives a coloured glow like an ordinary photo lamp; by simply pulling a cord at the side of the lamp you switch over the filaments.

Cat. No. EL201—Opal White and Yellow (for printing and developing) Each 12/1
Cat. No. EL201—Opal White and Red (for developing plates and films) Each 12/1

OSRAM PILOT LAMPS. (D)

This Lamp is ideal for bathroom, halls, landings, and in fact every place where a small light is required for long periods. It only consumes 15 watts, and is therefore very economical.

Cat. No. EL204 

LAMPS—CARBON FILAMENT. (D)

Carbon filament lamps are now very seldom used for lighting, but are still in use as resistances (approx. 1 c.p. equals 4 watts).

Cat. No. EL255—8 c.p. each 2/5
Cat. No. EL256—16 c.p. each 2/5
Cat. No. EL257—25 c.p. each 3/1
Cat. No. EL258—50 c.p. each 5/-

LAMPS—CANDELABRUM. (D)

Fitted with candle tube ready for use, with candle fittings. Each Cat. No. EL267—25 watts 6/-

LAMPS—CANDELABRE. (D)

For chandeliers, wall brackets, candle fittings, etc. When ordering, state type of base required.

Cat. No. EL205—Plain 3/3 flame, 25 watts. Each
Cat. No. EL206—Twisted 3/3 flame, 25 watts. Each

OSGILIM NEON LAMPS. Voltage 200-250.

Type | Watts | Cap | Price
--- | --- | --- | ---
Nightlight | 5 | BC | 4/9
Letter or Figure | 5 | BC | 4/9
Dwarf Indicator | 0.5 | SBC | 3/11
Dwarf Indicator | 0.5 | BL | 4/4
Cross Shaped Electrodes | 8 | BC | 10/3

EXCITER LAMPS.

Volts | Watts | Light | Price
--- | --- | --- | ---
8 | 32 | 50 mm. | 5/7
8 | 32 | 56 mm. | 6/7
8.5 | 32 | 56 mm. | 5/7
10 | 50 | 48.5 mm. | 6/7
10 | 75 | 50 mm. | 6/7

Caps Ass't.

LAMPS—FLASHOLITE. (D)

This type is used for electric signs and for advertising effects, etc. A flash below the side of the lamp switches the lamp on and off approximately every 20 seconds. Available both in clear and spray painted colour (Red, White, Blue, Orange, Yellow, Flame, Green).

Cat. No. EL253—Clear 5/5 each
Cat. No. EL254—Coloured 6/1 each

LAMPS—SPECIAL ROUND BULB. (D)

These are used in American type candle fittings, etc. Frosted.

Cat. No. EL240—25 watts, B.C. base Each 2/10
EL250—40 watts, B.C. base Each 2/10
EL251—25 watts, E.S. base Each 2/10
EL252—40 watts, E.S. base Each 2/10

PROJECTION LAMPS. (D)

Type | Volts | Watts | Cap | Price
--- | --- | --- | --- | ---
Class A1 | 30, 50 | 250 | ES | 14/3
Tubular for 100-119 | 500 | ES or GES | 25/-
Vertical 200-260 | 600 | GES | 41/9
Burning 900 | 1000 | GES | 57/3
Class A2 | 100 | 500 | ES | 14/3
Round Bulb 100-119 | 250 | ES | 24/9
Vertical 200-260 | 1000 | GES | 57/3
Burning 1500 | 2000 | GES | 79/3
Class B | 100 | 130 | ES | 14/3
Round Bulb 100-119 | 250 | ES | 24/9
Horizontal 200-260 | 500 | GES | 35/9
Burning 1500 | 1000 | GES | 57/3

OSRAM TURN-DOWN LAMPS. (D)

Just what you want for the sick room, kiddies’ room, front balls, etc. Pull the cord and you dim the light—pull the other and it’s brilliant again.

Cat. No. EL259 Each 5/5

LAMP CAPS,

BC = Standard Bayonet Cap.
ES = Standard Screw Cap.
GES = Gelshut Screw Cap.
SBC = Small Bayonet Cap.

SPARE LAMPS FOR “MONARCH” SUN LAMPS. (D)

Special carbon filament lamps with screw base, as used for the famous “Monarch” Health—giving Sun Lamps. Clear. 230 volts.

Cat. No. EL600 Each 4/6
Red Natural Glass Ditto Each 6/6
Blue Natural Glass Ditto Each 6/6

LAMPS FOR LIGHTING PLANTS. (D)

Of course the Lamphouse have their own Lamps with special bayonet caps available in the following sizes: 10w., 15w., 25w., and 40w., and 12-volt Lamps in the same sizes are all listed at the same price.

Other special voltages are also available, such as 32v., 50v., 60v., and 100v.

IF IT'S LAMPS

Send to the LAMPHOUSE.

TORCH LAMPS. (K)

Standard Types. Best Quality.

Cat. No. EL100—1.25 volts Each 10/-
EL101—2.5 volts Each 6/-
EL102—3.5 volts Each 6/-
EL103—4 volts Each 10/-
EL105—Focus, 2.5 volts Each 6/-
EL106—Focus, 3.8 volts Each 6/-
EL109—Focus, 6 volts 1/-
EL115—8v., Lamp for Cycle Lamp, etc. 1/-
EL127—6.6 volt (for 8-cell Torches) 1/9

Tubular Radio Lamp—See page 81.

SPECIAL TYPES. (K)

(German)

Cat. No. Voltage Type. Each
EL130—2.5, Bull’s-eye 10/-
EL131—3.5, Bull’s-eye 10/-
EL132—2.5, 2 Opal 9/-
EL133—3.5, 2 Opal 9/-
EL134—2.5 Solid Crystal 10/-
EL135—3.5, Solid Crystal 10/-
EL136—6.0, Silk frosted (for Cycle Generators, etc.) 1/3

LAMPS FOR CYCLE GENERATORS. (K)

These lamps are specially constructed to be used for Cycle Generators giving the voltage output indicated on the lamp.

Cat. No. Each
EL116—6 volt, .25 amp. Generator Lamps 1/3
EL117—35 amp. Ditto 1/3
EL118—50 amp. Ditto 1/3

Radio Panel Lamps—See page 81.
**RADIATOR ELEMENTS**

**SPARE FIRE BARS FOR RADIATORS.**
1000 watt, 101in. between centres of mounting holes. Over all width of bar, 38in. Cat. No. EE519 ... 6/6 Each
Spordee Fire Bars, Small 1kw. 7½in. long. Cat. No. EE531 ... 6/6 Each
Large 1kw. Ditto, 9in. long. Cat. No. EE532 ... 6/6 Each
Round Porcelain Bars, with Spiral Elements; 1kw; 9½in. long. Cat. No. EE533 ... 6/6 Each

**RADIATOR ELEMENTS—SPIRAL WINDINGS.**
Spiral Element Windings for re-winding Radiator Elements, etc. Made of best British Resistance wire. Cat. No. Each
EE500—230 Volt, 200 Watt ... 1/6
EE510—230 Volt, 750 Watt ... 2/2
EE511—230 Volt, 1000 Watt ... 2/3

**MORPHY RICHARDS RADIATOR ELEMENTS.** (D)
750-watt Round Bars
Cat. No. EE520 ... Each 6/6
Ditto, 1000-watts
Cat. No. EE521 ... Each 6/6

**RADIO ELEMENTS.** (G)
Plug-in type Radiator Elements, will fit "Magnet" and other British and Continental Radiators. 750 watts. Cat. No. EE502... Each 6/6
Cat. No. EE501—Each 5/-

**RANGE ELEMENTS.** (D)
Electric Range Hot Plates.—Elements that will fit all makes of ranges. Speedoe to fit any make of range, 8in. to 11½in. diameter. 1750 watts. Cat. No. EE559 ... 35/6
Ditto, 8in. to 9½in. diameter, 900 watts. Cat. No. EE551 ... 29/6

**NIPPY COOKER ELEMENTS.** (D)
Complete Porcelain and Elements for Nippy Cookers. Cat. No. EE527 ... Each 16/6

**APPLIANCE TERMINALS.** (K)
Plated Appliance Terminals, for fitting in the back of electric irons, etc. Supplied complete with two nuts, mica and metal washers. Cat. No. EE400 ... 6D. each

**SUN-UP KETTLE ELEMENTS.** (D)
Spares for Sun-up Kettles; 230 volt. Cat. No. EE506 ... Each 9/6

**ELECTRIC IRON ELEMENTS.** (D)
The Element in the iron is that part which 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.

Cat. No. EE606 ... 2/6 Each 29/4 Dozen

**APPLIANCE CORDS.** (D)
Cords for electrical appliances, irons, toasters, jugs, etc., fitted with "Fillet" type appliance plug on one end and a wall plug on the other end. (See diagram on page 13 for different types.)

Cat. No. EE600—Cord with 2-pin parallel cap ... 3/9
EE601—With 2-pin tee cap ... 3/9
EE602—with 3-pin cap ... 4/-
EE602—with lamp socket adapter ... 3/7

(Nota.—The above are fitted with 6 feet heat cord. Extra long cords can be supplied. Add 9d. for each extra yard required.)

**ELEMENTS FOR APPLIANCES**

**SPECIAL ELEMENTS.** (G)
Besides the "Fit-all" Elements listed elsewhere, we can supply the following special Elements:

**IRON ELEMENTS.**
Cat. No. Price
EY1—Hotpoint Travelling Type, single voltage ... 6/9
EY2—Premier Ditto ... 6/9
EY3—Universal Ditto ... 6/9
EY4—Hotpoint Travelling Type, 100-230 volts ... 13/6
EY5—Premier Ditto ... 13/6
EY6—Universal Ditto ... 13/6
EY7—Magnet Tailors", single heat ... 13/6
EY8—Hotpoint Ditto ... 13/6
EY9—Hotpoint Tailors", three heat ... 18/6
EY10—Magnet Ditto ... 18/6

**TOASTER ELEMENTS.**
Cat. No. Price
EY11—Waratah ... 6/9
EY12—Hotpoint D22 ... 6/9
EY13—Hotpoint T9 ... 6/9
EY14—Magnet ... 6/9
EY15—Universal E944 ... 8/6
EY16—Universal E8312 ... 6/9
EY17—Westinghouse ... 6/9
EY18—Hecla ... 6/9
EY19—Star-Rite ... 6/9
EY20—Toastermaster Commercial ... 6/9
EY21—Double Action Centre ... 6/9
EY22—Double Action Duty ... 6/9
EY23—Creda Swing-gate ... 6/9
EY24—Creda Two-shield ... 6/9

**KETTLE STRIPS.**
Two, Three, and Four Pint.
Cat. No. Price
EY25—Make of Kettle. Price
EY26—Ideal ... 8/3
EY27—Diamond ... 6/9

**PERCOLATOR ELEMENTS.**
Cat. No. Price
EY32—Universal ... 4/6
EY33—Heda ... 4/6
Any odd sized Elements can be made to sample.

**ELECTRIC JUG ELEMENTS.** (G)
Spiral Windings for Electric Jugs. 230 volt.
Cat. No. EE514 ... 1/6
Porcelain Bobbins for Jug Elements.
Cat. No. EE515, Ea. ... 1/6
Winding on Bobbin—Complete ... 3/6

**SPEEDEE JUG ELEMENTS.** (D)
For Speedee Enamelled Jugs.
Cat. No. EE516 ... Each 9/6

**ELECTRIC IRON HANDLES.** (D)
Wooden handles for electric irons will fit practically all makes. Each
Cat. No. EE405 ... 1/6
**SPARES AND EXTRA ATTACHMENTS FOR KNIGHT ELECTRIC CLEANERS (G)**

- **A.—Flexible Hosepipes**
  - Cat. No. EE320—Each 15/-
- **B.—Best Extension Tubes**
  - Cat. No. EE321—Each 6/-
- **C.—Oval Brushes**
  - Cat. No. EE322—Each 6/-
- **D.—Long Aluminium Nozzles**
  - Cat. No. EE323—Each 6/-
- **E.—Fibre Nozzles**
  - Cat. No. EE324—Each 3/-
- **F.—Floor Polishing Nozzles, fitted with two pads. It can be fitted to the tube in the same way as the other nozzles, and used in conjunction with the ‘Knight’ Cleaner for polishing floors.**
  - Cat. No. EE325—Each 13/6
- **Spare 230 V. Armatures**
  - Cat. No. EE326—Each 45/-
- **Field Coiler**
  - Cat. No. EE327—Pair 10/6
- **Carbon Brushes**
  - Cat. No. EE328—Each 1/3
- **Straight Tubes**
  - Cat. No. EE324—Each 5/-
- **Spare Bags**
  - Cat. No. EE421—Each 6/6
- **Spare Brass Caps**
  - Cat. No. EE422—Each 1/3

**LAMPOCKS. (D)**

Lamplocks which prevent lamps being stolen or removed from their sockets, only persons with key being able to exchange lamps.

- Cat. No. EG400—Lamplocks Each 1/9
- Cat. No. EG401—Keys for Lamplocks Each 1/6

**GALLERIES FOR LAMP SHADES (G)**

All the following have a standard 1 1/2 in. hole for fitting on to standard 1 1/2 in. Lampholders.

- **Brown Bakelite Moulded Gallery**, 21 in.
  - Cat. No. EF350—Each 9/6
- **Cat. No. EF351**
  - Ditto, 31 in.
  - Cat. No. EF356—Each 1/4
- **Cat. No. EF352**
  - Ditto, 41 in.
  - Cat. No. EF356—Each 1/6
- **Cat. No. EF353**
  - Metal Galleries as above. Oxidised copper finish, 21 in.
  - Cat. No. EF354—Each 1/4
  - Ditto, 31 in.
  - Cat. No. EF354—Each 3/11
  - Ditto, 41 in.
  - Cat. No. EF354—Each 7/6

**FLANGES. (G)**

- **Cat. No. EG206—** Each 6d.

**NIPPLES. (G)**

Threaded Brass Tube for making table lamps, etc. Fit standard 3 in. lamp holders.

- **Cat. No. EG200—** Each 3d.

**CHAINS.**

- **Complete Chain Set for hanging bowl fittings.** Consists of deep canopy with three hooks, three lengths of chain, each 36 in. long, three oxidised gravity hooks.
  - Cat. No. EF306—Each Chrome Ditto
  - Cat. No. EF307—Each 11/6

**DEEP CANOPY.**

Has three hooks for hanging bowl fittings, etc. Deep enough to fit right over the ceiling rose, thus saving the expense and trouble of removing the ceiling rose and block to fit a special connecting block. Oxidised copper finished.

- **Cat. No. EF315**
  - Ditto, chrome finish
  - Cat. No. EF316—Each 1/3 per yard
  - Cat. No. EF317—Each 2/1 per yard

**GRAVITY HOOKS.**

For hanging on the lip of bowl fittings. Oxidised copper finished.

- **Cat. No. EF318**
  - Ditto, chrome finish
  - Cat. No. EF319—Each 1/4
  - Cat. No. EF320—Each 3/6

**BOWL BUTTONS.**

Oxidised.

- **Cat. No. EF325**
  - Each 5d.

**SPARES FOR VIOLET RAYS. (D)**

- **Cat. No. EE253**
  - Surface Electrodes (A)
  - Each 2/6
- **Cat. No. EE254**
  - Condenser Electrodes (B)
  - Each 6/6
- **Cat. No. EE255**
  - Nape and Neck Electrodes for external treatment
  - Each 6/6
- **Cat. No. EE256**
  - Comb Electrodes (D)
  - Each 3/6
- **Cat. No. EE257**
  - Massage Roller Electrodes
  - Each 5/6
- **Cat. No. EE259**
  - Nerve Brush
  - Each 10/6
- **Cat. No. EE260**
  - Brush Electrode, for care of the hair, massage of head and body
  - Each 19/6
- **Cat. No. EE262**
  - Ozone Inhaler, with spray, (F)
  - Each 16/6
- **Cat. No. EE261**
  - Special Foot Electrode, for deductive treatment of nervousness, diseases of the heart or head, or for diseases needing deductive treatment. (G)
  - Each 21/-
- **Cat. No. EE250**
  - High Voltage Condensers
  - Each 6/6
- **Cat. No. EE251**
  - H.F. Coils
  - Each 9/6

**I-HORSE POWER MOTOR. (D)**

Handy Motor for saw benches, pumps, drills, and dozens of other jobs around the house. Manufactured by Brown, Brick and Meyers, U.S.A. Speed 1440 r.p.m. Site 7 in. x 6 in. Base, 6 in. high, Weight 30 lbs.

- **Cat. No. EM650**
  - £4/12/6

**CLAMP-ON SHADES. (D)**

Spare Shades for Clamp-on Table Lamps. Available in various colours. Metal shades are 6 3/4 in. in diameter, and is provided with a clip so that the shade will clamp on to the lamp bulb.

- **Cat. No. EE46—** Each 3/-
PHILIPS

MOTOR CAR LAMPS

(1)

We can supply Lamps for any type of car, and if you are in doubt about the type to order, state name of car, year of model, and position of lamps in car. We will do the rest.

6/8 VOLT SINGLE CONTACT SINGLE FILAMENT LAMPS.

Candle Equivalent
Cat. No.    Power     Wattage  Location     Price
EL300  6   5     Tail             1/1
EL301     5   5     Side            1/1
EL302  15  12   Stop             1/9
EL303  21  20   Head             1/9
EL304  32  25   Head             1/9
EL305  50  35   Head             1/9

6/8 VOLT DOUBLE CONTACT SINGLE FILAMENT LAMPS.

Candle Equivalent
Cat. No.    Power     Wattage  Location     Price
EL342     15  12   Stop             2/3
EL345  21  20   Head             2/3
EL346  32  25   Head             2/3
EL347  50  35   Head             2/3

12/16 VOLT SINGLE FILAMENT CONTACT LAMPS.

Candle Equivalent
Cat. No.    Power     Wattage  Location     Price
EL313A     6   5     Tail             1/4
EL314A     6   5     Side            1/4
EL315A  15  12   Stop             2/3
EL316A  21  20   Head             2/3
EL317A  32  25   Head             2/3
EL318  50  35   Head             2/3

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

Candle Equivalent
Cat. No.    Power     Wattage  Price
EL335     25  20   DC943  1/8
EL336     35  25   DC943  1/8

SPECIAL INTERIOR LAMPS, ETC, 6/8 VOLTS.

Cat. No.    Location  Size  Cap.    Price
EL335—Traf oor  38 x 14  Tubular  2-cap  1/8
EL336—Festoon  43 x 15  Tubular  2-cap  1/8
EL337—Festoon  32 x 15  Tubular  2-cap  1/8
EL339—Head  35  Screw  Min.  1/8
EL340—Dash Board Dial  Min. B.C.  1/8

SPECIAL INTERIOR LAMPS, ETC, 12/16 VOLTS.

Cat. No.    Location  Size  Cap.    Price
EL341—Traf oor  38 x 14  Tubular  2-cap  1/8
EL342—Festoon  43 x 15  Tubular  2-cap  1/8
EL343—Festoon  35  Screw  Min.  1/8
EL344—Head  35  Screw  Min. B.C.  1/8
EL345—Dash Board Dial  Min. B.C.  1/8

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

Cat. No.    Candle     Power     Wattage  Price
EL335—21/3   30/3   2/6
EL336—32/5   25/5   2/6
EL337—32/2   25/2   2/6
EL338—35/35  35/35  2/6
EL339—50/50  50/50  2/6

12/16 VOLT LAMPS WITH SPECIAL CAPS.

Cat. No.    Location     Wattage     Price
EL370—Head  25  20   SC863  4/1
EL371—Head  25  25   SC863  4/1
EL372—Head  35  35   SC863  4/1
EL373—Head  25  Pref  SC863  4/1
EL374—Head  35/35 Pref  SC863  4/1

* Super Duplo 1936 American Cars.

12/16 VOLT LAMPS WITH SPECIAL CAPS.

Cat. No.    Location     Wattage     Price
EL375—Side  25 Tubular  SC853  2/2
EL376—Head  20  Min. B.C.  SC843  2/3
EL377—Head  20 DC943  2/3
EL378—Head  25 SC863  2/3
EL379—Side  25 SC847  2/3
EL380—Head  25 SC863  2/3
EL381—Head  35 SC863  2/3
EL382—Head  35 DC943  2/3
EL383—Head  35 SC847  2/3
EL384—Head  35 DC943  2/3
EL385—Head  25 SC833  2/3
EL386—Head  25 SC833  2/3
EL387—Head  35 SC833  2/3
EL388—Head  35 SC847  2/3
EL389—Head  25 25 Dupl.  SC847  2/3
EL390—Head  35 25 Dupl.  846  2/3
EL391—Head  35 35 Dupl.  846  2/3
EL392—Head  35 35 Dupl.  943  3/11


Lamps with Cap 863—Recent Model Fiats.

Lamps with Cap 849—Old Model Fiats.

Lamps with Cap 866—Old Lucas Grapes Systems.

Details of Special Caps on application.

EXTRAS—Satin frosted.

List Price plus 10% Selective (Cadmium Yellow) List Price plus 20%
OXFORD MOTOR-CAR BATTERIES.  

(5)


Thick Plates—Carefully Sealed Cells—Long Life Guaranteed.

Cat. No. Type 
EA40-6-volt, 9-plate. Width 7in. x length 7in. x Height 8ln. 
55/-
EA41-6-volt, 11-plate. English. 7in. x 7.5in. x 9in.
59/-
EA42-6-volt, 11-plate. Squat. 7in. x 7in. x 7in.
59/-
EA43-6-volt, 15-plate. 7in. x 8in. x 9in.
62/-
EA44-6-volt, 13-plate. 7in. x 9in. x 7in.
69/-
EA45-6-volt, 15-plate. 7in. x 10in. x 9in.
68/-
EA46-6-volt, 15-plate. Squat. 7in. x 10in. x 7in.
68/-
EA47-6-volt, 17-plate. 7in. x 11in. x 9in.
80/-
EA48-6-volt, 17-plate. Squat. 7in. x 11in. x 7in.
80/-
EA49-6-volt, 15-plate. 7in. x 12in. x 9in.
92/-
EA50-12-volt, 7-plate. 7in. x 11in. x 9in.
86/-
EA51-12-volt, 9-plate. 7in. x 12in. x 9in.
92/-
EA52-12-volt, 11-plate. 7in. x 14in. x 9in.
115/-
EA53-12-volt, 11-plate. Squat. 7in. x 14in. x 7in.
115/-
EA54-6-volt, 7-plate. Motor Cycle. 3in. x 4in. x 6in.
35/-

"GOLTONE" IGNITION CABLE ASSEMBLY KIT. (K)

Registered Design No. 793780.

A useful Ignition Kit, indispensable to the Garage. The Ignition Cable is supplied with a range of easy fitting terminal ends to suit almost any make of British, American or Continental Car.

To make up replacement Ignition leads is the work of a minute or two with this outfit. Cut cable to length required, slip over colour-coded distinctive sleeve supplied, and attach ignition terminal.

The Kit includes a strong box (Registered design), containing a drum of 100 feet of 7 mm. H.T. Cable, with a fixed compartment storing a variety of 7 dozen Ignition Terminals, indicating Coloured Sleeves, and everything essential for the rapid assembly of replacement Ignition cables.

Outfit includes:—  
List Price.
100 feet "Goltone" H.T. Ignition Cable multi-rubber sheathed (tested at 20,000 Volts) on Drum 7 mm. £1/1/-.  
Cat. No. 
ET56-12 Distributor Lead Terminals 1/6 
ET51-24 Ignition Terminals 2/4 
ET100-12 Ignition Terminals 9d. 
ET58-12 Ignition Terminals 1/6 
ET55-12 Ignition Terminals 9d. 
ET1002-12 Ignition Terminals 2/6

Strong container with fixed compartment FREE

TOTAL £1/12/7

"PIP PIP" HORN. (K)

Cat. No. ET507 Each 1/6

THE "BLUE TIT" FLYING BIRD MASCOT. (K)

Of metal-finish Blue Enamel. For handle bar fitting. When the cycle is in motion the wings move as in flight. Very lucky.
Cat. No. ET902 Each 1/11

SPARK PLUG TESTERS. (K)

For testing Spark Plugs and making sure your cylinders are firing correctly. Ensure smooth running of your car, and make power by keeping a check on your spark plugs. Anyone can use them.

A Special PENCIL for MOTORISTS!

Why?

A smart efficient propelling pencil that is much more than a pencil to the motorist. It's job is that of spark plug testing. You simply apply the pencil point to the spark plug terminals and an even intermittent glow in the NEON window of the pencil indicates correct adjustment. Get one and KNOW the condition of your plugs at all times. Only 3/- for each. Cat. No. EM255 3/6

MOTOR CAR RADIOS

Page 39

MOTOR CAR AERIALS

Page 47

You will never know starting trouble if you charge your battery with an ATLAS.

See page 50.
"FIT & FORGET" (C)

KLG SPARKING PLUGS

MOTOR CAR CABLES (K)

Aluminium Armoured Cables. Standard flexible conductors. 23/0.076. Insulated vulcanised rubber protected with impregnated yarn and bright aluminium armoured. Current capacity 4 amps. 100ft. reels.

Cat. No. EW201 . 9D. foot; 14/3 reel

Ditto: twin . 4 D. foot; 26/6 reel

Rubber-covered Ignition Cable. Super quality multiple layers of high grade rubber, 7 mm.; 100ft. reels. 2D. foot; 14/3 reel

Cat. No. EW203 .

Single Conductor, Glossy Varnished Electric Celluloid Flexible Cable. This attractive cable withstands severe condition. Standard conductor insulated vulcanised rubber, braided strong yarn and multiple cellulose, bright full glossy varnished, oil and heat resisting. 100ft. reels.

Cat. No. EW204—2.75 mm. . 2 1/2 D. foot; 15/6 reel

EW205—4 mm. . 3 D. foot; 17/3 reel

EW206—7 mm. . 3 D. foot; 21/6 reel

Twin Celluloid Varnish Cable, as described above.

Cat. No. EW207 .

Metal-screened Ignition Cable for suppressing electrical interferences. For use on cars and aeroplanes fitted with radio. It is of super grade and complies with severe regulations. Tested at 22,000 volts after being immersed in water. Approx. outside diameter 7.5 mm.; 100ft. reels.

Cat. No. EW208 . 8 D. foot; 54/5 reel


Cat. No. EW209 . 1 1/4 D. foot; 7/6 reel

(See illustrations for full particulars.)

ADAPTORS, MINIATURE. (K)

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

Cat. No. Each
EG2—Double contact . 8 D.
EG3—Single contact . 8 D.

MOTOR CAR LAMP SOCKETS. (G)

American type Lamp Sockets for Motor Car Lamp Extensions, etc.

Cat. No. Each
EG2—Double contact . 1/3 each
EG3—Double contact . 1/3 each

(Also see page 21.)

MINIATURE SWITCHES. (K)

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

Cat. No. EG18 . 3/3

MINIATURE LAMP GUARD. (G)

Lamp Guards of this type are very useful when used in conjunction with our Voltage Reducer. (See Type ET622, as they protect the lamp from damage. A double contact holder is provided so that any double contact car lamp may be fitted.

Cat. No. EE136 . Each . 5/6
"ESMA" GENERATOR CYCLE LAMPS and FITTINGS

The Senior Service Dynamo Head Lamp is our 1938 contribution to bringing De Luxe cycle lighting within the reach of all.

**THE BIG FELLOW**

Beautifully designed, chromium-plated finish, with deep set, silver-plated reflector providing a wide and powerful beam of light. Torpedo shape with control and sidelight. 4-way switch. Battery for standing operation.

Cat. No. ET869 .................................................. 20/-

**THE WONDER HEAD LAMP**—Although low priced, this Head Lamp retains many advantages which the other head lamps offer. Throws a powerful beam of light over a long distance. Sturdily constructed and will give trouble-free service for years. Has battery for emergency lighting.

Cat. No. ET868 .................................................. 6/-

**THE PREMIER HEAD LAMP**—All chromium plated, 4-way switch, 2 bulbs, provides a brilliant beam of light. Obstacles are visible at a great distance, and steady road illumination assured. Built to give reliable and dependable service. 44-volt standard battery provides a light when not riding.

Cat. No. ET872 .................................................. 16/6

**NIGHTLITE HEAD LAMP** — Another powerful Head Lamp with Chrome trim. Has 41-volt battery for emergency lighting.

Cat. No. ET867 .................................................. 8/-

**JUNIOR HEAD LAMP**—An efficient Head Lamp that has been built for long service. Heavy gauge metal body. Black japanned.

Cat. No. ET870 .................................................. 7/6

Chromium-plated.

Cat. No. ET871 .................................................. 9/6

**DE LUXE DYNAMO**—Chrome plated. Output, 6 volt, 0.5 amp, 3 watt. Exclusive design. Chromium plated finish and waterproof. A really first-class job in every respect.

Cat. No. ET866 .................................................. 17/-

**REAR LIGHT**—Chromium-plated. Complete with bulb and cable.

Cat. No. ET873 .................................................. 3/-

**DYKAMO**—Perfectly balanced Dynamo. Brackets brass with chrome finish. Neck black japanned. Output 8 volt, 0.3 amp, 1.8 watt. Suitable for any of the head lamps above.

Cat. No. ET865 .................................................. 12/6

"ESMA" GENERATOR CYCLE LAMPS.

For your convenience we are listing Generator Head Lamps and Tail Lamps separately. You can then make up your Generator Set to suit your needs and pocket. All the Lamps are interchangeable with the Generators listed.
PIFCO SAFETY CYCLE LAMP. (G)

The big feature of this Pifco Cycle Lamp is the nickel-plated hood and telltales glass window with unique cut channel, so that the rider and traffic get a beam of light from three extra directions. The hood increases the beam of light for the cycle rider. Special switch incorporated.

Incomparable for utility, merit and value. Black finish, fixed bracket. British.
Cat. No. ET841 4/9 each
Spare Batteries—Cat. No. EB396 1/- ex.

PIFCO JUNIOR CYCLE LAMP. (G)

British.
Cat. No. ET840 3/3 each

PIFCO ELECTRIC CYCLE HORN. (G)

Pifco Electric Cycle Horns add to safety and speed. Under every condition of weather will give unflagging service. Robustly built and easy to fix. Outfit comprises: horn with cables, battery container, and switch attachment ready for use. Use 3-cell flat pocket battery. Horn and battery container fit directly under the handle bars. British.
Cat. No. ET830 9/6 complete

VOLMAG DYNAMO CYCLE LAMPS. (D)

A well made British Dynamo Cycle Lamp.
Fits the front forks of the cycle, ensuring a bright light under all conditions. Weight approx. 8 oz. Silver plated lamp reflector is 22in. diameter.
Cat. No. ET836—12/6 each

LAMPHOUSE GUARANTEE!

Any goods not considered completely satisfactory can be returned WITHIN 7 DAYS and the purchase price will be refunded without a quibble.

BRITISH-MADE REAR LAMP. (K)

Black finish, with plated mounts. Clip especially designed to fit oval, D, and round stays. Unbreakable red projector. Designed to project red light to the rear and sides. Fitted with low consumption bulb and complete with battery. Uses standard size single torch cell.
Cat. No. ET900 Each 2/-

PIFCO DE LUXE CYCLE LAMP. (G)

This powerful Pifco Head Lamp has its imitations, but has not been equaled. Special dim-bright switch. A powerful soft beam of anti-dazzle light for dark road touring, and by switching the light is reduced for town riding, and battery consumption reduced. Power supplied by two standard 3-cell pocket lamp batteries. Body finished matt black with chromium - plated fitting. British.
Cat. No. ET842—10/6 ea.

CYCLE ACCESSORIES

PIFCO DE LUXE CYCLE LAMP. (G)

This powerful Pifco Head Lamp has its imitations, but has not been equaled. Special dim-bright switch. A powerful soft beam of anti-dazzle light for dark road touring, and by switching the light is reduced for town riding, and battery consumption reduced. Power supplied by two standard 3-cell pocket lamp batteries. Body finished matt black with chromium-plated fitting. British.
Cat. No. ET842—10/6 ea.

Cycle Accessories

CYCLOMETERS. (K)

Reliable and accurate Cycloimeters for checking your mileage.
Cat. No.
ET903—For 26in. wheels . . . Each 7/6
ET904—For 28in. wheels . . . Each 7/6
ET905—Strikers for above . . . 6D. Each

PIFCO DE LUXE CYCLE LAMP. (G)

This powerful Pifco Head Lamp has its imitations, but has not been equaled. Special dim-bright switch. A powerful soft beam of anti-dazzle light for dark road touring, and by switching the light is reduced for town riding, and battery consumption reduced. Power supplied by two standard 3-cell pocket lamp batteries. Body finished matt black with chromium-plated fitting. British.
Cat. No. ET842—10/6 ea.

HYDROMETERS. (K)

Engle glass tube type, with non-sticking float. Test your own batteries.
Cat. No. EM300 . . . 2/11
SPARE FLOATS
Cat. No. EM301 . . . 1/-

MIDGET BALL HYDROMETERS. (K)

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. EM302 . . . Each 1/3

STONG N.P. ON-OFF SWITCHES. (K)

Can be supplied with or without mounting brackets.
Cat. No. ES437 1/9

DYNAMO TAIL LAMPS. (K)

Tail lamps for use from dynamo or battery. Chromium plated with 11m. faceted red glass. Supplied with 80in. cable with terminal clips. Lamp bulb extra. 3/6 ea.
Cat. No. ET901

Engine Propellor Mascot. (K)

British made. All metal plated. Finished with coloured propeller blades and screw clip for handle-bar fitting.
Cat. No. ET908 . . . Each 1/3

With mounting brackets
Cat. No. ES436 2/6

ENGINE PROPPELLOR MASCOT. (K)

British made. All metal plated. Finished with coloured propeller blades and screw clip for handle-bar fitting.
Cat. No. ET908 . . . Each 1/3

With mounting brackets
Cat. No. ES436 2/6
GOOD TOOLS for GOOD WORKMEN

Whether for home or tradesmen's use, these SHEFFIELD-MADE SCREWDRIVERS will give complete satisfaction. Beechwood oval handle. Steel cut ferrule.

<table>
<thead>
<tr>
<th>Model</th>
<th>Blade Length</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU112</td>
<td>2in</td>
<td>1/-</td>
</tr>
<tr>
<td>EU113</td>
<td>4in</td>
<td>1/3</td>
</tr>
<tr>
<td>EU114</td>
<td>6in</td>
<td>1/6</td>
</tr>
<tr>
<td>EU115</td>
<td>8in</td>
<td>2/3</td>
</tr>
<tr>
<td>EU116</td>
<td>12in</td>
<td>3/3</td>
</tr>
</tbody>
</table>

INSPECTION HANDLAMPS are invaluable in the workshop or garage. The light can be taken to just where it is wanted. Wood handle—strong wire frame to protect the lamp. Fitted with bakelite shockproof lampholder. British.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU36</td>
<td>8/6</td>
</tr>
</tbody>
</table>

MOTORISTS' CAMPING LAMP. (K)
A handy lamp for hanging in a tent, etc. Fitted with standard double contact motor car lamp holder. With twin wire leads for joining to your car battery or your desk board.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EE131</td>
<td>5/6</td>
</tr>
</tbody>
</table>

AUTO SWITCH. (K)
Useful Switch for dashboard mounting; all insulated. Trafficator type. Has 3 positions, switch as bright, dim and off. Reliable job with good solid contact. Diameter 11in.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>ES440</td>
<td>3/6</td>
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</tbody>
</table>

TWIN SWITCH. (K)
All insulated. The two switches are of the on-off type and work independently from each other. Size 12 x 2A.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES439</td>
<td>3/-</td>
</tr>
</tbody>
</table>

HORN BUTTON. (K)
With mounting brackets for cycles or motor bikes. Nickel-plated finish.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ES438</td>
<td>2/-</td>
</tr>
</tbody>
</table>

UTILITY TOOL SET. (D)
Set comprises Hammer, Gimpet, large and small Screwdriver, Reamer or Countersinking Tool and Scriber. Hammer head fits on hammer by well-cut thread. Others fit screw by set-screw on the side of the handle. All bits are housed in the hollow handle, which is made of wood. Length of handle, 65in. Length of bits, 21in. Length of hammer head, 31in.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU118</td>
<td>2/-</td>
</tr>
</tbody>
</table>

THE PERFECT SCREWDRIVER. (D)
A strong Screwdriver for all purposes. Steel shaft right through the handle.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU122</td>
<td>5D</td>
</tr>
<tr>
<td>EU124</td>
<td>10D</td>
</tr>
<tr>
<td>EU125</td>
<td>1/2</td>
</tr>
<tr>
<td>EU126</td>
<td>2/6</td>
</tr>
<tr>
<td>EU127</td>
<td>3/6</td>
</tr>
</tbody>
</table>

6 in 1 TOOL SET

The handiest tool in the world. Every home, store, office and workshop should have one. As a hammer alone it's worth the money. All parts of good quality.

<table>
<thead>
<tr>
<th>Model</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU118</td>
<td>2/6</td>
</tr>
</tbody>
</table>

THE LAMPHOUSE ANNUAL—1938
QUALITY TOOLS LAMPHOUSE PRICED

BREAST

DRILL

A heavily constructed drill, 17in. high, with 2-speed gears, operated by detachable handle, which is fitted to the desired gear shaft.

Takes round shank drills up to 1-in.

Chuck is 3-jaw type ensuring certain grip at all times. Gears are totally enclosed, being fitted with removable cover for inspection and oiling —breastplate removable for carrying. Stove Black enamel finish.

Cat. No. EU131—32/—

HAND

DRILLS

A one speed double gear drill, taking round shank drills up to 3\(\frac{3}{8}\) in. Steel chuck fitted with three spring type jaws. Has fixed side knob and detachable handle. Metal parts black and red enamelled with polished wooden handle and side knob.

Length overall 12in.

Cat. No. EU132—4/11

SMALL HAND

DRILL.

A lighter pattern similar to above, having single gear drive. Takes drills up to 1in. Length overall 8\(\frac{1}{4}\)in.

Cat. No. EU135—6/6

SMALL BENCH

GRINDER

A lighter pattern grinder, having 3in. dia. wheel, 7/8in. thick. Finished in red enamel. An excellent machine for light work. Fits up to 1in. bench.

Cat. No. EU138—21—

LARGE BENCH

GRINDER

14-in. high with ball bearings, taking round shank drills up to 3\(\frac{3}{8}\)in. Three jaw steel chuck. Automatic feed and thrust. Maximum distance from chuck to table 4in. Table size 3in. x 3\(\frac{3}{4}\)in. Distance from chuck to pillar, 2in. Finished in Red and Black enamel. A first class tool in every respect.

Cat. No. EU134—35/6

PLAIN BRACE

Forged steel body, octagon mouthpiece and spring jaws, 3in. sweep, 14in. long. Polished wood handle and ball. Bright steel bar.

Plain bearings.

Cat. No. EU139—3/9

SPECIAL VALUE RATCHET BRACE. High quality Ratchet Brace that would cost double this price elsewhere. Takes any size bits, and has polished hardwood head and handle. Has octagon mouthpiece and spring jaws, 10in. sweep, 14in. long. Ball bearing, nickel plated. You will find many uses for tools of this kind round the home, for making minor repairs.

Cat. No. EU130—8/9

Spiral Ratchet Screwdriver.

Those who have frequent use for a screwdriver will find the Spiral Ratchet Screwdriver much speedier and more convenient than the ordinary driver. Has an improved spiral action for driving or withdrawing screws. Right and left hand movements, and a device for making it rigid. Tempered steel, perfectly cut spiral groove with one groove deeper than the other to prevent wear. Has spring in handle for quick return. Total length 12ins. Weight 6 ozs.

'Cat. No. EU137—12/6

RATCHET SCREWDRIVERS.

This line of screwdrivers have forged steel blade, mahogany finish handle, and left or right ratchet as well as fixed operation.

Cat. No. EU138—2in. blade. . . . each 8/—

Cat. No. EU139—6in. blade. . . . each 10/—

THE LAMPHOUSE GUARANTEE PROTECTS YOU!
**TOOLS FOR THE HANDYMAN (D)**

- **6in. MODULATE PLIERS** — Polished. Cat. No. EU69 Each 1/8
- **6½in. RADIO PLIERS** — 1st Grade insulated checked handle. Rated 3,000 volts. Long round nose. Cutting edge. 2½in. overall. Cat. No. EU52 Each 3/9
- **5½in. SIDE CUTTING NIPERS** — Bright finish. Cat. No. EU55 Each 1/6
- **5½in. SIDE CUTTING NIPERS** — 1st Grade, insulated checked handles. Rated 3,000 volts. Cat. No. EU64 Each 4/9
- **7½in. SIDE CUTTING NIPERS** — Finish Black. Powerful type for cutting steel. Cat. No. EU56 Each 3/11
- **8in. Combination PLIERS** — Fine polished metal handle with checked grip. Cat. No. EU58 Each 2/11
- **8½in. TINMEN'S SNIPS** — Light quality, black with bright blades with rivet. Cat. No. EU68 Each 1/9
- **9½in. MOTOR PLIERS** — Cat. No. EU66 Each 3/11
- **6in. MOTOR PLIERS** — Cat. No. EU70 Each 3/11

**FLEXIBLE STEEL RULES. (G)**

- Rule rolls up into small round bakelite case. 1½in. diameter. Rule released when centre button is pressed. 5½in. wide, 30½in. long. Marked in 1/32nds for the first 2 inches, and 1in. for the balance. Also marked in centimetres. Cat. No. EU120 11d. each

**MARKING GAUGES. (D)**

- Made in England, therefore reliable. Will give lasting service and satisfaction. Cat. No. EU90 Each 2/6

**TACK LIFTERS. (D)**


**JOINERS' SQUARES WITH MITRE. (D)**

- Cast-iron stock, three rivets, hardened steel blade, bright, with mitre cut-away, warranted true and accurate. Sheffield make. 6in. Cat. No. EU18 Each 1/6

**ALL-METAL SLIDING BEVEL. (D)**


**SPANNERS. (G)**

- These are made from tempered steel, and contain ten spanners in one. Fit all nuts from 0 B.A. to 8 B.A. Useful for all engineers, radio technicans, and electricians. Cat. No. EU1 Each 1/6

**POCKET RADIO SCREWDRIVERS. (K)**

- Hologram Screwdrivers for the radio man. Handy size; made of best steel; complete with cover and clip for fitting into pocket. Cat. No. EU101 Each 1/ each

**Screwdrivers: thin blade, coloured wood handle. An attractive line. One dozen on card.**

- Cat. No. EU102 6d. each 5/9 dozen

**RADIO SCREWDRIVERS. (K)**

- Insulated handle Screwdrivers. Box steel, fine points, moulded handle that remains fast. Cat. No. EU109 9d. each 8/6 dozen
ANDREA 6-VALVE
DUAL-WAVE (K)
Battery 6-volt Model

£31/10/-

Hand-rubbed piano finish cabinet of beautifully matched American Walnut, 20½in. high, 15½in. wide, and 11in. deep.

6 NEW TYPE OCTAL BASE TUBES, ONE-HALF USUAL BATTERY DRAIN—8 tube performance—short and medium waves 17.8 to 52 and 195 to 580 metres (520 to 1550 K.C.—5000 to 16,800 K.C.)—operates from one 6-volt storage battery—NO B or C BATTERIES REQUIRED, BUILT-IN SELF-RECTIFYING POWER SUPPLY—8in. AL-NI-CO permanent magnet dynamic speaker—3-gang low minimum condenser—tunable R.F. stage on all wave bands—470 KC Hi-Q I.F. system—two-speed tuning (12 to 1—60 to 1 ratio)—5in. illuminated etched on metal dial, calibrated in MC and METRES on short wave band, KC and METRES on medium wave band—triple automatic anti-fading control—continuous variable tone control—diode detector—gramophone connection—Remote speaker connection—Complete shielding from back door pick-up—TROPIC-PROOF (all H.F. parts impregnated) — AC RECEIVER OUTPUT—SUPER-SENSITIVITY on all WAVE BANDS — RUSTPROOF cadmium plated chassis 8⅛in. high, 13¾in. wide, 10½in. deep. TUBES USED: 2-6S7G, 1-6D8G, 1-6T7G, 1-6L5G, 1-6K6G.

Cat. No. ER903

ANDREA 7-TUBE
AUTO RADIO (K)

£22/10/-

POWERFUL — NOISELESS — SUPPRESSORLESS LOWER BATTERY DRAIN


Cat. No. ER713
Hand-rubbed piano finish American Walnut cabinet of excellent proportion and design, with beautifully contrasted mahogany stripe running vertically through front and top. 10½in. high, 16½in wide, 7½in deep. CONTAINS 6-TUBE AC Chassis D6S. short and medium wave bands, 6½in. El. Dy. Speaker.

6 tubes—equivalent 7.
Tapped for 120, 150, 220, 230 volts, 50/60 cycles.
17.8 to 53, 187 to 571 (16.8 to 5.6 MC, 1600 to 525 KC).
Superheterodyne Circuit.
470 KC HiQ I.F. system.
2 Double tuned sectionalised I.F. Transformers.
10 Tuned Circuits.
Shock Mounted Bar Type Gang Condenser.
6½in. Electro Dynamic Speaker.
Phono Connection
Short-wave De-Fluttering Filter.
BEAM POWER Class “A” Output.
Dual Automatic Anti-Fading Control.
Diode Detection.
Built-in Line Noise Filter.
TROPIC-PROOFED—all parts impregnated.
ILLUMINATED DIAL: 5½in x 3½in.
MICROMETER TUNING 18.5 to 1 ratio.
INDICATING KNOBS
Chassis Dimensions: 7½in. high, 13½in. wide, 6½in. deep.
Cat. No. ER714 £22/10/-

ANDREA 6-VALVE DUAL WAVE ELECTRIC

Hand-rubbed piano finish American Walnut cabinet of excellent proportion and design, with beautifully contrasted mahogany stripe running vertically through front and top. 10½in. high, 16½in wide, 7½in deep. CONTAINS 6-TUBE AC Chassis D6S. short and medium wave bands, 6½in. El. Dy. Speaker.

6 tubes—equivalent 7.
Tapped for 120, 150, 220, 230 volts, 50/60 cycles.
17.8 to 53, 187 to 571 (16.8 to 5.6 MC, 1600 to 525 KC).
Superheterodyne Circuit.
470 KC HiQ I.F. system.
2 Double tuned sectionalised I.F. Transformers.
10 Tuned Circuits.
Shock Mounted Bar Type Gang Condenser.
6½in. Electro Dynamic Speaker.
Phono Connection
Short-wave De-Fluttering Filter.
BEAM POWER Class “A” Output.
Dual Automatic Anti-Fading Control.
Diode Detection.
Built-in Line Noise Filter.
TROPIC-PROOFED—all parts impregnated.
ILLUMINATED DIAL: 5½in x 3½in.
MICROMETER TUNING 18.5 to 1 ratio.
INDICATING KNOBS
Chassis Dimensions: 7½in. high, 13½in. wide, 6½in. deep.
Cat. No. ER714 £22/10/-

ANDREA 5-VALVE BROADCAST Electric RECEIVER

ANDREA 5-VALVE BROADCAST Electric RECEIVER £12/10/- (K)

This Model, newly developed, meets the universal demand for a HIGH QUALITY Radio Receiver PRICED WITHIN THE MEANS OF THE SMALL WAGE-EARNER.
The tone quality, selectivity and sensitivity of this carefully constructed five-tube superheterodyne, compare favourably with many larger and more expensive sets.
Cat. No. ER904 £12/10/-
A YEAR AHEAD
THE

Burndept
All-Wave
BATTERY RECEIVER

VIDOR MODEL (K)

Seven Reasons Why You Will Be Well Pleased With "BURNDEPT"

We tried and tested, on all points, 30 different Battery Receivers of English and American manufacturers, and we decided on the "BURNDEPT" for the following reasons:

1—Sensitivity. Although of only three valves, the set will give a performance equal to many 4 or 5 valve sets.
2—The fact that the set only uses three valves makes it most economical to run.
3—The tone is excellent.
4—It is entirely of British manufacture.
5—It is easy to operate and tune.
6—It is an All-Wave set, whereas most sets offered in New Zealand are Dual-wave only.
7—As far as we are aware, there is no other battery set on the New Zealand market that can touch the "Burndept" for price.

FOUR-BAND TUNING FROM:

- Short Wave (1) 13.5 — 48.5 metres
- Short Wave (2) 75 — 210 metres
- Medium Wave 200 — 350 metres
- Long Wave 900 — 1,200 metres

AND A NEW FEATURE IN A BATTERY RECEIVER!

Simply by pressing the switch knob, the scale of this new "Burndept" can be flooded while tuning, and can then be switched off for greater economy.

ONLY

£14/10/-

Complete With Batteries

Cat. No. ER100

RESULTS THAT COUNT!

Although it is but a few weeks since we first offered this Radio to the public, we have already received testimonials from various parts of the Dominion, enthusiastically expressing satisfaction and pleasant surprise at the marvellous performance of this set.

Call or send for a "Burndept" Receiver to-day! Try it out in your own home for SEVEN DAYS. If, at the end of that time, you are not fully satisfied in every way with its performance, return it and we will refund your money in full, including return delivery charges!

The 1938 Burndept All-Wave Band-Pass Receiver has an aristocratic pedigree dating from the infancy of Radio. As far back as 1922 Burndept were making receivers of the all-wave lengths, and this early pioneering is evident in the superiority of Burndept receivers of to-day! Programmes are easily received on the two short-wave bands, are really entertaining, and provide real enjoyment for listeners. Of particular interest is the fact that this Burndept Receiver tunes as low as 13.5 metres, making possible the reception of stations NOT receivable on other so-called all-wave receivers. This receiver provides excellent and trouble-free reproduction from all New Zealand and Australian stations, on the broadcast band and all main world stations on short waves.

A SURPRISE PACKET

No 12.

Only 5/-

(6)

No. 12 Surprise Packet may not be as big as it looks in this picture, but it's the big value that counts.

Constructors, amateurs, experimenters, etc., Big Bargain Packets, containing a collection of useful radio parts.

Trust the Lamphouse with 5/-... You will not be disappointed. Money refunded in full if you are not more than pleased with your bargain. Limited quantity. Order early.

Cat. No. ES12 - Price 5/-

Postage 6d.

PICK-UP NEEDLES. (K)

"HEROLD"
PICK-UP-NEEDLES

Steel Gramophone Needles, gold plated. Specialy prepared for pick-up work. Also excellent for ordinary gramophones. 200 in box.

Cat. No. EP250 - Box 1/6
ENSIGN R A D I O

The Sensation of a Decade

Listen to "ENSIGN" RADIO for two minutes, and MARVEL! You'll hardly believe it's radio, because, for the first time, you'll be listening to REAL REPRODUCTION—just as if the actual studio performance was taking place in your very home.

Distinctly Modern and exclusively designed cabinets of sturdy construction and beautifully finished, housing chassis embodying every worth-while and up-to-the-minute engineering improvement. This assures the proud owners of these receivers performance of outstanding merit, the clarity and richness of tone being unsurpassed. A comparison of any one of these receivers with the best competitive offerings will make apparent the reasons for their reputation.

Model JN7—Cabinet fitted with Battery Type 5-VALVE DUAL-WAVE VIBRATOR CHASSIS. The ideal Set for the country listener on account of the low "A" Battery consumption. (Requires no "B" Batteries.) Equipped with 8in. Speaker and full-size Aeroplane Dial.

Cat. No. ER856 .......... £28

7-VALVE ALL-WAVE STREAM-LINE MANTEL—With push button tuning and with 8in. speaker.

Cat. No. ER857 .......... £37/10/

Model J6—6-Valve DUAL-WAVE MANTEL, using the identical chassis as 6-Valve Dual-wave Console Model, and giving the same smooth operation and trouble-free performance.

Cat. No. ER850 .......... £24

NEW PUSH BUTTON ELECTRIC TUNING.

The operation is both fast and positive, and the accuracy of selection is such that automatic frequency control of the receiver to overcome selection discrepancies, is unnecessary and, in fact, undesirable.

Specially Designed, with high safety factors to give dependable operation even under unusual service and climatic conditions, the manufacturers of these high-grade, modern-type, low-cost radio receivers employ only trained personnel and the best of equipment; this together with their belief of the indisputable fact that:

"There is no substitute for precise manufacturing and high quality"

is what makes this range of receiving sets compare so favourably with the best competitive offerings.
ENSIGN RADIO  The Sensation of a Decade!

Cat. No. ER853  £39/10/-

Model F1—7-VALVE ALL-WAVE MANTEL, using the same beautifully constructed chromium-plated chassis as in the Console Model, and capable of bringing to your fireside world-wide programmes for your entertainment and enjoyment.
Cat. No. ER852  £32/10/-

New Model—DUAL-WAVE, DUAL-PURPOSE, A.C. VIBRATOR TYPE PORTABLE RECEIVER, operating from 230-volt A.C. supply or from 6-volt A battery (No B battery required). Change is made by simply touching a switch. Ideal for beach or weekend cottages, boats, launches or motor-cars, and for districts where the power is to be shortly installed. 6-valve.
Cat. No. ER855  £31/10/-

Model JN5—6-VALVE DUAL-WAVE CONSOLE. Incorporating advanced Superheterodyne Circuit, latest type Valves, Colour Band Dial—Visible Tone and Volume Indicators—Colour Wave change Switch—Cadmium-plated Chassis, and equipped with Operadio Dynamic Speaker.
Cat. No. ER851  £29/-

Equally dependable low-priced Model F2—5-VALVE BROADCAST MANTEL MODEL, using Modern Superheterodyne Circuit and employing latest type Valves, 4-in. Aeroplane Dial and 8in. Operadio Speaker Design and performance place this Set definitely apart from ordinary mantel type broadcast receivers.
Cat. No. ER854  £17/10/-
RADIO SECTION

AERIAL WIRE, PLAIN COPPER. (K)
Only best British pure copper wire supplied.
Cat. No. EA251—3/22, 100ft. 1/9
Cat. No. EA252—7/22, 100ft. 3/6
Cat. No. EA283—7/20, 100ft. 6/3
Cat. No. EA284—7/22, 50ft. 1/11

AERIAL WIRE, ENAMELLED. (K)
Enamelled aerial wire will last longer than the plain copper, as the enamel covering protects the wire from corrosion. The enamel also acts as an insulation.
Cat. No. EA255—7/22, 100ft. coils 5/6

SCREENED LEAD-IN WIRE. (K)
Effective in reducing static noises caused by electrical devices, etc. 50ft. coils. 8d. each yard
Cat. No. EA291

SHEilded LEAD-IN. (K)
Heavy shielded wire for lead-ins or for shielded earth wire, core 3/22 copper wire, well insulated and covered with metal braid. Total diameter approximately 6.5 mm. As used in most shielded aerial systems.
Cat. No. EA273 10D. yard

SINGLE 14SWG ENAMELLED COPPER WIRE. (K)
For double aerials, etc. 21lbs. equals approximately 100ft.
Cat. No. EA265 3/—lb.

AERIAL WIRE—INSULATED—LEKRITE. (K)
11-strand conductors with a strong compounded insulation which is waterproof. Suitable for both indoor and outdoor use.
Cat. No. EA266—25ft. coils 1/4 each
Cat. No. EA269—50ft. coils 2/3 each
Cat. No. EA270—75ft. coils 3/3 each
Cat. No. EA271—100ft. coils 4/3 each

FLEXIBLE LEAD-IN WIRE. (K)
Specially manufactured for lead-ins. Made very flexible so that it will not be affected by constant swelling. Consists of 30 strands copper wire, each 310, very insulated with vulcanised rubber. Diameter 4 m.m.
Cat. No. EA269 per yard 9d. 7/6 for 100ft.; 33/- for 500ft. coil.

COUNTERPOISE AERIAL WIRE. (K)
Hard drawn bare Copper Wire, 12 S.W.G., for use with counterpoise aerials, etc., 11b. approx. 30ft.
Cat. No. EA263 1/6

AERIAL WIRE, INDOOR. (K)
Art. silk covered in various colours. Stranded, very flexible. Suitable for putting around picture rails, etc. Also used for making frame aerials.
Cat. No. EA262—100ft. coils 3/3 Each 36/6 doz.

INSULATORS, E.C.G. (K)
Egg Insulators are almost universally used in N.Z. To ensure good results you should put two or three each end of the aerial.
Cat. No. EA312 Each 1/1 8d. dozen; 6/— gross.

GLASS INSULATORS. (K)
Glass Insulators, used where a really good job is to be made of insulating your aerial. Length 31m.
Cat. No. EA313 Each 6D. 5/9 doz.; 60/— gross.

SHELL INSULATORS. (K)
Useful and popular Aerial Insulators. Cat. No. EA324—1lin. x 11in. 6d. each
Cat. No. EA325—2lin. x 3lin. 4d. each

AERO INSULATORS. (K)
Special Low Loss Insulator. Porcelain. Size 2lin. x 23in.
Cat. No. EA326 Each 6D.

BEEHIVE STAND-OFF INSULATORS. (K)
Made of best quality glazed porcelain. For anchoring wires to walls or for mounting transmitting coils. 2lin. base.
Cat. No. EA307 Each 1/1

MIDGET STAND-OFF INSULATORS. (K)
Useful for transmitters, etc. Nickel-plated fittings.
Cat. No. EA306—6D. each

ENGINEERING INSULATORS. (K)
An Insulator in two sections with cork spacing washer for feeding through panels, etc. Length 1m. overall diameter 6mm. conductor 1lin. long, with nuts on each end.
Cat. No. EA311 Each 9D.

"NAIL-IT" INSULATORS. (K)
Used for taking wires along outside walls, etc. Made in two pieces, and when nailed up grip the wire and make a neat and efficient job.
Cat. No. EA310—4D. each

INSULATED GUIDE ARMS. (K)
Used for insulating lead-in wire from spouting, eaves, etc. The lead-in wire passing through a hole in the insulator, which is attached to a thin iron rod. A coach screw thread on the end of the rod enables it to be screwed directly into the wood.
Cat. No. EA301 Each 10D. each

LONG GUIDE ARMS. (K)
Similar to the above, but of heavy construction and 12lin. arm.
Cat. No. EA302 Each 1/3

"EMILY'' GUIDE ARMS. (K)
Are similar to the above, but of a much lighter construction.
Cat. No. EA303—3lin. over-all. Each 4D.
Cat. No. EA304—7lin. over-all. Each 6D.
Cat. No. EA305—12lin. over-all. Each 9D.
PAULY—GALVANISED. (K)

EA412
EA413
1in. galvanised pulleys for halyards, etc.
Cat. No. EA412 6/6 each, 5/6 dozen

NON-JAM PULLEYS. (K)

These pulleys are specially constructed so that the guy wire cannot jam. Heavily galvanised.
Cat. No. EA413—1/2

AERIAL OUTFIT PARCEL. (K)

Special assortment of good aerial equipment. Contains—
1 Coll (100t) 7/22 aerial wire.
9in. Lead-in Tube.
6 Egg Insulators.
1 Lissen Lightning Arrestor
2 Nail-it Insulators.
10yds. Special Lead-in Wire.
1 doz. Insulated Staples.
1 Galvanized Pull-doz.

Cat. No. EA287. 11/6 complete parcel

LEADS-IN, EBONITE. (K)

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 1in.
Cat. No. EA401—Ebonite Lead-in, 7d. each 6in. long.
Cat. No. EA402—Ebonite Lead-in, 7d. each 9in. long.
Cat. No. EA403—Ebonite Lead-in, 1/2 ea 12in. long. 11/9 dozen.

LEADS-IN, EBONITE. (K)

This is a better type, with wing-nuts on each end. 1in. diameter, 6in. long.
Cat. No. EA404—13/6 dozen 1/3 each

LEADS-IN, FLEXIBLE WINDOW. (K)

This type is flexible and can be fitted under windows, etc., when it is not desired to bore a hole through the wall.
Cat. No. EA405—6D. Each 5/6 dozen

PORCELAIN LEAD-IN TUBES. (K)

These are hollow porcelain tubes for leading in a wire through the wall of the house, etc. We prefer this type of lead-in, as it does away with the necessity of extra joints. The lead-in wire can be brought in without setting wet and avoids joints that sooner or later become troublesome. The end is bent to keep out the rain.
Cat. No. EA406—1/- each

ATTNPOSITION BLOCKS. (K)

As used in double doublet aerial systems for transposing lead-in wire.
Cat. No. EA315 For set of 8 4/6

AERIAL EARTH PLATES. (K)

Eliminates unsightly wires to your set, having them concealed in the wall. Beautiful bakelite plate. Has attractive and neat appearance.
Cat. No. EA431—2/6 each

LISSEN LIGHTNING ARRESTORS. (K)

(Approved by the Fire Underwriters)

To make your aerial system comply with the Fire Underwriters' regulations, a lightning arrester must be fitted to all installations. The arrester must be fitted on the outside of the building containing the receiver, it being usual to place it just where the lead-in enters the house. This Lissen Lightning Arrestor is small in size, easy to install, and gives you full protection. Instructions for installing set with every Lissen Arrestor.
Cat. No. EA426—20/6 dozen 1/9 each

HELIJEN LIGHTNING ARRESTORS. (K)

(Approved by the Fire Underwriters)

Here is a de luxe approved Lightning Arrestor which is not only efficient in every respect, but will give an enhanced appearance to your aerial system. Supplied complete with fixing bracket as illustrated.
Cat. No. EA427 Each 3/6

LIGHTNING ARRESTORS. (K)

Small type Eagle Arrestors.
Cat. No. EA428—10d. each 9/6 dozen

AERIAL CLEATS. (K)

Galvanised iron cleats for securing halyard ropes.
Cat. No. EA416—4d. Each

AERIAL ROPE. (K)

Manufactured from best hemp and specially prepared so that it will withstand the weather over long periods. 60ft hanks.
Cat. No. EA424—2/6 Each

AERIAL CONNECTORS. (K)

Specially designed for connecting the lead-in wire to the aerial to do away with soldering. When clamped on, the two wires make a perfect joint.
Cat. No. EA425—4d. ea.

AERIAL SPRINGS. (K)

Consist of a strong steel spring with an insulator on each end. Used for taking up the sway of masts or trees, etc., to prevent the aerial from breaking.
Cat. No. EA423—1/9 each

STRAINERS, WIRE. (K)

Galvanized iron wire strainers for tightening stay wires, etc.
Cat. No. EA415—1/3 Each

GALVANISED HOOKS AND EYES. (K)

For screwing into wood to hold aerials, stay wires, etc.
Cat. No. EA410—Galvanized Hooks, 21/2in. 2d.

Cat. No. EA411—Galvanized Screw Eyes, 21/2in. 2d.

AERIAL MASTS. (K)

30 Foot Steel Masts. British manufacture. Supplied in three sections, which are telescopic. Made throughout of British steel close joint tubing. All fittings are included, together with stranded steel galvanized wire.
Cat. No. EA432—32/6 each

CHEAP AERIAL SWITCHES. (K)

Aerial Earth, Knife Switch, porcelain base.
Cat. No. ES478—A real bargain at—5d. each
**INSULATED STAPLES.** (K)

**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. Coloured. 50 staples in a packet.

Cat. No. ES118 3D. doc., 9D. packet

Or 7/6 per dozen packets

Competition quality Insulated Staples. Grey colour. 100 staples in packet.

Cat. No. ES117 62D. pkt. 5/6 each pkt.

**STAPLES.** (K)

Cat. No. ES119 — 1/6 lb. 2D. dozen

**KNIFE SWITCHES.** (K)

Single Pole Double Throw Aerial Earth Switches. Bakelite base. 8D. each

Cat. No. ES490 — 7/6 doz.

Double Pole Double Throw Knife Switches on bakelite base.

Cat. No. ES491 — 17/6 doz. Each

**HEAVY KNIFE SWITCH.** (K)

A Single Pole Double Throw Knife Switch with heavy blade and solid contacts. Specially designed for transmitters, etc. Mounted on slate base.

Cat. No. ES492

**EARTH TUBES.** (K)

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. EA433 2/6 each

**EARTH CLIPS.** (K)

Light adjustable pattern. Has a number of holes so that screw can be shifted. Fits practically all sizes of pipes.

Cat. No. EA434

3D. each 10/6 doz.

**CLAMPITE.** (K)

Special Earth Clip, easily fitted. The 3 points make a sure contact.

Cat. No. EA435

6D. each 5/6 doz.

**EARTH CLAMPS.** (K)

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

Cat. No. EA436 — 1ln. water pipe size (will fit pipes up to 1ln. outside diameter). 7D. each

Cat. No. EA437 — 1ln. water pipe size (will fit pipes up to 1ln. outside diameter). 9D. each

Cat. No. EA438 — 1ln. water pipe size (will fit pipe up to 1ln. outside diameter). 10D. ea.

**WIRE, TINNED EARTH.** (Z)

7/002 Bare Tinned Copper Earth Wire.

Cat. No. EA294

14½ coil (7 lbs.) 4/6 100ft.

**AERIAL ELIMINATORS.** (K)

Muter Compo. Aerial Eliminators. These are claimed by the manufacturers to be superior to an outdoor aerial. On test we find that while they do not give quite so much volume as an outdoor aerial, the reduction in static and interference is considerable. Selectivity is also improved. They can therefore be recommended for people not wanting to put up an outdoor aerial, for demonstration purposes, and in places where static and interference are particularly severe.

Cat. No. EA286 3/7 each

**"NO-MAST." THE WORLD'S BEST AERIAL.** (K)

Patent No. 337866.

No Mast. No unsightly pole required. Enables you to tune in stations never heard before on your set. Increases volume of all stations and reduces overlap and interference. Neat and unobtrusive, yet the lost word in aerial efficiency.

Until the introduction of the "No-Mast" Aerial there was no satisfactory alternative to the ugly, cumbersome and troublesome aerial pole—difficult and expensive to erect, awkward to maintain, and an eyesore to the locality. The "No-Mast" enables everyone, even flat-dwellers, to obtain an unobtrusive outdoor aerial at minimum cost and inconvenience of erection, yet giving the maximum efficiency.

Designed by experts on the latest scientific principles, the "No-Mast" Aerial has received the unqualified approval of the world's best-known radio authorities. It is the choice of many leaders of the industry, including B.B.C. officials, and also at Windsor Castle, where the leaders roots make satisfactory reception difficult.

The cost of the "No-Mast" Aerial is definitely less than that of erecting a pole aerial. It can be erected in 20 minutes by anyone who can knock in six nails, and once fixed cannot be blown down. Complete with fittings.

Cat. No. EA294

17/6 Postage 1/6 extra.

**LEMKEM LINE FILTER.** (K)

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 the AC mains.

Cat. No. EA295

19/6 each

(See inside front cover.)
THE MOTO-WHIP—STREAMLINE
AUTO AERIAL. (K)
The I.C.A. Moto-whip is a novel adjustable auto antenna that can be adjusted for both city and country driving. The sturdy construction of the Moto-whip makes it a most desirable antenna that can be used on any type car. Streamline design offers a minimum of wind resistance. Beautiful triple-plated chrome finish. Permanent, lasting, efficient. Important features that make the Moto-whip a fast selling aerial:

- Beautiful, triple-plated chrome finish matches fittings of all cars.
- Easy installation. Snap clip adjustable for country or city reception.
- Can be used on any type car.
- No drilling on top of car.
- Furnished complete with lead-in cable.
- Full length of Moto-whip—52in.

The Moto-whip antenna is equipped with all necessary hardware and lead-in cables, individually packed. Individually packed. 16/-
Cat. No. EA299

I.C.A. POLTENNA, AUTO AERIAL. (K)
The ideal Aerial for long distance reception. Works on broadcast receivers or all-wave receivers. Attached in a few minutes.

The new POLTENNA is a telescopic type of antenna extending to a maximum height of 8ft. when open. This collapsible metal type of antenna provides increased signal pickup, especially in locations away from broadcasting stations.

Will fit any make of car regardless of whether it is a new streamline turret-top, coupe, or roadster, or old-type cars, regardless of make.

Mounts quickly and easily on the bumper—no drilling necessary. Can be collapsed when not in use.
The POLTENNA is also practical for transmission and can be tuned for 5 to 10 metre operation.
Effectively finished in Black Duco Parked Polished Polish Finish, the POLTENNA comes completely assembled with insulator, sturdy mounting brackets.
Cat. No. EA291 19/6 (K)

BEAUTIFUL EAGLET, TWIN-FLOW—THE ANTENNA
IN PERFORMANCE! BEAUTY! DESIGN! (K)
I.C.A. now presents a truly new motor-car antenna in this EAGLET TWIN-FLOW utilizing the principle on which is an established principle of noise cancellation. The component and symmetry of design are such as to enhance the beauty of any car upon which it is installed. The Eaglet is designed to work on both short-wave and broadcast bands. The Eaglet TWIN-flow contains the following important features:

- Beautiful, lasting triple-chromium plated finish.
- Doublet system of noise cancellation.
- No drilling on top of car.
- Effective vacuum cup and plates ensure quick and permanent installation.
- Doublet aerial mounts on beautiful chrome-finished ornamental insulators. (Insulator's design shows an eagle in flight.)

Adapted to the contour of all streamlined cars.
Not affected by rain, snow or ice.
Can be used on coaches, sedans, or coupes.
Minimizes static and wheel noises.
Attractively priced.
Cat. No. EA289 30/-

And Now—
A NEW AERIAL ELIMINATOR (K)
This new and improved scientific device replaces outdoor and indoor aerials with startling efficiency. The Insulena is a very compact unit, measuring only 1in. x 2in. x 11/2in., which can be installed anywhere. Thousands of users report freedom from interference and man-made static, often unbearable with old-type aerials. The Insulena is not a light socket aerial and has no connection with the electric current line—eliminating any possibility of A.C. hum. No lightning arrester required.
Cat. No. EA288 Price 13/6

LEKMEK DOUBLET AERIAL SYSTEMS. (K)
Specially suited for dual-wave sets, short-wave sets, and short-wave converters. Consists of a complete double doublet aerial system in kit form and incorporates a Lekmek aerial cable interference eliminator. No wiring or assembling necessary. It has all been done at the Lekmek laboratories. Includes everything necessary except the ropes and supports, and only needs to be erected. Full instructions and a clear diagram is provided with each outfit. Ideal for city, suburban and country users, as it successfully combats all interference from trams, trains, neon signs, electric motors, refrigerators, vacuum cleaners, noises from passing cars and all other types of man-made static. In many cases reception has been improved more than 50 per cent.
Cat. No. EA298 47/6

(See inside front cover.)

INDOOR AERIAL! (K)
An indoor spring type aerial that will stretch out to about three feet across an ordinary room, and still remain in its aerial form.
Cat. No. EA285 1/6

KEEP YOUR BATTERIES FULL OF POWER WITH THE FREE WIND! (D)
Gone are the expense and inconvenience of run-down radio batteries from the moment you install a DE LUXE WINCHARGER.

From then on, all your power cost will be the adding of distilled water to your battery when necessary. The WINCHARGER airbrake governor eliminates vibrations, fluttering, and damage from strong winds. Especially equipped with special condenser to dampen generator interference in radio. Charging rates can be altered to suit charging condition.

COMPLETE AS ILLUSTRATED.
With Ampmeter and Cut-out Panel.
Cat. No. EA200—£14/10/- Each

Length of Propeller, 8ft.
Height of Metal Stand, 6ft.

LEKMEK AERIAL FILTERS. (K)
Recommended for all broadcast band sets. Checks man-made static and electrical interference picked up through the aerial.
The Lekmek Aerial Filter is designed for the purpose of reducing noise and interference which is adjacent to the receiver. Consists two transformers, a 80ft. of screened interference-proof lead-in cable.
Cat. No. EA290 35/- each
Cat. No. EA300—Ditto with 100ft. cable. 45/- each

THE LAMPHOUSE ANNUAL—1938
2 volt 50 amp hour (actual) Accumulators. There are no separators, the plates being kept in position by ribs moulded inside the glass container, the result being a highly efficient cell, having low internal resistance. Size 41in. x 5lin. x 7lin. Glass cell.
Cat. No. EA124 27/6 Each

LISSEN FOR PORTABLES. (K)

This Accumulator is constructed so that the plates remain immersed in acid both in carrying and operating positions. Reinforced moulded containers with special insulated terminals. Unpippable. Celluloid case.
Cat. No. EA123 2 volt 20 amp. (actual)
Size 4 5/16 x 2 7/16 x 4 1/16. Each 29/6

BEREC 45-VOLT "B" BATTERIES. (K)

This Battery is of standard size and is a special export model manufactured by the Ever-Ready Company of Great Britain. Being of generous capacity they will outlast other standard 45-volt types. They have the added advantage of being tapped every three volts, thus assuring that modern battery valves requiring special voltages are supplied with the exact voltage to enable them to give maximum efficiency.
Cat. No. EB191 Berec 45-volt "B" Batteries Each 16/6

Oxford Radio Batteries. (G)

Heavy duty, solidly constructed leakproof 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. EA20 2 volt, 110 amp. 31 x 92 27/-
EA21 2 volt, 150 amp. 31 x 92 29/-
EA22 2 volt, 150 amp. 41 x 92 33/-
EA23 6 volt, 110 amp. 7 x 91 62/-
EA24 6 volt, 140 amp. Type for Vibration, 7 x 111/2 x 92 80/-
EA25 6 volt, 160 amp. Type for Vibration, 7 x 111/2 x 92 85/-
EA26 6 volt, 170 amp. Type for Vibration, 7 x 125 x 92 90/-

BEREC 45-VOLT "A" BATTERIES. (K)

Berec 15-volt, fixed every 11 volts. Cat. No. EB192 Each 6/6

EVER READY AIR CELL
NO RECHARGING

At last the country's biggest Radio problem is solved. A new Ever Ready Air Cell means improved performance, and does away for ever with the trouble and cost of battery charging. The Ever Ready Air Cell gives a minimum of 1000 hours service whether used continuously or at infrequent intervals over a lengthy period; it delivers constant voltage and prevents valve "burn outs" due to too high a voltage. Can be used as an "A" battery for any battery set where the maximum "A" drain does not exceed 65 of an amper. Write for further literature dealing with this wonderful Air Cell.
Cat. No. EB190 55/-

HEAVY DUTY "C" BATTERIES. (K)

Columbia Radio Batteries need no introduction to New Zealand Radio fans. They continue to assure you greater clarity, volume and distance. Always specify Columbia for longest life and most power per shilling.
Cat. No. EB172 41 volt C Battery Each 3/

Columbia Radio Batteries.
Cat. No. EB170 Heavy Duty Layerfill (4400), 45 volts Each 29/6

COLUMBIA DRY CELL. (G)
Cat. No. EB167 11 volt No. 8 Type Cell 2/9
AND AT ONCE YOUR SET DEMANDS A BIG INCREASE IN CURRENT FROM YOUR BATTERY

VIDOR 120V. B AND C BATTERIES.
Size 8\text{in.} \times 6\text{in.} \times 3\text{in.} If the bias section is not required connect HT — plug to GB—9v. Voltage is then 120v. If, however, GB is used the “B” voltage available is still 111 volts. Bias battery tapped every 11 volts. “B” battery tapped 27, 39, 51, 63, 75, 87, 99 and 111 volts.
Cat. No. EB6

18/6

VIDOR 120V. H.D. BATTERIES.
Size 10\text{in.} \times 6\text{in.} \times 3\text{in.} Weight 17\frac{3}{4} \text{lbs.} Tapped 15, 30, 45, 60, 75, 90 and 120 volts.
Cat. No. EB6

29/–

GRID BIAS BATTERY

VIDOR 9V. “C” BATTERIES.
Size 5\text{in.} \times 3\text{in.} \times 3\text{in.} Weight 1\text{lb.} 3\text{oz.} Tapped every 11 volts.
Cat. No. EB21

3/3

VIDOR 6V. “C” BATTERIES.
Size 6\text{in.} \times 3\text{in.} \times 3\text{in.} Weight 1\text{lb.} 3\text{oz.} Every 11 volts.
Cat. No. EB20

1/9

VIDOR 120V. STANDARD BATTERIES.
Size 8\text{in.} \times 6\text{in.} \times 7\text{in.} Weight 61\text{lbs.} Tapped 22\frac{2}{3}, 45v.
Cat. No. EB1

12/6

VIDOR 60V. BATTERIES
(Heavy Duty)
Size 10\text{in.} \times 6\text{in.} \times 3\text{in.} Weight 91\text{lbs.} Tapped at 15, 30, 45 and 60 volts.
Cat. No. EB4

16/–

VIDOR 60V. 6M.A. BATTERIES
(Light Duty)
Size 9\text{in.} \times 3\text{in.} \times 3\text{in.} Weight 31\text{lbs.} Tapped at 18, 30, 36, 42, 48, 54, and 60 volts.
Cat. No. EB2

9/–

VIDOR 100V. 6M.A. BATTERIES.
Size 10\text{in.} \times 3\text{in.} \times 3\text{in.} Weight 61\text{lbs.} Tapped at 37, 46, 55, 64, 73, 82, 91
and 100 volts.
Cat. No. EB4

13/9

VIDOR 100V. 6M.A. BATTERIES
(Light Duty)
Size 12\text{in.} \times 5\text{in.} \times 3\text{in.} Weight 74\text{lbers.} Tapped at 24 volts and every 9 volts ther- after.
Cat. No. EB5

16/–

VIDOR 120V. 6M.A. BATTERIES
(Light Duty)
Size 12\text{in.} \times 5\text{in.} \times 3\text{in.} Weight 74\text{lbers.} Tapped at 24 volts and every 9 volts there- after.
Cat. No. EB5

16/–

VIDOR 45V. STANDARD BATTERIES.
Size 8\text{in.} \times 2\text{in.} \times 7\text{in.} Weight 61\text{lbs.} Tapped 22\frac{2}{3}, 45v.
Cat. No. EB1

12/6

VIDOR 6V. STANDARD BATTERIES.
Size 8\text{in.} \times 2\text{in.} \times 7\text{in.} Weight 61\text{lbs.} Tapped 22\frac{2}{3}, 45v.
Cat. No. EB1

12/6

GRID BIAS BATTERY

VIDOR No. 6 TYPE 15V. Cells.
For bells, radio, etc. Size 6\text{in. high.}
2\text{in. diam. Weight 1lb.} 13\text{oz.}
Cat. No. EB30

2/3

VIDOR 45V. 6TYPE 11V. Cells.
For bells, radio, etc. Siz \text{e 6in. high.}
2\text{in. diam. Weight 1lb. 13oz.}
Cat. No. EB30

2/3

The Battery with THOUSAND LIVES!

Mail All Orders to the Electric Lamp House 22 MANNERS ST WELLINGTON

THE LAMPHOUSE ANNUAL—1938 49
THE PERFECTED VIBRATOR—
It's RADIOKES!
Dual-Unit for Use with EVERY Battery Set.

The Radiokes Vibrator is particularly easy to install. One cable only is provided, and this cable is totally shielded and wired to a 5-pin plug. In such a way that the switch on the receiver also controls the vibrator. This also acts as a safety measure to prevent the vibrator unit from being operated without load.

The main vibrator unit is for sets already designed for vibrator operation, but with the addition of the Special Voltage Divider Unit, the Radiokes Vibrator can be used with ANY BATTERY RECEIVER without any difficult alterations.

Think of the money you save in replacements—order this Radiokes Vibrator today—install it yourself—full instruction with each unit. Remember—it suits EVERY battery receiver—is shielded inside and so eliminates "hash" and is silent in operation (you'll be surprised how quiet it is on short-wave)—fitted with extra heavy power equipment to stand overload—small in size, neat in appearance.

CAT. NO. EA186—Radiokes Vibrator $6 6/-
CAT. NO. EA197—Voltage Divider Unit 15/-

SPARE BULBS FOR TUNGAR CHARGERS.

Cat. No. EA189—2 amp. 25/-
Cat. No. EA190—6 amp. 59/-

PORTABLE POWER PLANTS. (D)

WITHIN THE REACH OF EVERYBODY.

"PIONEER" now furnishes this remarkable plant at amazing low prices. Now you can have plenty of current for lights, motors, radios, battery charging, etc.—and you don't have to be a master mechanic to do it.

6 VOLTS, 200 WATTS.
PUSH BUTTON STARTING.
BATTERY IGNITION. (D)
The complete unit is easily moved about and is sturdy built for long life under heavy duty service. Easy to operate. For installation where engines of this type are satisfactory, the "PIONEER" L.B. Plants have no equal.

Cat. No. EA199 $22 10/-

WRITE FOR LEAFLET.

"ATLAS" TRICKLE CHARGER. (D)
Consists of Stepdown Transformer and permanent metal Rectifier, suitably mounted in a strong well-finished sheet steel fireproof case. Will charge two, four and six volt accumulators on approximately half an amp. It may be left permanently connected to the accumulator but should be switched off from the mains when the receiving set is actually in use.

Cat. No. EA183 $25/

FOR CAR or RADIO.

"ATLAS" ENGLISH BATTERY CHARGER.

(D)

Designed for 6 or 12 volt batteries. Provision has also been made for charging 2vaccumulators, thus making the Charger universal for all types of car batteries and radio accumulators. The charging rates are as follows—2 volts at 1 amp.; 6 volts at 2 amps.; 12 volts at 1 amp. Incorporates metal rectifier. Prices include all cables, plugs, etc. Just plug into your light socket and charge your batteries.

Owners of auto, radio sets who would like their sets in constant use, sometimes find they cannot have their switch turned on all the time, as the drain on their battery is too severe, and the next morning they are unable to start their car.

The "ATLAS" Battery Charger overcomes this difficulty. Simply plug it in overnight, and in the morning your battery is fully charged, full of pep and ready for another day's programme.

Cat. No. EA184 $79 6/ Each
De Luxe Model, with moving iron ammeter.
Cat. No. EA185 $95/
AIDS TO BETTER RECEPTION

5 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 aerials. Acting as a perfect aerial eliminator.
5. It controls volume from powerful local stations.

Installed in a Few Minutes, Without Tools!
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.

Price only 27/6
CAT No. EA1

ICA 3-IN-1 RADIO TUNER. (K)
Carefully designed and engineered. Con- cists of a highly efficient L.C. Circuit tuning over the entire broadcast band. It functions as either an antenna tuner, wave trap, or Aeriel Eliminator, depending upon the man- ner of its connection to the radio set. A valuable adjunct to the radio receiver, greatly enhancing radio performance. Oper- ates on any make or model of radio set.
As an Antenna Tuner, it will improve the reception of weak stations. As a Wave trap, it will separate interfering stations and improve selectivity. As an Aeriel Eliminator, it makes unnecessary the outdoor aerial. Can be installed by anyone within a few minutes.
Cat. No. EC294—Complete with Instructions. 3/11

R.C.S. HEAVY DUTY MOTOR FILTER. (K)
This filter eliminates all noises which occur by reason of feed-back from power mains, and also electrical disturbances caused by such things as electric motors, refrigerators, elevators, high tension lines, violet ray plants, etc. It connects between the offending motor and the power.
Cat. No. EF501 37/6

R.C.S. FRACTIONAL H.P. MOTOR FILTER. (K)
This filter eliminates all noises which occur by reason of feed-back from power mains, and also electrical disturbances caused by such things as electric motors, refrigerators, elevators, high tension lines, violet ray plants, etc. It connects between the offending motor and the power.
Cat. No. EF502 13/6

LEKMEK LINE FILTER. (K)
For eliminating man-made noises and electrical interference coming over the A.C. mains. Filter fits between set and power point. Also particularly successful in D.C. areas and on ships with D.C. generators.
Cat. No. EA297 19/6

GOLTONE RADIO INTERFERENCE SUPPRESSOR UNIT. (K)
This Suppressor Unit is fixed in the flexible cord of small appliance which causes interference in nearby radio sets, and it should be placed as close as possible to the appliance.
It effectively stops electrical interference from all manner of domestic electrical appa- ratus such as vacuum cleaners, sewing ma- chines, motor mixers, etc., and can be used in every case where it is not possible to incorporate a filtering arrangement in the motor-case of the appliance.
The Condensers are impervious to heat and moisture. The case is of high-grade bakelite material with cord grips for attaching to the flexible conductor. It is equally successful on A.C. or D.C. circuits up to 260 volts at 10 amps.
Cat. No. EF504 8/6

Try It At
Our Risk.
Send for an “AERITROL” to-day; 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.
THE "NEVADA" CONSOLE CABINET. (D)  
American figured walnut front, with walnut ends, slanted front. Inside measurements of chassis compartment 20in. x 12in. x 10in. high. Overall: 35in. high, 22in. wide, 14in. deep. Highly polished.
Cat. No. EC178 Each 129/6

THE "CAMBRIDGE" MANTEL CABINET. (D)  
Walnut front, birch ends, inside measurements 13in. x 10in. x 6in. to bottom of speaker fret. Overall: 183/4in. x 153/4in. x 103/4in. deep. Highly polished.
Cat. No. EC177 Each 52/6

THE "SOUTHBRIDGE" MANTEL CABINET. (D)  
Walnut front, birch ends, inside measurements 13in. x 10in. x 6in. to bottom of speaker fret. Overall: 183/4in. x 153/4in. x 103/4in. deep. Highly polished.
Cat. No. EC176 Each 39/6

"BURNIA" SPEAKER CABINETS. (D)  
Walnut finish. Provision to take either 6in. or 8in. Speakers. Has felt feet to protect furniture. Size: 112in. x 112in. x 7in.
Cat. No. EC179 Each 27/6 Ea.

THE ARAWA CABINET. (D)  
Inside measurements 201/2 x 9 x 11. Nicely finished, polished walnut.
Cat. No. EC180 Each 32/6

LISSEN DISC TYPE H.F. CHOKE. (K)  
This type of choke is wound with double silk wire. It is of single hole mounting type, with solder lugs attached so as to facilitate wiring.
Cat. No. EC43—30 M.H. Each 1/6

LEKMEK R.F. CHOKE. (K)  
Due-lateral Windings, Impregnated.
Cat. No. EC60 Price 1/9

LEKMEK POWER FILTER CHOKE. (K)  
Manufacturers' types for below panel mounting, layer wound, impregnated and baked.
Cat. No. EC122—30 Henry 100 ma. 34in. x 25in. x 22in. 11/3

R.C.S. FILTER CHOKE. (K)  
We can thoroughly recommend these Chokes for the elimination of hum from filter circuits. A large core area is provided with low resistance and high inductance winding. The air gap on these Chokes is scientifically adjusted on the latest type of choke testing apparatus, and it remains cool when carrying the rated current.
EC130—30 H., 100 M.A. 10/-
EC131—30 H., 50 M.A. 9/3
EC132—30 H., 150 M.A. 18/6
EC133—30 H., 200 M.A. 26/6

LISSEN ALL WAVE CHOKE. (K)  
Lissen Astatic H.F. Choke, specially designed for all-wave sets (as used in the famous Lissen All-Wave Four).
Cat. No. EC40 5/6

R.C.S. H.F. CHOKE. (K)  
These are slot wound on five groove formers with a total of 1200 turns, and are of the manufacturers' type fitted with plan for soldering direct to the plate contact of the socket.
Cat. No. EC42 Each 11/2 D.

VIBRATOR HIGH TENSION CHOKE. (K)  
This Choke is similar in appearance to the R.C.S. Audio Transformer. The H.T. Choke for a Vibrator Unit requires special treatment in designing and engineering. Its core and winding are properly balanced to suit the exacting conditions for effectively filtering a vibrator.
Cat. No. EC50 13/6

VIBRATOR TUNED R.F. CHOKE. (K)  
This Choke is specially wound for the elimination of noise from the Vibrator and vacuum impregnated.
Cat. No. EC51 3/9
THE LAMHOUSE ANNUAL—1938

53

THESE NEWLY DEVELOPED

R.C.S. COILS (K)

Will make your DUAL-WAVE RECEIVER A SUPER SET.

As any constructor knows, the coils are really the heart of any set, so that if you want your Dual-Wave Receiver to be absolutely "At London’s" use only these new R.C.S. products.

R.C.S. TUNING COILS.

Aerial, R.F., and Oscillator coils specially wound on high-grade grooved formers with isolonite type base; both broadcast and short wave coils have trimmers for stable adjustment (very critical on short waves) and are enclosed in the one can, which is large and definitely non-damping and designed for rigid mounting. All leads are colour coded with strongly soldered connections.

AERIAL

Cat. No. EC382 RF

11/6

Cat. No. EC383 OSCILLATOR

11/6

R.C.S. High Gain Special

IRON CORE INTERMEDIATES

Are extremely sensitive and designed for high fidelity results. Isolonite type base, with extra strong leads colour coded.

Cat. No. EC314

9/9

R.C.S. DUAL-WAVE COIL KIT.

Comprises Aerial, R.F., and Oscillator Coils, as illustrated, with wave change switch and broadcast padders, completely wired and assembled on a rugged steel bracket for quick mounting. Each bank is effectively shielded with the minimum of metal surrounding switch and wires, allowing extremely short leads and thus giving the maximum efficiency. All leads are colour coded.

Cat. No. EC385

£3/10/-

Complete Kit with two special high-gain intermediate transformers.

Cat. No. EC385A

£4/9/6

OXFORD T.R.F. COILS (K)

The Oxford T.R.F. Coils are made on new principles. They are wound on Dalton ring fixing coil formers. This method has many advantages over the old bolt and nut method of fixing. To fix an unshielded coil to a chassis you simply have one hole, put in the former and screw up the facing ring—ever so much simpler than using bolts and nuts which are so awkward to tighten up. Another advantage is that if you require to remove the coil for examination all you do is to unscrew the ring and lift out the coil. All coils are wound to match BC935 Condensers, special coils can be supplied on request.

Cat. No.

EC304—Aerial Coils, unshielded

EC305—RF Coils, unshielded

EC306—RF Coils (with reaction)

EC307—Aerial Coils, shielded

EC308—RF Coils, shielded

EC309—RF (with reaction)

D Dalton Formers can be supplied without windings as follows:


RADIOKES TUNING COILS (K)

Type BCS. Litiz-wound coils in two Pl sections, similar to RC2, but housed in small square can. Shield can: 11in. x 11in. x 22in. Mounting centres: 1 5/16in.

BCS Aerial Coil

Cat. No. EC392

7/6

BCS R.F. Coil

Cat. No. EC393

7/6

BCS Oscillator Coil

Cat. No. EC394

7/6

Type BIC. Litiz-wound iron core coils wound on high-efficiency Strulfer cores. The most efficient coil made, with amazing sensitivity and selectivity. Can be as large as BCS.

BIC Aerial Coil

Cat. No. EC395

12/9

BIC R.F. Coil

Cat. No. EC396

12/9

BIC Oscillator Coil

Cat. No. EC397

12/9

Type DIC. Dual wave iron core coils, using new Strulfer cores, complete with isolonite trimmers in top of can. 18-50 and 200-500 metres—for 465 k.c. only. Shield cant: 21in. diameter, 4 1/4in. high. Mounting centres: 21in.

DIC Aerial Coil

Cat. No. EC398

21/-

DIC R.F. Coil

Cat. No. EC399

21/-

DIC Oscillator Coil

Cat. No. EC400

21/-

SHORT-WAVE COIL UNIT (K)

LISSEN HI Q4 range Rotary Coil Unit. Designed to ensure minimum losses. Four bands from 4.8 to 91 metres can be selected by a turn of the knob, while the positive contact of plug-in coils is retained. The insulating material is of low-loss ceramic. Switch contacts are solder nickel and self cleaning.

Cat. No. EC463

25/6

RADIOKES TWA-3 TRI-WAVE COIL BOX.

Type TWA-3 Coil Assembly is of greatly improved type. Briefly, the unit has been built in three sections, the first section housing aerial coils, the second R.F. coils, and the third oscillator coils. Complete and most effective brass shielding between each section gives complete stability with a minimum of loss due to close coil shields.

Broadcast coils are of the new iron core type. Litiz wound, giving unequalled sensitivity and selectivity. The TWA-3 assembly covers an unusually wide frequency range, from 11 to 80 metres on short wave and the usual broadcast band, 200-550 metres. The use of Type AD-465 or AP-465 I.F. transformers completes a coil kit which definitely has no equal.

TWA-3 Coil Assembly, complete with gang condensers.

Cat. No. EC386

£6/17/6

IRON CORED COILS (K)

Pop up your set. Use RCS Iron Cored Coils. These Coils will give you more gain and better selectivity. RCS Coils use STRULFER Iron Cores. Supplied complete with shield.

Cat. No. EC377—RCS Iron Cored Aerial Coils

9/9

Cat. No. EC378—Ditto R.F. Coils

9/9
The R.C.S. Dual-wave Box contains both the Short-wave and Broadcast Coils, Switch, and necessary trimming Condensers. The box is single-hole mounting.
Cat. No. EC376 (L.F. Extra.) £5/5/–

R.C.S. 4/5 VALVE DUAL-WAVE BOX. (K)

The RCS MIDGET LITZ WOUND BROADCAST COILS. (K)

R.C.S. MIDGET LITZ WOUND BROADCAST COILS. (K)

These Midget Aerial, R.F. and Oscillator Coils are, due to their small size (18 in. x 13 in.), ideal for mantel, portable or car radio. The coils are sensitive and selective and are the latest product from our laboratory. You can’t go wrong in wiring up—no colour or number code needed as our new design mounting panel is embossed showing identical letters at connecting points with those in “Wireless Weekly” diagrams.
Cat. No. EC410—Aerial Coils 5/6
Cat. No. EC411—R.F. Coils 5/6
Cat. No. EC412—Oscillator Coils 5/6

1 Aerial Coil.
1 R.F. Coil.
1 Oscillator Coil.
2 High-gain 166 KC Litz Wound Intermediates.
1 3-gang Condenser, 1 Padder.
Circuit Diagrams and Instructions.
Cat. No. EC2008  £5/5/–

Cat. No. EC350—Aerial Coils Each 2/3
EC357—RF Coils Each 2/3
EC358—RF with Reaction Each 2/6
EC359—Aerial Coil with Shield Each 3/3
EC360—RF Coil with Shield Each 3/3
EC361—RF Coil with Reaction with Shield Each 3/6

R.C.S. TRF COILS. (K)

R.C.S. Intermediate Transformers of the Isolanitte base type have exceptionally high gain, due to the special impregnation of the coils and the entire elimination of the steel supports, and to the very low loss base.

Cat. No. EC312—460 K.C. Each 6/3
Cat. No. EC313—175 K.C. Each 6/3

 Contents.
1 Aerial Coil (shielded).
1 R.F. Coil (shielded).
2 IF Transformers (Litz wound).
1 2-gang Condenser with floating rubber mounts and screws.
1 Padder.
Circuit Diagrams and Instructions.
Cat. No. EC2005  £2/17/6

R.C.S. 35R (2AT)

This Coll Kit is as used in the now famous “£50 Prize Winner.” It can be used by all wishing to build a high-class broadcast receiver with the best possible coil kit.

R.C.S. MIDGET SQUARE TYPE IRON CORE. (K)

This square Midget I.F. is just as sensitive and selective as its larger brother, and was especially designed for the car radio described in this issue. It is ideal for use in any receiver where space is very limited.
Size: 21 in. high x 13 in. square, 400 K.C.
Cat. No. EC315  Each 10/–

R.C.S. T.R.F. COILS. (K)

R.C.S. Intermediate Transformers of the Isolanitte base type have exceptionally high gain, due to the special impregnation of the coils and the entire elimination of the steel supports. The coils are supported on a special support which is part of the trimmer type coil, and the entire elimination of the steel supports. The coils are specially designed for the car radio described in this issue. It is ideal for use in any receiver where space is very limited.

Cat. No. EC316—460 K.C. Each 5/6
Cat. No. EC311—175 K.C. Each 5/6

R.C.S. T.R.F. COIL KIT. (K)

Each consists of 3-Type H.C. 51 coils, 2-type I.F. 84 iron cored I.F.’s, complete with special cable and circuit data.
Cat. No. EC409  40/–

R.C.S. MIDGET OR CAR RADIO COIL KIT. (K)

Contents:
1 Aerial Coil (shielded).
1 Oscillator Coil (shielded).
2 IF Transformers (Litz wound).
2 2-gang Condenser with floating rubber mounts and screws.
1 Padder.
Circuit Diagrams and Instructions.
Cat. No. EC379  Each 10/–

What people think about “The Skysweeper.”
(See page 118.)

Invercargill, 18/6/37.
I received the “Skysweeper 4 Kit Set” in good order and condition and have to thank you for your excellent attention to my order. I built up the Set and was amazed at its performance, 26 stations being logged on the first night.—W.E.W.

Auckland, 18/6/37.
“Was pleasantly surprised to have the “Skysweeper Kit” arrive here this morning (before the invoice). On opening up and checking up found everything O.K., including d.E.S valve, which I proposes to use as a joke as tester. Really did not expect the goods so soon under the L.B.P.”—W.B.

North Wairau, 11/9/37.
Last night on my “Skysweeper” I had dozes of stations. I still find the Motor Aerial Eliminator superior to an ordinary out-door aerial.”—K.L.

Waimauku, 22/9/37.
“Thank you for the tools forwarded by you to me. They are of higher quality than I expected.”—R.B.K.
EXCELRAD PRODUCTS
MADE IN NEW ZEALAND

EXCELRAD COILS.
The following are details of Excelrad Coils for 1938/9. The Coils are grouped into Coil Kits for various kinds of circuits, but individual coils can be supplied separately. Circuit diagrams using the various Excelrad Coils will be released shortly and published in the "N.Z. Radiogram" (monthly).

For 5-valve Broadcast Sets using a 3-gang Condenser, Band Pass Input.
Cat. No. (Type) | Price
--- | ---
EN4 (R65) — Aerial Coil | 6/-
EN5 (R85) — Band Pass Coll (capacity coupled) | 6/-
EN10 (R54) — Oscillator Coll | 6/-
EN11 (R55) — Coll Kit, as above, with matched condenser | 35/-

For 5-valve Broadcast, using 2-gang Condenser, Coils for mounting underneath the chassis.
Cat. No. (Type) | Price
--- | ---
EN12 (F100) — Aerial Coll | 8/-
EN13 (R101) — Oscillator Coll | 8/-
EN14 (SB2) — Coll Kit, as above, with matched condenser | 23/6

For 5-valve Dual-wave, using 3-gang Condenser, Band Pass Input.
Cat. No. (Type) | Price
--- | ---
EN15 (R67) — Aerial Coll | 9/-
EN9 (R96) — Band Pass (capacity coupled) | 6/-
EN17 (R101) — Oscillator Coll | 9/-
EN18 (SD3) — Coll Kit, as above, with matched Condenser | 41/-

For 5-valve Dual-wave, using 2-gang Condenser.
Cat. No. (Type) | Price
--- | ---
EN12 (F100) — Aerial Broadcast Coll | 8/-
EN20 (R69) — Aerial Short-wave Coll | 9/-
EN21 (R101) — Broadcast Oscillator Coll | 5/-
EN22 (R65) — Short-wave Oscill Coll | 4/-
EN23 (R102) — Coll Kit, as above | 31/6

For 6-valve Broadcast with RF Stage, using 3-gang Condenser.
Cat. No. (Type) | Price
--- | ---
EN24 (R162) — Aerial Coll | 6/-
EN25 (R163) — RF Coll | 75/-
EN26 (R164) — Oscillator Coll | 6/-
EN27 (6B) — Coll Kit, as above, with matched condenser | 35/-

For 6-valve Dual-wave, with RF stage, using 3-gang Condenser.
Cat. No. (Type) | Price
--- | ---
EN28 (126) — Aerial Broadcast (560-1550 KC) and standard short-wave (6-16.5 MC) | 9/-
EN39 (127) — R.F. Coll Broadcast and Short-wave | 9/-
EN40 (190) — Oscillator Coll, broadcast and short-wave | 10/-
EN30 (6D) — Coll Kit, as above, with matched condenser | 45/-

For 6-valve All-wave, with RF stage, using 3-gang Condenser.
Cat. No. (Type) | Price
--- | ---
EN41 (R63) — Aerial Coll, Broadcast and standard short-wave (6-18 KC) | 9/-
EN42 (R81) — Aerial Coll, Medium short-wave (2-6 MC) | 6/-
EN43 (R108) — Broadband and standard short-wave | 8/-

EXCELRAD PRODUCTS.
Particulars of the 1938 range of Excelrad Transformers, Coils, etc., have just been released. Prices for some of the lines have not yet come to hand, but will be supplied on request. (Excelrad Type Numbers are in Brackets.)

EXCELRAD INTERMEDIATE FREQUENCY TRANSFORMERS.

Cat. No. (Type) | Price
--- | ---
EN55 (21A) — 455 kc Plate Grid | 14/-
EN53 (7B) — 456 KC Plate to Grid | 14/6
EN56 (29A) — 456 kc similar to 7A, but lower gain | 9/-
EN57 (29B) — 456 kc similar to 7B, but lower gain | 9/-
EN58 (25A) — 456 kc similar to 29A, but lower gain. Air core | 10/-
EN59 (25B) — 456 kc similar to 29B, but lower gain. Air core | 10/-

MISCELLANEOUS COILS.

Cat. No. (Type) | Price
--- | ---
EN10 (111) — Aerial Coll. Low Impedance | 6/-
EN68 (111A) — R.F. Coll. Low Impedance | 6/-
EN70 (139) — Oscillator Coll. Broadcast | 15/-
EN71 (116) — S.W. Converter Coll | 15/6

EXCELRAD POWER TRANSFORMERS.

Cat. No. (Type) | Price
--- | ---
EN72 (240) — Vertical type for four or five valve with single 42 output H.T. 350 v. 50 m.a. Fil. 5 v. 2 a. | 27/6
EN73 (375) — Vertical type for 5 or 6 valve with single 42 output H.T. 350 v. 70 m.a. Fil. 5 v. 2 a. | 32/6
EN74 (T57) — Same as above, but for horizontal mounting | 27/6
EN75 (T138) — Same as T76, but with 240 v. H.T. | 27/6
EN76 (T56) — Vertical type for 7 or 8 valve sets, 1800 watts output H.T. 350 v. 120 m.a. Fil. 5 v. 2 a. | 36/6
EN77 (423) — Vertical type for push-pull output H.T. 350 v. 120 m.a. Fil. 5 v. 2 a. | 36/6
EN78 (225) — 2.5 v. 3 amps. Filament Transformer | 15/-
EN79 (240) — 4 v. 2 amp. Filament Transformer | 15/-
EN80 (260) — 6 v. 2 amp. Filament Transformer | 15/-

SPECIAL TRANSFORMERS.
Prices on request.
Cat. No. (Type) | Price
--- | ---
EN94 (110) — 60-watt stopdown Transformer for 230 v. 110 v. | 4/-
EN95 (T47) — Power Transformer for 16-watt Amplifier. H.T. 230 v. 180 m.a. Filaments 5 v. 3 a. | 3/-
EN96 (T46) — High-tension Transformer for 30-watt Amplifier. H.T. only. 500 v. 100 m.a. | 376 v. 4 a.
EN97 (TL53) — Filaments only, 2 x 5 v. 3 a. | 375 v. 4 a.
EN98 (F27) — For Speaker field supply. 40 watts. 200 v. 200 m.a. Fil. 5 v. 3 a. | 375 v. 4 a.

AUDIO TRANSFORMERS.
Cat. No. (Type) | Price
--- | ---
EN99 (61) — General purpose ratio 1:3 12/-
EN100 (62) — Push-pull input ratio 1:15/6
EN101 (63) — Push-pull input for 19 valve class B | 15/-
EN102 (64) — Couple between 56 valve and push-pull 45's. Class A.B. | 19/6
EN103 (69) — Output Transformer from single output pentode to average speaker of 4 ohms coil impedance | 12/-
EN104 (92) — Push-pull from output pentodes to average speaker of 4 ohms coil impedance | 15/-
EN105 (93) — Output from single 45 to 4 or 6 tubes speaker | 12/-
EN106 (98) — Universal output transformer from any modern output stage, single or push-pull pentodes or triodes into speakers from 1-10 ohms voice-coil impedance | 18/-
EN107 (TL49) — Output Transformer for 2 x 6L6 in class A. Secondaries tapped at 500, 200, 80, 25, 15, 8, 5, and 25 ohms. Price on request
EN108 (TL39) — Output Transformer for 2 x 6L6 in Class A.B. Secondaries tapped at 200, 100, 50, 25, 16, 8, 5, and 2.5 ohms. Price on request

CHOKES.

Cat. No. (Type) | Price
--- | ---
Each EN109 (C350) — R.F. Choke Broadcast 1/8 | 9
EN110 (C305) — R.F. Choke Broadcast 2/6
EN111 (C305) — R.F. Choke Short-wave 2/6
EN112 (C305) — Voltage Transformer for general use. D.C. resistance 3000 ohms | 18/-
EN113 (61) — 20 Henrys 50 m.a. Choke for general use. D.C. resistance 420 ohms | 12/-
EN114 (71) — 30 Henrys 100 m.a. Filter Choke for coupling purposes. D.C. resistance 150 ohms | 24/6
EN115 (72) — 4 Henrys 150 m.a. Filter Choke for general use. D.C. resistance 150 ohms | 24/-
EN123 (TL30) — Filter Choke, 8 Henrys 200 m.a. D.C. resistance 75 ohms | 30/-

TRANSFORMERS AND CHOKES FOR VIBRATION POWER SUPPLY.
Prices on request.
Cat. No. (Type) | Price
--- | ---
EN125 (76) — Same as above, but delivers 150 v. at 25 m.a.
EN126 (213) — Filament Filter Choke. D.C. at 50 m.a.
EN127 (211) — High-tension Filter Choke
EN128 (RC2) — R.F. Filter Unit for Vibrator Transformers low voltage supply
EN129 (RC1) — R.F. Filter Choke for high tension.
# T.C.C. Condensers

## T.C.C. Electrolytic Condensers
(Wet Type—Aluminium Cased)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC550-4 MFD</td>
<td>4/-</td>
</tr>
<tr>
<td>EC551-8 MFD</td>
<td>4/-</td>
</tr>
<tr>
<td>EC552-16 MFD</td>
<td>7/8</td>
</tr>
</tbody>
</table>

(Dry Type in Cardboard Containers)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC560-4 MFD</td>
<td>4/-</td>
</tr>
<tr>
<td>EC561-4X4 MFD</td>
<td>6/6</td>
</tr>
<tr>
<td>EC562-8 MFD</td>
<td>4/-</td>
</tr>
<tr>
<td>EC563-8X8 MFD</td>
<td>10/-</td>
</tr>
</tbody>
</table>

(Tubular Type—Dry)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC570-12 volt 50 MFD</td>
<td>3/-</td>
</tr>
<tr>
<td>EC571-25 volt 25 MFD</td>
<td>3/-</td>
</tr>
<tr>
<td>EC572-50 volt 10 MFD</td>
<td>3/-</td>
</tr>
</tbody>
</table>

## T.C.C. Tubular Condensers
(Non-Inductive Condensers with wire ends, 350 volts. (Working))

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC659-0.0001 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC660-0.0002 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC661-0.0025 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC662-0.003 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC663-0.005 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC664-0.01 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC665-0.02 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC666-0.03 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC667-0.04 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC668-0.05 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC669-0.06 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC670-0.01 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC671-0.02 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC672-0.03 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC673-0.05 MFD</td>
<td>10d.</td>
</tr>
<tr>
<td>EC674-0.1 MFD</td>
<td>1/-</td>
</tr>
<tr>
<td>EC675-0.25 MFD</td>
<td>1/3</td>
</tr>
<tr>
<td>EC677-0.5 MFD</td>
<td>1/8</td>
</tr>
<tr>
<td>EC678-1 MFD</td>
<td>2/6</td>
</tr>
</tbody>
</table>

## T.C.C. Mica Condensers
(TCC Type M Mica Fixed Condensers)

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC692-0.00005</td>
<td>10d.</td>
</tr>
<tr>
<td>EC693-0.001</td>
<td>10d.</td>
</tr>
<tr>
<td>EC694-0.002</td>
<td>10d.</td>
</tr>
<tr>
<td>EC695-0.003</td>
<td>10d.</td>
</tr>
<tr>
<td>EC696-0.005</td>
<td>1/2</td>
</tr>
<tr>
<td>EC697-0.01</td>
<td>1/3</td>
</tr>
<tr>
<td>EC698-0.02</td>
<td>1/6</td>
</tr>
<tr>
<td>EC699-0.03</td>
<td>1/6</td>
</tr>
<tr>
<td>EC700-0.05</td>
<td>2/6.</td>
</tr>
<tr>
<td>EC701-0.06</td>
<td>2/3</td>
</tr>
<tr>
<td>EC702-0.01</td>
<td>2/6</td>
</tr>
</tbody>
</table>

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*Images and diagrams of the T.C.C. Condensers are included in the document.*
**COIL OR GANG TRIMMERS. (K)**

R.C.S. Coll or Gang Trimmers are fitted on top of the gang or across a coil, and measure 2 in. x 3 in. wide, and consist of two German silver plates mounted on a porcelain base, with a minimum capacity of about 10 mfd and a maximum of about 100 mfd.

<table>
<thead>
<tr>
<th>Cat. No. EC890</th>
<th>10D.</th>
</tr>
</thead>
</table>

**R.C.S. ISOLANTITE PADDERS. (K)**

These Padders are of a special high grade type, and are made in various capacities, varying from 4 mfd. to 2000 mfd, and are ideal for trimmers on short-wave coils. The moving plate is made of heavy gauge spring German silver, and the capacity will not vary with temperature or humidity.

<table>
<thead>
<tr>
<th>Cat. No. EC850—400 K.C.</th>
<th>1/6 each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EC851—175 K.C.</td>
<td>2/6 each</td>
</tr>
</tbody>
</table>

**LISSEN MINIATURE PRECISION VARIABLE CONDENSER. (K)**

Suitable for both tuning and reaction circuits, these Lisseen Variable Condensers are designed particularly for home constructed receivers, and where space is a major consideration, the condenser projecting only 2 in. behind the panel.

EC378 supplied complete with graduated bakelite tuning knob; others with suitable knob. The 1 in. spindle will fit any standard dial or drum control.

<table>
<thead>
<tr>
<th>Cat. No. EC376—.0065</th>
<th>3/6 each</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EC379—.008</td>
<td>3/6 each</td>
</tr>
<tr>
<td>Cat. No. EC377—.001</td>
<td>3/6 each</td>
</tr>
</tbody>
</table>

**NEW TYPE OF SOLID DIELECTRIC CONDENSERS. (K)**

With black highly polished Terilnax outside plates. Central fixing. Small initial capacity. Smooth working rotor. Useful for all types of reaction and tuning condensers.

<table>
<thead>
<tr>
<th>Cat. No. EC801—.0085</th>
<th>2/6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EC802—.008</td>
<td>2/6</td>
</tr>
<tr>
<td>Cat. No. EC803—.001</td>
<td>2/6</td>
</tr>
<tr>
<td>Cat. No. EC800—.0025 (Differential)</td>
<td>3/6</td>
</tr>
</tbody>
</table>

**COIL TRIMMER CONDENSER. (K)**

This R.C.S. Coil Trimmer is ideal for fitting on the top of the coils, and measures approx. 8 in. x 8 in. x 4 in. Moving plates made of German silver, Cat. No. EC891

| Each | 1/4 |

---

**M.C. MIDGET CONDENSERS.**

Ceramic insulation reduces dielectric losses to a minimum, and assures maximum and uniform efficiency under all conditions of temperature and humidity. Non-corrosive soldered brass plates eliminate vibration and ensure high resistance. Provision is made for both single hole panel mounting and base mounting. Used for ultra short-wave and short-wave tuning, broadcast tuning.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Max.</th>
<th>Min.</th>
<th>List</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC320...</td>
<td>10</td>
<td>3</td>
<td>2/6</td>
</tr>
<tr>
<td>EC321...</td>
<td>15</td>
<td>3</td>
<td>2/3</td>
</tr>
<tr>
<td>EC322...</td>
<td>25</td>
<td>3.5</td>
<td>2/6</td>
</tr>
<tr>
<td>EC323...</td>
<td>35</td>
<td>4</td>
<td>2/6</td>
</tr>
<tr>
<td>EC324...</td>
<td>50</td>
<td>4</td>
<td>3/3</td>
</tr>
<tr>
<td>EC325...</td>
<td>70</td>
<td>5</td>
<td>4/6</td>
</tr>
<tr>
<td>EC326...</td>
<td>100</td>
<td>6</td>
<td>14/6</td>
</tr>
</tbody>
</table>

**DOUBLE SPACED M.C. CONDENSERS.**

The double spaced condensers have the same characteristics and the same constructional features as the standard M.C. Ideal for use in transmitters. Provide the same operating advantages outlined in description of M.C. condensers.

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Plates</th>
<th>Max.</th>
<th>Min.</th>
<th>List</th>
</tr>
</thead>
<tbody>
<tr>
<td>EC27...</td>
<td>3</td>
<td>3</td>
<td>20</td>
<td>7/-</td>
</tr>
<tr>
<td>EC28...</td>
<td>5</td>
<td>4</td>
<td>35</td>
<td>7/6</td>
</tr>
<tr>
<td>EC29...</td>
<td>7</td>
<td>5</td>
<td>50</td>
<td>8/6</td>
</tr>
<tr>
<td>EC30...</td>
<td>11</td>
<td>6</td>
<td>80</td>
<td>8/6</td>
</tr>
<tr>
<td>EC31...</td>
<td>14</td>
<td>6</td>
<td>100</td>
<td>9/-</td>
</tr>
</tbody>
</table>

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**CONDIENSORS, MIDGET. (K)**

**CONDOUPLING. (K)**

**CONCOURSE TUBULAR CONDENSERS. (N)**

Concours Tubular Condensers can be used in all circuits requiring a high voltage non-inductive Condenser.

**TELSER AERIAL SERIES CONDENSERS. (K)**

**CLEARING LINES.**

**STANDARD TELEPHONES BLOCK TYPE CONDENSERS. (K)**

**FIXED CONDENSERS. (K)**

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**CONDOUPLING. (K)**

**COUPLING. (K)**

**CONCOURSE TUBULAR CONDENSERS. (N)**

**CLEARING LINES.**

**STANDARD TELEPHONES BLOCK TYPE CONDENSERS. (K)**

**FIXED CONDENSERS. (K)**

---

**COIL TRIMMER CONDENSER. (K)**

This R.C.S. Coil Trimmer is ideal for fitting on the top of the coil, and measures approx. 8 in. x 8 in. x 4 in. Moving plates made of German silver, Cat. No. EC891

| Each | 1/4 |

---

**TELSER AERIAL SERIES CONDENSERS. (K)**

This Condenser provides an ideal selectivity and volume control. The maximum capacity is .0003 mfd, and has an extremely low minimum capacity. The switch arm is attached to the spindle, whereby the Condenser is short-circuited at its maximum position, giving a straight through aerial connection when desired. This results in a wide range of control. Supplied complete with knob.

| Cat. No. EC863 | 3/6 each |

---

**CONDOUPLING. (K)**

Extending pieces for ganging Condensers, with 1 in. shaft.

| Cat. No. EC668 | 6/6 each |

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**COUPLING. (K)**

**COUPLING. (K)**

**COUPLING. (K)**

**COUPLING. (K)**

---

**CONDIENSORS, MIDGET. (K)**

**CONDOUPLING. (K)**

**CONCOURSE TUBULAR CONDENSERS. (N)**

**CLEARING LINES.**

**STANDARD TELEPHONES BLOCK TYPE CONDENSERS. (K)**

**FIXED CONDENSERS. (K)**

---

**CONDIENSORS, MIDGET. (K)**

**CONDOUPLING. (K)**

**CONCOURSE TUBULAR CONDENSERS. (N)**

**CLEARING LINES.**

**STANDARD TELEPHONES BLOCK TYPE CONDENSERS. (K)**

**FIXED CONDENSERS. (K)**

---

**CONDIENSORS, MIDGET. (K)**

**CONDOUPLING. (K)**

**CONCOURSE TUBULAR CONDENSERS. (N)**

**CLEARING LINES.**

**STANDARD TELEPHONES BLOCK TYPE CONDENSERS. (K)**

**FIXED CONDENSERS. (K)**

---

**CONDIENSORS, MIDGET. (K)**

**CONDOUPLING. (K)**

**CONCOURSE TUBULAR CONDENSERS. (N)**

**CLEARING LINES.**

**STANDARD TELEPHONES BLOCK TYPE CONDENSERS. (K)**

**FIXED CONDENSERS. (K)**
An excellent Condenser for plate circuits of high-power amplifiers, being of very sturdy construction, and having high insulation properties. Vanes are of pressed aluminium, and are double spaced. End plates manufactured from first grade ceramic material, has removable insulated shaft, the length of which can be adjusted to suit individual requirements. Fitted with brackets for chassis mounting. Positive contact to moving vanes by means of twin spring wiper contacts. Dimensions (overall): 9in. long, 3in. high (vanes open), 53in. wide, 43 plates. Weight: 3½ lb. Shift diameter, 3in.
Cat. No. EC898 50/-

A high efficiency ceramic insulated, double spaced Condenser, being both small in physical size and robust in construction. Ideal for grid circuits of high power stages, coupling Condensers, plate Condensers in low-power transmitters, etc. Panel mounting. Dimensions (overall): 3½in. long, 2½in. square, 3½in. shaft. Weight, 10 ozs.
Cat. No. EC807 9/6

A neat Variable Condenser of modern design. Air spaced. Capacity .0025
Cat. No. EC919 5/6 each

A 17-plate single-spaced Condenser, mounted on isolantite panel. Useful for short-wave receivers, crystal and self-controlled oscillators, etc. Plates are made of brass. Panel mounting. Shaft, 3½in. Dimension: Height 2½in. (plates open), width 2½in., length 1½in. Weight, 4ozs.
Cat. No. EC898 5/-

1938 RADIO GUIDE. (B)
A very popular Radio Annual containing descriptions of over twenty complete Sets of all types, as well as much other useful and interesting Radio Information. Tables, etc.
Cat. No. EB704 Each 2/6

LISSEN HI Q LOW-LOSS CONDENSERS. (K)

Cat. No. EC907 12/6

CONDENSERS, SHORT-WAVE. (K)

This model is specially designed in every detail for short-wave work. No current is carried by the bearings, and a special screened pig-tail connection to rotor is used. The minimum capacity is very small and the maximum is true to rating. Such insulating material as is used is carefully placed and proportioned so as to reduce H.F. losses. The frame has been designed to avoid as far as possible closed loop effects. British.
Cat. No. EC895—.0001 8/6 each
Cat. No. EC806—.00015 8/6 each

SINGLE GANG CONDENSERS. (K)

Capacity .0005. An ideal job for all types of circuits. Crystal sets and wave-traps where it is desired to make a first-class job. Of rugged construction. 5½in. shaft.
Cat. No. EC918 Each 5/11

J.B. TWIN GANG CONDENSERS. (K)

Specially produced for ultra short-wave work. Have a very low minimum capacity. Low losses and non-microphonic. May be employed for tuning or band spreading two tuned circuits or for trimming the pre-selectors of superhet receivers.
Cat. No. EC824—Capacity 45 MFD. Each 8/6

GANGED CONDENSERS. (K)

RCC Precision Tuning Condensers are actually precision built, rugged and compact. Because of the mechanical construction, the electrical characteristics are constant and do not vary. Constancy of electrical value is attained through the carefully designed one-piece frame and the use of a special brass shaft housed in a ball-bearing race.
Cat. No. EC920—2-gang .00035 10/6
Cat. No. EC921—3-gang .00035 15/6
Cat. No. EC922—4-gang .00035 18/6
Cat. No. EC923—2-gang .00015 Special Short-wave type. 12/6

SMALL SIZE TWO-GANG TUNING CONDENSER. (K)

Capacitance .00035. Overall dimensions 2½ x 1½ x 2½. 3½in. shaft. Ball bearing mounting.
Cat. No. EC925 10/6

STROMBERG CARLSON GANGED CONDENSERS. (K)

These Condensers are of Australian manufacture, ruggedly constructed. Most Australian Coil Kits are designed to work with 5G, "G" Condensers. Capacity .00035
Cat. No. EC926—2-gang . Price 10/6
Cat. No. EC927—3-gang . Price 15/6

PRE-SET CONDENSERS. (K)

The very low minimum capacity of these Pre-set Condensers gives a wide range of selectivity adjustment when used in the aerial circuit. They are substantially made, easily adjusted and provided with a locking ring. High insulation and low loss.
Cat. No. EC650—.002 mfd to .00025 mfd.
Cat. No. EC651—.001 mfd to .0002 mfd.
Cat. No. EC825—.0003 mfd to .00025 mfd.
Cat. No. EC653—.0001 mfd to .000025 mfd.
All 2½ each

EXTENSION SHAFTS FOR CONDENSERS. (K)

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 3½in. dia. shafts. Fitted with 3½in. shaft for knob or dial, and complete with panel bush. Nickel-plated finish. 3½in. long.
Cat. No. EC689 Each 2/—
SIRIS FIXED DETECTORS. (K)
This Detector requires no attention after being placed in the crystal set. Very sensitive and will remain active for a long period. The crystal has been set and tested at the factory.
Cat. No. EC252 2/6 each

3"INEL DORMEI DETECTORS. (K)
This Detector has a perikon combination and gives excellent results. The crystal can be adjusted by withdrawing the knob, turning to the right and gently letting it go back on the crystal. Never try to adjust the crystal without first pulling out the knob.
Cat. No. EC253 2/6 each

PLUG-IN DETECTORS. (K)
Sensitive Plug-in Type Detectors, with Banana Type Pins.
Cat. No. EC261 2/6 each

CRYSTALS, HERTZITE. (K)
Hertzite Crystals, packed in boxes, complete with tweezers and catswhiskers. British.
Cat. No. EC258 9D. each

CRYSTALS, UNITED. (K)
Packed in tin boxes and complete with catswhisker. Very sensitive. British made.
Cat. No. EC270 1/3

NEUTRON CRYSTALS. (K)
Packed in tin boxes
Cat. No. EC271 1/

SYLIVEREX CRYSTALS. (K)
United Crystals are packed in glass tubes.
Cat. No. EC269 3D. each

DETECTORS—ORMOND GLASS-ENCLOSED. (K)
Cat. No. EC256 2/6 each
Cat. No. EC257—Spare Glasses 9D. each

DETECTORS—RED DIAMOND. (K)
Red Diamond Detectors are the semi-permanent type. Can be adjusted by moving the plunger. Sensitive, and give good results.
Cat. No. EC254 3/6 each
Cat. No. EC256—Spare Crystals 1/6 each

DETECTORS. (K)
Set of Nickel-plated Detector Parts, including Arm, Crystal Cup and Cats-whisker
Cat. No. EC250: 1/6 each

CRYSTAL CUPS. (K)
Spare Crystal Cups for above. 9D. each
Cat. No. EC269

1½ CRYSTAL DETECTORS. (K)
Sensitive Fixed Crystal, complete with mounting clips. (Foreign.)
Cat. No. EC262 Only 1/6 each

CRYSTAL SET.
Moulded in bakelite case and supplied complete with plug-in coil and sensitive plug-in detector.
Cat. No. EC250 8/6 each
Cat. No. EC251—Spare Coils complete with banana plug type pins 1/9 each
Cat. No. EC291—Spare Plug-in Detectors with banana plug type pins 2/6 each

A DANDY CRYSTAL SET. (K)
A new type of Low-Loss inexpensive Crystal Set for sensitive reception. Has a specially developed adjustable crystal and an adjustable slider-tilting coil. All that is necessary to operate the Crystal Set is to connect up the aerial and ground and attach the headphones and it is ready to function. Complete with crystal and cat’s whisker.
Cat. No. EC292 6/11

BRANDES MATCHED HEADPHONES. (K)
A scientifically made set of headphones designed for those demanding a superior article.
They are full size, yet are unusually comfortable to wear. Shells are of polished aluminium. Adjustable. Web-covered flexible steel head band. Complete with cord.
Cat. No. EC283 17/6 pair

LIGHT WEIGHT HEADPHONES. (K)
These ‘phones are extremely light. They are of German manufacture, with bakelite Ear Pieces that fit comfortably. Although low in price, and of light construction, they are very sensitive and give excellent results, 4,000 ohms.
Cat. No. EC280 7/6 pair

FROST PHONES. (K)
LOGGING D. X.
Frost ‘Phones satisfy the exacting demands of those wishing to obtain extremely sensitive Instruments. Light in weight, comfortable to wear and easily adjustable.
All materials used are of the very highest quality, and these ‘phones are made in a plant which for over thirty-five years has manufactured high-grade telephone equipment. These ‘phones may be depended upon to give perfect satisfaction. Shells are of polished aluminium with black composition caps.
Cat. No. EC281 15/
E A R  P A D S .  ( K )
Crape Rubber Ear Pads for putting over the ear caps of headphones. Makes a wonderful difference to your ears.
Cat. No. EC282—
1/6 pair

C O R D S ,  H E A D P H O N E . ( K )
Cat. No. EC202—Headphone Cords, 4 lugs one end, 2 tips two other, 8ft. 1/6
Cat. No. EC203—Headphone Cords, with tips both ends. 31/2. Each 1/9

C O I L S — C R Y S T A L  S E T . ( K )
Coils for Crystal Sets. Consist of 70 turns, 4-voltage D.C.C. Wire on 3in. diam. bakelite former. Tapped every tenth turn.
Cat. No. EC266—Each 3/—

S P A R E  P A D S  f o r  p u t t i n g
C a t .  N o .  E C 2 0 3 — H e a d p h o n e  C o r d s
C a t .  N o .  E C 2 6 6
b a k e l i t e  f o r m e r .  T a p p e d  e v e r y  t e n t h  t u r n .

S p a r e  D i a p h r a g m f o r  F r o s t  P h o n e s  1
C a t .  N o .  E C 2 8 6    E a c h
S p a r e  C a p s  f o r
C a t .  N o .
T h r e e  s i z e s  a v a i l a b l e .
s t r o n g  s p r i n g s  t h a t  m a k e  a  s u r e  c o n t a c t .
E C 2 0 -- 5 / 1 0  a m p .

i n g  w i t h  h i g h  v o l t a g e s .  W i r e
U N I V E R S A L  C O I L S .  ( K )
C o i l s  w i t h  t i p s  b o t h  e n d s .  5 t t .  E a c h

3 / 6

B R I T I S H  m a d e ,  t h e s e  C l i p s  h a v e  g o o d
I N S I N U T E D  C R Y S T A L  S E T .  ( K )

I N S T R U M E N T  K N O B  S .  ( K )
S p e c i a l  v a l u e  B a r  K n o b  f o r  j i n .  s h a f t s .
Cat. No. ED23—
8D. each

M E T A L  M A G I C  E Y E  E S C U T -
C H E E S . ( K )
T o t a l  d i a m e t e r  2 1 x 1 2 .  F i n i s h e d  F l o r e n t i n e  b r o n z e ,
Cat. No. ES26. 1/6

P O I N T E R ,  K N O B  A N D  D I A L . ( K )
A d i r e c t  c o n t r o l  c o m -
p r i n g  s a t i n  f i n i s h -
ed  a l u m i n i u m  d i a l  e n -
g r a v e d  0 - 1 0  d e g r e e s ,
F r i c t i o n a l  d r i v e  g u a r a n t e e d  f r e e
s h a f t ,
R a t i o  1 0 0  t o  1 .
F r o n t  o f  p a n -
E M E R G E N C Y  B L A C K  B R A C K E T F I T T I N G . ( K )
C o n s i s t s  o f  a l u m i n i u m  s a t i n  f i n i s h e d ,  b a c k
D i a m e t e r  o v e r a l l
D i a m e t e r  o f
ty p e  e s c u t c h e o n
C a t .  N o .  E D 6 5 —

3 / 6

P O I N T E R ,  K N O B  A N D  D I A L . ( K )
D i a m e t e r  o f  s c a l e  3 i n .  C a l i -
B a r k n o b  g i v e s  a  d i r e c t  c o n t r o l  a n d  i s 2 1 i n . l o n g ,
3 i n .  d i a m e t e r ,  s a t i n  f i n i s h e d ,  b a c k
H e i g h t  o v e r a l l
c y c l e s  t o  s u i t
E M E R G E N C Y  B L A C K  B R A C K E T F I T T I N G . ( K )
C o n s i s t s  o f  a l u m i n i u m  s a t i n  f i n i s h e d ,  b a c k
D i a m e t e r  o v e r a l l
D i a m e t e r  o f
ty p e  e s c u t c h e o n
C a t .  N o .  E D 6 5 —

3 / 6

P O I N T E R ,  K N O B  A N D  D I A L . ( K )
D i a m e t e r  o f  s c a l e  3 i n .  C a l i -
B a r k n o b  g i v e s  a  d i r e c t  c o n t r o l  a n d  i s 2 1 i n . l o n g ,
3 i n .  d i a m e t e r ,  s a t i n  f i n i s h e d ,  b a c k
H e i g h t  o v e r a l l
c y c l e s  t o  s u i t
E M E R G E N C Y  B L A C K  B R A C K E T F I T T I N G . ( K )
C o n s i s t s  o f  a l u m i n i u m  s a t i n  f i n i s h e d ,  b a c k
D i a m e t e r  o v e r a l l
D i a m e t e r  o f
ty p e  e s c u t c h e o n
C a t .  N o .  E D 6 5 —
Dual-wave Band Spread Tuning Unit. This is a modern dial supplied with three glasses and giving a three-colour effect. Colour changes are operated on Short-wave Switch. Size approximately 6in. diameter. Main ratio 16 to 1, second-hand ratio 8 to 1. These new Edgell Dials enhance the appearance of the cabinet, and are up to date in every respect.

Cat. No. ED89 Each

Special Slow Motion Model for Short Wave work. Two ratios, 8 to 1, and about 120 to 1. Finely engraved scale in 200 divisions. Width 4in., height 8in., 1/4in. depth in blind panel.

Cat. No. ED86

$32/6$

THE "MODERNE" DIAL (K)

This Dial employs a full octagon design escutcheon and octagonal scale design. Ratio 8 to 1.

Cat. No. ED121

$15/9$ each

THE LAMPHOUSE ANNUAL—1938 61

LAMP HOLDERS FOR DIALS. (K)

A skeleton type Lamp Holder which fits the standard type torch bulb. Used for illuminating dials.

Cat. No. ED502

D, ea.

$5/3 each$

Ditto with clip style bracket, made to clip over condenser, etc.

Cat. No. ED504

$6/6$

$5/3 dozen$

THE "WORLD" DIAL. (K)

Very popular design. A dial that will set off any cabinet. Exceedingly smooth and travelling through 180 degrees. Scales divided into two sections for broad cast and short wave.

Cat. No. ED120

$16/3$ each

NEW RADIOTELEGRAPH DIALS. (K)

This Dial is extremely attractive, featuring three colour lighting in red, green, and orange, and should prove immensely popular. It can be supplied in three different types: — Dual wave, Broadcast, or Tri-wave. It is of oval shape and supplied complete with attractive escutcheon.

Cat. No. Each

ED91—Broadcast Dial $27/6$

ED92—Dual wave Ditto $28/6$

ED93—Tri-wave Dial $30/6$

PILOT LIGHT BRACKET. (K)

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

Cat. No. ED500

$1/9$ each

NEW DIAL—LISSEN HI-Q DECIMAL DIAL AND SLOW-MOTION DRIVE. (K)

A slow-motion drive for ultra short and short-wave work with an entirely new type of dial divided into 1,000 divisions. The dial is divided into 10 divisions for approximate tuning by the small pointer, and each division is subdivided by the large pointer into a further 100 divisions, so that accurate calibration is possible by decimal reading. The reduction of the drive is about 25 to 1, while special spring gears eliminate all trace of backlash. Complete with condenser-fixing bracket.

Cat. No. ED61

$19/6$
BAKELITE POINTER KNOBS. (K)

Ideal Knobs, for analyser, test equipment, 5 metre for all types of transmitters, and electrical and radio test equipment. Holes for lin. diam. shafts. Black finish with engraved white line through centre of pointer.

Cat. No. ED340—2 1/2 in. ........ 10/6 each
Cat. No. ED341—1 in. ........... 1/3 each

LEVER KNOBS. (K)

Moulded brown bakelite Lever Knobs. Over-all length, 2 in.

Cat. No. ED28—........... 6/6 each

DIALS, PLAIN. (K)

Cat. No. ED16—2 in. dial . .......... 10/6 each
Cat. No. ED19—3 in. dial. Each ........ 1/6
Cat. No. ED20—4 in. dial. Each .... 1/6

“MAGIC EYE” ESCUTCHEONS. (K)

Moulded in beautifully finished bakelite, it will finish off any radio cabinet. Made for use with “Magic Eye” Tuning Indicator. Size overall 4 in. x 1 in.

Cat. No. ES225 ............... Each 1/3

DIALS, ORMOND. (K)

A very efficient type of slow motion dial, having a geared action. The frame is constructed of best quality bakelite of great strength, highly polished. Both fast and slow motion are provided. The former, by giving driving knob a cant towards central knob and throwing drive out of gear, enables central bush knob to manipulate the condenser spindle direct. Slow motion is obtained by pressing driving knob into original position and operating in the usual manner. The aluminium dial is in direct connection with the lock screw. Terminal is provided for separately earthing the dial. The latter may then be used as an anti-capacity earthing shield. Ratio approximately 10 to 1.

Cat. No. ED60 .......... 17/6 each

BAKELITE VERNIER DIAL. (K)


Cat. No. ED62—........... 3/6 each

REDUCERS FOR CONDEN. DIALS. (K)

Enables Condenser with 1 in. shaft to be used with dials that have 3 in. hole.

Cat. No. ES224 .......... 4/6 each
FORMER. (K)

This Former Tube for coil winding has very high insulating properties, the surface being made of pure bakelite. Made in England by Liston Ltd.

Cat. No. EF79—2 in. diam. 6 in. lengths Each Cat. No. EF80—1 in. diam. 6 in. lengths Each Cat. No. EF81—11 in. diam. 6 in. lengths Each Cat. No. EF82—11 in. diam. 4 in. lengths (valve base size) Each Cat. No. EF83—11 in. diam. 6 in. lengths (valve base size) Each Cat. No. EF84—1 in. diam. 12 in. lengths Each Cat. No. EF85—11 in. diam. 6 in. lengths Each Cat. No. EF86—2 in. diam. 6 in. lengths Each Cat. No. EF87—23 in. diam. 6 in. lengths Each Cat. No. EF88—3 in. diam. 5 in. lengths Each

FORMERS—MARQUIS, TRIPOD. (K)

Standard sizes permit the adoption of uniform size shielded. Available in 1 in. and 11 in. diameters with provision for 2 in. winding space. Cat. No. EF32—1 in. diameter 11 D. each Cat. No. EF33—11 in. diameter 1 / 1 each

PEERLESS COIL FORMERS. (K)

Eight-ribbed Bakelite Former. Plug-in type: Ideal for short-wave sets. The handle shown makes for easy insertion and withdrawal of the coil. The top (handle) screws off, facilitating winding. Supplied in Red, Green or Black.

Cat. No. EF33—4 pin each 1 / 6 Cat. No. EF34—5 pin each 1 / 6 Cat. No. EF35—6 pin each 1 / 6

DALTON COIL FORMER. (K)

An advance in coil formers. Dalton Formers are fixed by means of a ring. All you do is to drill a hole in the chassis, plug in the former, screw up the ring, and the coil is fixed in place. No screws or brackets are necessary. Diameter 11 in.

Cat. No. EF52— 9 D. each Cat. No. ES906—Shields for Dalton Formers 1 / 3 ea.

HIGH FREQUENCY FORMER. (K)

CALIT Super High Frequency, for winding special high frequency coils where it is absolutely essential there are no losses. Formers are already grooved and provided with holes to take the wire. Winding diameter 1 1/16 in. length over all 15 in. Over all diameter 11 in. 8 lbs.

Cat. No. EF60 Smaller size ditto for choked, etc. Winding diameter 7 1/8 in. Over all diameter 3 in. Over all length 1 in. 4 lbs.

Cat. No. EF61

TWIN TIP JACK UNITS. (K)

A strong spring firmly makes contact to any tip inserted within its grip. Mounted on bakelite strip. Metal parts nickel-plated. Jacks fit any standard ‘phone tip.

Cat. No. EJ6 Each 2 / 3

Cat. No. EJ5 Each 3 / 4

Useful Insulated T i p J a c k .

Cat. No. EJ5— 3 / 4 each

M O R S E P R A C T I C E K E Y S .  ( K )

A good instrument with nickel-plated fittings and highly finished base.

Cat. No. EH102 Each 9 / 3

KEYS. (K)

Heavy brass arm, terminals and fittings. Heavy nickel-plated brass arm, terminals and fittings. Mounted on polished wood base. P.O. pattern.

Cat. No. EH101 Each 17 / 6

PRACTICE KEYS. (K)

Light type for practising the Morse Code.

Cat. No. EH105 Each 4 / 3
This feature adds considerably to the panel mounting. It is particularly suitable for bench and video means of the special back bracket mounting. This is accomplished by reducing parallax errors to a minimum. The convex face of the highly polished bakelite case is symmetrically curved. This feature adds considerably to the instrument's appearance and at the same time enables the movement to be raised high enough, with respect to the dial, for a straight through needle of minimum weight to be fitted.

The long, clearly marked scale, in conjunction with the knife-edge pointer, reduces parallax errors to a minimum. No flange screws are required for mounting. This is accomplished by means of the special back bracket provided.

Cat. No. EM423 £3/10/-

3 in. MODEL.

Diameter across flange, 3.5 in. Approximate scale length, 2.5 in.
Diameter across body, 2.75 in.
Angle of arc, 100 degrees.

Fitted with the standard PALEC movement, this instrument can be relied upon not only for a high degree of precision, but also for its ability to withstand severe overloads. It is housed in a polished bakelite case, and it fitted with knife-edge pointer and aluminium dial.

Cat. No. EM410 £2/12/6

PALEC METERS

ACCUACY WITHIN 1%

The solid Cobalt Steel Magnet is magnetised and artificially aged, and can be relied upon never to vary or drop, even over a period of years.

This is a very important point, which is often overlooked in several lower grade imported Meters.

The seamless aluminium former is machine layer wound, even on the ultra sensitive micrometers, which require to be wound with enamel copper as fine as 48 SWG.

MAGNETIC SHUNT.—A correcting magnetic shunt is fitted across the pole pieces. This enables a ready adjustment to any degree of full accuracy.

HUMIDITY EFFECTS.—The movement is treated to withstand humidity effects. All metal parts, such as pole pieces, core, and magnet, are cadmium-plated as a protection against rust.

TEMPERATURE COMPENSATION is an added feature in PALEC Meters.

VOLTMETERS D.C.

(200 Ohms per volt.)

<table>
<thead>
<tr>
<th>Model</th>
<th>0-2.5</th>
<th>2.5-5.0</th>
<th>5.0-10</th>
<th>10-20</th>
<th>20-50</th>
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Note the more popular sizes of the above.
Meters are available from stock. Any meter can be supplied within 10 days from receipt of order.

ACCURACY.—The high standard of accuracy guaranteed on PALEC Meters is as follows: On D.C. Voltmeters and Milliammeters, the LIMIT OF ERROR OVER THE EFFECTIVE RANGE (AT 20 DEGREES C.) is WITHIN ONE PER CENT. OF THE MAXIMUM SCALE VALUE. Other types, 2 per cent.
“PALEC” Engineer’s Multi-Purpose Meter (D) Model “CM”

The Model CM Multimeter is intended primarily for workshop or laboratory use. Numerous valuable ranges and tests are available to enable the Radio or Sound Engineer to cope with all problems connected with the servicing of Radio and Audio Apparatus.

**SPECIFICATIONS.**

**METER:** Is fitted with a large 5in. type Meter (1,000 ohms per volt) with prominent easily read scales.

**ACCURACY:** The accuracy of same is unusually high (see Meter Page.)

**DESIGN:** Embodies a selective circuit of foolproof operation.

**CONSTRUCTION:** Has external eye appeal and is an instrument job throughout.

**RANGES:** D.C. VOLTS—10-25-100-250-1,000. A.C. AND OUTPUT VOLTS (read on linear scale)—10-25-100-250-1,000.

**DECIBELS**—10-15 and 10 to 35 db. (Reference 6 mw. across 500 ohms.) D.C. MILLIAMPS—1-10-25-100-250.

**A.C. MEASUREMENTS:**—An advanced feature is the ability to read D.C. potentials up to 28 volts without drawing any current from the load resistor (the equivalent of infinite ohms per volt).

**OHMS**—0-2,000-20,000-200,000-1,000,000; battery operated.

**MEGOMHS**—0-10 megohms. **INSULATION TEST** at 250 volts D.C. **CAPACITY**—.001-10 m.f. **INDUCTANCE**—0-10,000 Henrys. **IMPEDANCE** (at 50 c.p.s.)—0-1,000,000 ohms. **ELECTROLYTIC CONDENSERS**—Applies a Good-Bad leakage test to all types of electrolytic condensers and also measures capacity of same.

**POWER SUPPLY:**—A built-in power pack operated from 200-250 volt A.C. line, supplies the necessary D.C. and A.C. voltages for a number of the above tests.

Model “CM” complete with leads and instructions in leatherette lidded case, size 8in. x 9in. x 7in.; weight, 12lbs. Cat. No. EM376 £16/17/6

Model “CMS” (as illustrated), complete as above, plus Analyser Selector and extra large tool compartment. Overall size, 15in. x 9in. x 7in.; weight, 17lbs. Cat. No. EM380 £20/12/6

PALEC Portable Valve Testers (D)

Model “PV”

A.C. PORTABLE VALVE TESTER

This instrument is supplied in a compact and portable leatherette lidded case, measuring 8in. x 9in. x 7in. Its range and operation is the same as the Counter Type MV.

Is fitted with the 3in. type Meter with “Replace”, “Good” scale.

Will test on the direct reading dial, Battery, Auto, and if necessary A.C. type valves. Will also check for shorts and leakages.

Two ranges of external volts, 0-7-70 volts, are provided for Battery checking; also range of external Ohms.

(illustrated above.)

Cat. No. EM407 £14/5/6

**MILLIAMPS SHUNTS (D)**

| Cat. No. EM417-0/10 Milliamps | Each £4 | EM420-0/50 Milliamps | Each £4 |
| Cat. No. EM418-0/20 Milliamps | Each £4 | EM421-0/100 Milliamps | Each £4 |
| Cat. No. EM419-0/30 Milliamps | Each £4 | EM422-0/200 Milliamps | Each £4 |

The PALEC COMBINED VALVE AND CIRCUIT TESTER

All Your Tests in One Case. See Next Page For Particulars.

(Continued on next page.)
PALEC
A. C. Valve Tester (D)
Model "MV" Counter Type

This fine looking instrument is intended for use as an aid to
test sales in stores and radio accessory shops. The circuit is of
modern design and applies a form of emission test which follows
does similar lines to that recommended by the R.M.A.

TESTS ALL VALVES — is designed for Australian conditions
and will test all types of standard radio valves.

HANDLING APPEARANCE — will attract attention and inspire
the confidence of the customer.

MICRO LEAK TEST — will instantly detect faulty element Valves
by means of a special Neon short test. NOTE: This test is made
on a heated Valve.

SERVICE — is designed and constructed to cope with future
requirements, and will give profitable service for many years to come.

NOTE: Calibration figures of new types are supplied from time to
time.

METER — incorporates our large 5in. type Meter with prominent
"Replace" — "Good" scale.

The Model "MV" is housed in a crystalline finished steel cabinet
with clamping front panel. The over-all measurements are 16in. x
11in. x 12in. It is operated from a 200-250 volt A.C. supply. The
procedure necessary to test a Valve for "merit" is simplicity itself,
requiring only five operations, viz.: (1) A check of the filament voltage
by pressing a button; (2) the selection of the filament voltage;
(3) and (4) the positioning of the selector and range controls from
the figures shown on the Chart; and (5) the pressing of a button
for the required reading on the Meter.

Cat. No. EM406

£17/10/-

DETECTO-LITE. (K)
Every experimenter and serviceman should have a "Detecto-lite."

1. Will test any current from 110
v. to 550 v. and will indicate
the voltage.
2. Will tell instantly whether A.C.
or D.C. current.
3. Will indicate the number of
cycles.
4. Will give a live and earth
signal.
5. Will give a temporary pilot
light on any electrical appar

Cat. No. EM252

11/6 each

TEST PRODS. (K)
Test Prods (Red and Black), complete
with flexible cable. Invaluable to service
men and experimenters.

Cat. No. EM254

3/— pair

BATTERY TESTER. (K)
Callipers with attached torch lampholder for test ing
batteries and bulbs.

Cat. No. EM251—Ex. 6D.

PALEC
Complete Valve & Circuit
Tester Model "VCT"

COMPLETE VALVE
AND CIRCUIT ANALYSIS
The insistence of
for a complete Valve and Circuit
Tester as one
Unit was responsi
ble for the design
and production of
the remarkably ad
vanced and compact
Model "VCT." This
instrument is crowd
ed with new and
useful features and
will enable the Rad
io Mechanic to check and
test every compo
ment in a radio
chassis—VALVES
included.

Specifications and Features—:

VALVE TESTING—Shows the condition of all types of Valves
on the Good-Bad Scale as well as applying a Neon test for element
leakage.

LOW OHMS—A range of low ohms, reading from a tenth of an
ohm (ten ohms half scale) is provided for cells, contact, and dry
joint checks. Three other ranges supply measurements up to 10
megohms.

ELECTROLYTIC CONDENSERS—All types of Electrolytic Con
densers can be tested and checked on a Good-Bad scale.

PAPER CONDENSERS—Paper and Mica Condensers tested for
open circuited connections and leakage by the Neon flash method.

MA's in four ranges to 250MA, D.C. VOLTS in four ranges to
1,000 volts, A.C. and Output VOLTS in four ranges to 1,000 volts.

Other points of interest are: Sin, type Meter with linear scale
for A.C. readings, and VALVE RECTIFICATION for A.C. and Out
put measurements.

The latter is a new development and enables the maximum of
unvarying accuracy plus freedom from the effects of accidental
overload. All of the above plus QUICK AND SIMPLE OPERATION,
an attractive appearance, sound construction, accuracy, and compact
size (11in. x 11in. x 6in.) makes this instrument unique.

Price, Model "VCT" (A.C. operated)
Cat. No. EM388

£19/10/-

PIFCO TESTING PRODS. (K)
PiFco Patent Spring-loaded Red and Black
Extraction Test Prods. The points are not
exposed until pressed. An easy method of
testing contacts in the most remote parts of
a receiver and a very useful addition to
any testing instrument. Length of each
prod 5in. Supplied complete with 18in. long
rubber-covered cables. British.
Cat. No. EM253

£5/9

LAMPHOUSE GUARANTEE.
"Any goods that are in any way unsuitable may be returned within seven
days (from receipt) and your money
will be refunded in full."
THE LAMPHouse ANNUAL—1938

PALEC OSCILLATOR

A FIner Oscillator—
AT A LOWER PRICE.
MODEL D.R.

A soundly designed and constructed Oscillator is the radio man's most valuable test instrument.

DIRECT READING DIAL
(Vernier Drive).—

CONSTANT IMPEDANCE ATTENUATION (Pad Type).

Each arm of the ten step network is individually shielded. The whole unit in turn is trip shielded, resulting in positive attenuation of the generated signal at all frequencies.

The above is a unique feature in a low-priced Oscillator and enables one to make many reliable tests.

Other features are variable modulation 0-100 per cent.; a separate audio output 0-2 volts at 400 c.p.s.; a pilot light to ensure long battery life; a tapped dummy antenna for Int. B.C. and S.W. bands. The instrument is of attractive appearance and is supplied complete with valves (2), batteries and full instructions detailing LINING UP PROCEDURE on all types of sets.

Cat. No. EM399—
D
£13/3/-

PALEC VOLT-OHM-MILLIAMMETER MODEl "M5"

"The Palec" Model M5 is a reliable and an accurate multirange instrument equipped with our large 5in. type meter.

RANGES:—D.C. Volts, 10-100-
500-1,000 (at 1,000 ohms per volt),
Ma's, 1-10-50-100, Ohms, 0-2,000-
20,000-200,000-2,000,000.

The latter range is obtained by connecting an external 45-volt battery to the terminals provided. The Instrument is supplied in a well fitted leatherette case complete with test prods. Cat. No. EM335 .
£7/10/-

ANALYSER SELECTOR.

A special Analyser Selector which is easily fitted into the removable lid of Model M5 (see Illustration) can be supplied. This Unit enables voltage and current readings to be readily taken at all points of American or Octal type Valves, without removing the chassis from the cabinet. M5 Multi-range Meter, with Analyser Unit. Cat. No. EM387
£10/15/-

PALEC UNIVERSAL METER. (D)

(illustrated on page 64.)

Here is something you have been waiting for. An accurate Moving Coil and D.C. Meter that will make practically all tests. Shunts and Resistors can be purchased separately.

The Palec Moving Coil d'Arsonval Type Panel Meters represent a distinct advance on the standard of instruments available at a moderate price.

Although only recently made available to the general trade, they have been supplied in quantity to State and Federal Government Departments.

The very sensitive and critical parts of this instrument, such as springs, jewels and pivots are imported direct from Switzerland, while a unique feature is the Cobalt steel magnet which is specially manufactured by a well-known German firm.

These Meters are both accurate and sturdy. We guarantee them to withstand a 5,000 per cent. overload test reported 100 times without upsetting the zero or accuracy. We further guarantee a full scale deflection inaccuracy of no more than plus or minus 1 per cent.

Palec Universal Meter.—Consisting of standard 0 to 1 milliamp with universal dial.

Cat. No. EM410—3in. .................. £2/12/6
EM423—Sin. .......................... £3/10/-

NOTE.—Resistors and Shunts for the above Instrument are extra. The Palec wire-wound bobbin type Resistors are inductively wound with D.S.C. Eureka Wire, and can be relied upon to be within 1 per cent. of its rated value.

EM411—10,000 ohm .................... 5/3
EM412—50,000 ohm .................. 6/3
EM413—100,000 ohm ................. 9/-
EM414—250,000 ohm ............ 16/6
EM415—500,000 ohm ........... 26/6

The standard bank of Resistors total of 500,000 ohm with tapings for 10, 50, 100, 250, 500 volts.

Cat. No. EM416 — Each .......... 35/-
For Shunts see page 65.

HERE IS THE NEW GEM METAL TUBE ADAPTOR. (D)

Tests All Metal Tubes.

This adaptor enables you to check all types of metal tubes in any tube checker. No jumper leads, external connections or trick set-ups necessary. Simply use the Adaptor in the type 36 tube socket of your tube tester for all tests. Has proper resistors as recommended by metal tube engineers to individually test each section of 6H6 double diode with protection to both tubes and instruments.

Two toggle switches provided—one for checking each plate of the 5Y3, 5Z4, 6H6 and 6N7 types, and the other for testing five volt tubes in the 36 basic test socket. Supplied with cap lead to connect new small size metal tube caps and stud to take regular control grid clip of present tube checker.

Checks octal based tubes, glass as well as metal, including 5YS, 5Z4, 6A8, 6AG—C, 6B6—G, 6C5—Q, 6DG—C, 6F6—G, 6F6—C, 6H6, 6H6—C, 6J7, 6J7—G, 6K7, 6K7—G, 6L7, 6L7—G, 6N7, and 8N7—G. Face of Adaptor carries an etched direction plate and bottom has complete detailed instructions and readings chart. 3fin. dia., 2fin. high

Cat. No. EM220 .......................... 45/-
PIFCO

ROTAMETER.

One Needle Pointer. Eight Separate Dials.

One instrument, made in England over one hundred tests.

RANGES:

- 0-8 volts.
- 0-250 M.A.
- 0-250 M.A.
- 0-250 M.A.
- 0-100 M.A.
- 0-10 M.A.

Nine separate meters all in one.

Incorporates the unique Rotameter principle. Every test can be made without a single change of connection. A turn of the INDICATOR and the required DIAL appears. A safety fuse is incorporated as a safeguard against damage by careless handling. The BATTERY TEST registers the voltage of the three Radiometer Cells fitted inside.

Black Bakelite case. Octagonal INDICATOR. Supplied with two 22in. long rubber-covered cables. Valves tested by plugging into holder on meter top. (English base only.)

Dimensions: Height overall, 4 9/16in. Width, 3 5/16in. Depth, 1 5/16in. Weight, 12 oz.

Cat. No. EM105—PIFCO ROTAMETER—complete with cables. £4 7/6

EM106—PIFCO Style Case for Rotameter 6/6

EM117—Renewal Dry Cells 4/6

EM104—Spare Fuses 10/6.

TEST YOUR BATTERIES. (K)

TELESCOPIC DOUBLE RANGE VOLTMETER—WITH SPARES FOR PIFCO MOVING COIL METERS. (D)

COMPLETE MOVEMENTS 25/

JEWELS IN SETTING 1/9

PIVOTS 3/

MOVING COILS—With springs 10/

HAIR SPRINGS 1/

MOVEMENTS WITH MAGNETS 27/6

POINTERS 3/4

Spares for PIFCO Moving Coils

Here it is! Just Released!

PALEC 12 (P.C.) RANGE METER. (D)

The latest PALEC triumph—a MULTI-RANGE METER incorporating the PALEC 5in. 0/1 M.A. Meter—with universal dial. Scales very clear. Easy to operate and definitely accurate on all scales. Provision is made so that a rectifier can be incorporated to give A.C. readings. Outside dimensions of case, 9in. x 9in. x 6in.

Range Volts... 0/10/50/250/500.

Milli-Amps... 0/1/10/50/100.

Ohms... 0/2,000/20,000/2,000,000.

Cat. No. EM385 7/10/

R.C.S. MODULATED SERVICE OSCILLATOR. (B)

This instrument is individually calibrated in five positions on a Standard Signal Generator, and measuring only 6 x 5 x 9in. high. The R.C.S. Oscillator will align any make or type of Radio Receiver, Intermediate Transformers, etc., as accurately as any instrument costing ten times the price. Operating on a power of 45 volts. Service Oscillator, D.C. and 2 volts A.C. or D.C. Three coils are supplied, 175 K.C. (red), 400 K.C. (green), and Broadcast (brown), and the whole is completely shielded and finished with a special cracking finish. Full instructions are supplied with each Oscillator.

Cat. No. EM321 £4 5/
PIFCO
RADIOMETER

PIFCO goes straight to the heart of the trouble, testing sets and components with equal ease and speed. Any radio set can be tested, either A.C. or D.C. Mains or Battery operated. Solidly constructed with fine bakelite case, the PIFCO Radiometer has readings for high and low voltage, milliamperes, ohms, continuity test, etc.

The "ALL-IN-ONE" Radiometer for A.C. or D.C.—For testing electric or battery radio sets. Anybody can trace faults with this wonder instrument. Finished in black bakelite. Size of dial 12in. by 2in., complete with leads.
Cat. No. EM103 . . . . (K) 21/-

PIFCO METER

Hydrometers (K)

A full-sized Hydrometer, robust make. Length 12in. Air-tight ribbed rubber bulb. Octagon nozzle which prevents the instrument from rolling. Beaded float included that does not adhere to side of glass barrel when testing.
Cat. No. EM300 Each 2/11

Cat. No. EM301—Spare float for above. 1/- each

"ACURITE" METERS. (K)

These Meters have been made to our specifications. Known as the CN type, they are of the moving coil pattern and are for D.C. only. Scale diameter, 2in. Overall diameter, 2½in. Contained in moulded bakelite cases with highly polished nickel plated facings. These meters are dead-beat accurate and durable.

METERS. "ACURITE." Moving Coil.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM1—0/1 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM2—0/2 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM3—0/10 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM4—0/20 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM5—0/30 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM7—0/100 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM8—0/200 Milli-Amps</td>
<td>37/6</td>
</tr>
<tr>
<td>EM102—0/1 and 0/100 M.A.</td>
<td>47/6</td>
</tr>
<tr>
<td>EM11—0/400 Volts</td>
<td>42/6</td>
</tr>
<tr>
<td>EM12—0/1 Amp.</td>
<td>37/6</td>
</tr>
<tr>
<td>EM13—0/5 Amp.</td>
<td>37/6</td>
</tr>
<tr>
<td>EM14—0/10 Amp.</td>
<td>37/6</td>
</tr>
<tr>
<td>EM15—0/20 Amp.</td>
<td>37/6</td>
</tr>
</tbody>
</table>

"ACURITE" A.C. METERS. (K)

"Accurite" Type P.E.F. Meters are of the moving iron type, 2½in. diameter, Quite reliable and will work on both A.C. and D.C.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM16—0/20 M.A.</td>
<td>15/6</td>
</tr>
<tr>
<td>EM17—0/30 M.A.</td>
<td>15/6</td>
</tr>
<tr>
<td>EM18—0/50 M.A.</td>
<td>15/6</td>
</tr>
<tr>
<td>EM19—0/100 M.A.</td>
<td>15/6</td>
</tr>
<tr>
<td>EM20—0/5 Volts</td>
<td>15/6</td>
</tr>
<tr>
<td>EM21—0/120 Volts</td>
<td>15/6</td>
</tr>
</tbody>
</table>

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<td>37/6</td>
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<tr>
<td>EM12—0/1 Amp.</td>
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<td>EM13—0/5 Amp.</td>
<td>37/6</td>
</tr>
<tr>
<td>EM14—0/10 Amp.</td>
<td>37/6</td>
</tr>
<tr>
<td>EM15—0/20 Amp.</td>
<td>37/6</td>
</tr>
</tbody>
</table>
THE MICROHM

(Regd.)

WIRE-WOUND POTENTIOMETER. (K)
A precision component incorporating the latest developments of potentiometer design. Standard shafts are 1/4 inch diameter and 1 inch long.

The following exclusive features make the Microhm Wire-wound Potentiometers the best available,
1. A staggered contact ensures an absolute minimum of jump between turns on the resistance strip, and provides an exceptionally even variation of the resistance from half-turn to half-turn.
2. A specially hardened nickel silver spring maintains an even tension during the rotation of the contact.
3. Only the highest quality Nichrome wire has been used, carefully wound on rag fibre and finished with cellulose adhesive, which gives a “nearly perfect” resistance strip.
4. Two nickel silver pressure plates ensure efficient electrical connection and smooth mechanical movement.
5. An attractive bakelite case with pressed metal dustproof cover complete the Microhm Potentiometer.

POTENTIOMETERS, WITH SWITCH. (K)

Each 1/9

CHICAGO POTENTIOMETER WITH SWITCH
Cat. No. EP46—10,000 ohm wire-wound
EP50—25,000 ohm, carbon
EP51—50,000 ohm, carbon
EP52—100,000 ohm, carbon
EP53—250,000 ohm, carbon
EP54—500,000 ohm, carbon
EP55—1 meg.

SHIELDED CABLE PLUGS. (K)

Plugs:
A metal capped plug with moulded male or female section, securely held in by spring ring—unbreakable and designed for use on all radio sets—amplifiers, test equipment, etc.

Cat. No. EP300—4-prong
Cat. No. EP301—5-prong
Cat. No. EP302—6-prong

Sockets:
Cat. No. EP310—4-hole
Cat. No. EP311—5-hole
Cat. No. EP312—6-hole

An inexpensive ‘phone plug. The tips are held by spring contacts. The advantage is that the cords can be removed very quickly.
Cat. No. EP265 Each 1/6

PHONE PLUGS. (K)

A good Phone Plug at a low price. (Foreign)
Cat. No. EP267 Each 9D

MINIATURE WALL PLUG AND SOCKET. (K)

Handy for speaker extension, etc.
Cat. No. EP256-8D, complete 4/9
COSMOCORD GRAM CHASSIS. (G)

This unit is the result of years of research, work and manufacturing. The motor is absolutely constant in its speed, due to a specially designed governor, and has plenty of reserve power. Running of motor is practically inaudible. Speed Regulator, 74-82 r.p.m. 12in. De Luxe Turntable double action, fully automatic switch, with micrometer adjustment. Balanced tone Cosmocord pick-up, with swivel head for easy needle changing. Screen-pick-up lead, pick-up rest, needle cup with slotted cap, volume control. All mounted on bakelite unit plate. Template for fitting and instructions are supplied.

Cat. No. EP210  £5/10/-

COSMOCORD PICK-UP HEAD. (K)

Pick-up head which will fit the tone arm of practically all makes of gramophones. Good tone. Low noise level. Weight on record, approx. 4 ozs.

Cat. No. EP203  11/6 each

GRAMOPHONE MOTORS. (G)

"Undy" Gramophone Motors, complete with turntable. Can be used either on 110 or 220 volt A.C. supply. Well constructed job, perfectly balanced. Speed control.

Cat. No. EM804  58/6 each

COSMOCORD PICK-UPS. (K)

The introduction of this Pick-up marks a great step forward in design. Completely moulded in bakelite of pleasing brown finish. Will give a perfectly uniform frequency response and has self-contained volume control in the base.

Cat. No. EP202  32/6

---

The Morphy Richards tone balanced record reproducer is introduced as a direct result of the persistent demand for an instrument of outstanding quality at a singularly reasonable price. The designer—a sound engineer of many years' experience—justly claims with great satisfaction and no little pride, that the Morphy-Richards Pick-up functions perfectly under widely varying conditions and can be relied on to give many years of satisfactory and trouble-free service.

Complete unit as illustrated with twin connecting leads; with built-in 50,000 ohms volume control.

Cat. No. EP204  Only 27/6 (K)

COSMOCORD Model 176 GRAMOPHONE PICK-UP. (K)

Combines high volume with correct bass compensation and is suitable for practically every type of radio receiver. It is particularly noted for its full, rich tone, and its extremely pleasant rendering of both vocal and instrumental records. Supplied complete with arm, volume control, and 3ft. of silk-braded connecting lead.

Cat. No. EP205  36/6

"HAMS"—SPECIALY FOR YOU! (K)

Special purchase of used P. and T. TELEPHONE TRANSMITTERS, in good order. Make excellent "Mikes," Long type.

Cat. No. EX920  3/6 each

Cat. No. EX921—Short type, as illustrated.

3/6

---

CONNECTICUT TABLE MICROPHONES. (K)

Furnished with large sensitive single-button microphone and four-pin spring suspension. This microphone is 14 inches high, with pressed steel base, input transformer, on and off toggle switch, and cord. Nicely finished in black and green tracery with nickel trim. Two dry cells, No. 6 type, or one 45 volt "C" battery are required to furnish the current for the microphone. Packed in attractive display boxes with complete instructions for connecting and operating.

Cat. No. EM502 Each 39/6

CONNECTICUT STAR MICROPHONES. (K)

Here's a useful microphone of pleasing design, durable construction. A large diaphragm with single carbon button. Connects directly to detector tube. Microphone may be left permanently connected and programme cut in "on" at any time by means of button mounted in front of case. No batteries required. Made in U.S.A.

Cat. No. EM501 Each 8/6

PANELS

PANELS—BLACK INSULATING. (G)

Here are British made of the very best quality insulating material. Highly polished on one side. Mechanically strong, but yet quite easy to cut and drill. 3-16" thick.

Cat. No. Each

EP1—9in. x 7in.  3/6

3/9

EP2—12in. x 7in.  5/9

EP3—15in. x 7in.  6/3

EP4—18in. x 7in.  6/6

EP5—21in. x 7in.  7/6

FUSES. (K)

These Fuses screw into a holder like torch bulbs, but they will burn out and save your valuable filament should you make a wrong connection. 60 M.A.

Cat. No. ES221—

9D. Each

FUSE HOLDERS. (K)

for Fuse Bulbs.

Bakelite Holders

Cat. No. ES222—

6D. Each

5/6 Dzenn
### STANDARD RESISTOR COLOUR CODE

In the R.M.A. (American) standard coding, ten colours are assigned to the figures as shown in the following table:

<table>
<thead>
<tr>
<th>Figure</th>
<th>Colour</th>
<th>Figure</th>
<th>Colour</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Black</td>
<td>5</td>
<td>Green</td>
</tr>
<tr>
<td>1</td>
<td>Brown</td>
<td>6</td>
<td>Blue</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
<td>7</td>
<td>Violet</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
<td>8</td>
<td>Grey</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
<td>9</td>
<td>White</td>
</tr>
</tbody>
</table>

The body of the Resistor is coloured to represent the first figure of the resistance value. One end of the resistor is coloured to represent the second figure. A band or dot of colour, representing the number of decimal places following the first two figures, is located within the body colour.

#### Examples:

<table>
<thead>
<tr>
<th>Ohms</th>
<th>Body</th>
<th>End</th>
<th>Dot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>Brown</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>150</td>
<td>Brown</td>
<td>Green</td>
<td>Brown</td>
</tr>
<tr>
<td>200</td>
<td>Red</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>300</td>
<td>Orange</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>400</td>
<td>Yellow</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>500</td>
<td>Green</td>
<td>Black</td>
<td>Brown</td>
</tr>
<tr>
<td>750</td>
<td>Violet</td>
<td>Green</td>
<td>Brown</td>
</tr>
<tr>
<td>1000</td>
<td>Brown</td>
<td>Green</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

### SPEER COLOUR CODED RESISTORS. (K)

Conservatively rated at 1 Watt. They will stand up to 50 per cent. over load 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 handicap effects.

#### Heliogen Wire-Wound 5-Watt Resistors. (K)


<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>ER218</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,500 ohm</td>
<td>2/6</td>
</tr>
<tr>
<td></td>
<td>5,000 ohm</td>
<td>2/9</td>
</tr>
<tr>
<td></td>
<td>10,000 ohm</td>
<td>3/-</td>
</tr>
<tr>
<td></td>
<td>15,000 ohm</td>
<td>3/6</td>
</tr>
<tr>
<td></td>
<td>25,000 ohm</td>
<td>4/-</td>
</tr>
<tr>
<td></td>
<td>50,000 ohm</td>
<td>4/6</td>
</tr>
<tr>
<td></td>
<td>100,000 ohm</td>
<td>5/6</td>
</tr>
<tr>
<td></td>
<td>200,000 ohm</td>
<td>7/6</td>
</tr>
</tbody>
</table>

### SPARE VOLTAGE DIVIDER CLIPS. (K)

Supplied complete with nut and washer, ready for fitting.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>ER66</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2D.</td>
<td></td>
</tr>
</tbody>
</table>

### RHEOSTATS. (K)

20 ohm. Croydon Rheostats. Well constructed and wire wound, specifically designed for use in their winding. The current capacity is 60 M.A. The contact clips are of a special flat type, which, while making perfect contact, do not damage the wire, as with the indented clips. The total length of the 15,000 ohm Divider is 5 in., and has two clips. The 25,000 ohm Divider has three clips and is 7½ in. long.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>ER82-15,000 ohms</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3/9</td>
<td></td>
</tr>
</tbody>
</table>

### R.C.S. STANDARD VOLTAGE DIVIDERS.

Caution: Use with caution when using higher current capacities.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>ER84-15,000 ohms</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1/9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>ER85-25,000 ohms</th>
<th>Each</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2/3</td>
<td></td>
</tr>
</tbody>
</table>

### R.C.S. VOLTAGE DIVIDER (Heavy Duty) 50 M.A. (K)

These are wound on tubing 3 in. in diameter, and the highest grade nichrome wire is used in their winding. The current capacity is 60 M.A. The contact clips are of a special flat type, which, while making perfect contact, do not damage the wire, as with the indented clips. The total length of the 15,000 ohm Divider is 5 in., and has two clips. The 25,000 ohm Divider has three clips and is 7½ in. long.

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<tr>
<td></td>
<td>2/10</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3/9</td>
<td></td>
</tr>
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<td></td>
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<tr>
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### R.C.S. VOLTAGE DIVIDERS.

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<tbody>
<tr>
<td></td>
<td>2/3</td>
<td></td>
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AMPION SPEAKERS

Improvements in cone manufacturing have enabled consistency of characteristics to be maintained in production. Raw cones are tested for such characteristics as mass and fundamental resonance frequency between definite production limits, and finished loudspeakers are tested individually for fundamental and cone resonances. Every process the cone paper is "waterproofed" during fabrication.

Improvements in design have resulted in extension of low frequency response, reduction of harmonic distortion, improved transient response and control of fundamental and cone resonance.

In the 8in. and 10in. loudspeakers the peak in the response curve due to fundamental resonance occurs at 60 cycles per second and is from 4 to 5 decibels lower than in previous models.

The peak is also considerably broader than in previous speakers and the result is a gradually rising response characteristic from 200 to 70-80 cycles per second. This causes an extension of bass response down to 40-50 cycles per second, an absence of "boom," a reduction of harmonic distortion due to non-linearity, an increased intelligibility of speech and naturalness of musical reproduction.

AMPION PERMANENT MAGNET SPEAKERS. (K)

MODEL “K”
A 8in. Permanent Magnet Dynamic Speaker with built-in Darwin Alnico Magnet, otherwise similar to "M" type. Fitted with 10in. leads and mounting bracket.
Cat. No. E5808 £1/12/6

MODEL “M”
A 6in. Electro-Magnet Speaker with "TG" type Transformer. Transformer has been remodelled to increase output at lower frequencies. For single output only. Fitted with 10in. leads.
Cat. No. E5799 £1/7/6

MODEL “F”
6in. Electro-Magnet Speaker with "TG" type Transformer. A fundamental resonance frequency is maintained between 125-140 cycles per second to provide high fidelity and good bass response. For single output only. Fitted with 20in. cable.
Cat. No. E5800 £1/10/

MODEL “Q”
An 8in. Electro-Magnet Speaker employing a high fidelity corrugated cone and over size "TA" type Transformer. Frequency response similar to the "5" type.
Cat. No. E5811 £3/15/6
CABINETS for above Speakers. See page 52. Each (Extra) 27/6

WRIGHT DE COSTER UNIVERSAL ELECTRO-DYNAMIC SPEAKERS. (K)

Wright de Coster provide a Universal Speaker with special field and special transformers. It has an universal field which furnishes the following:—2500, 2200, 1800, 1600, 1800 1800 tappet at 300, 1500, 1000 and 700 ohms, furnished with universal transformer, dust and rust proof, voice coil impedance, 5.3 ohms at 400 cycles.
Cat. No. E5813—10in. 50/—
Cat. No. E5814—12in. 70/—

AMPION ELECTRO-MAGNET TYPES. (K)

MODEL “M”
8in. Electro-Magnet Speaker with "TG" type Transformer. Transformer has been remodelled to increase output at lower frequencies. For single output only. Fitted with 10in. leads.
Cat. No. E5799 £1/7/6

MODEL “F”
6in. Electro-Magnet Speaker with "TG" type Transformer. A fundamental resonance frequency is maintained between 125-140 cycles per second to provide high fidelity and good bass response. For single output only. Fitted with 20in. cable.
Cat. No. E5800 £1/10/

ORDERING SPEAKERS. (K)

When buying a Speaker it is important that it is equipped with the correct transformer to match the output transformer in your set. Do not fail to state the type of output valve you are using. One advantage of Ampion is that spares are always available. Prices are as follows—

ES826—Spare Field Coils 13/—
ES821—Spare Cone and Voice Coils 13/—
ES822—Spare Transformers 12/9

LISSEN PERMANENT MAGNET MOVING COIL SPEAKERS. (K)

The Ideal Speaker for Battery Sets.

An altogether outstanding Speaker, with a performance equaling that of much larger instruments, and certainly out of all proportion to its size and modest price. It is almost impossible to adequately describe the performance of this new Lisson Permanent Magnet Moving Coil Loud Speaker, and every home constructor and serviceman interested in this type should try this Lisson Model out.

Each Loud Speaker carries an output transformer securely fixed to the chassis. The transformer is supplied with four terminals to which the leads from the receiver are connected. This transformer can be easily secured. Each terminal is identified by a coloured disc.

Perhaps one of the most remarkable features about this Speaker is its sensitivity, for although it will handle tremendous output without a sign of distortion, weak distant signals are reproduced without trouble.

LISSEN MODEL “0”
The Ideal Speaker for Battery Sets.

Cat. No. ET704

Spare Tapped Transformers for Lisson Speakers.

£1/17/6 each

ADD AN EXTRA SPEAKER (K)

Enjoy the programmes in bed, or in another room. An excellent 3-in. h.c.b. Impedance magnetic speaker, in Bakelite black and white, 6in. by 6in. by .25in. high, by .25in. deep. Easily attached to any set. Fully enclosed with insulated back cover for protection against dust, dirt, etc. Has "on" and "off" switch controlling each individual speaker. Supplied with clips for extension cord or wire connection. High impedance of speaker windings ensures excellent reproduction without affecting tone quality of the radio set. Ideal for hospitals, schools, restaurants, etc. With Instructions for connecting. Cat. No. ET790, and only 29/6
Make every room a Reception Room

WITH THE NEW

LISSEN

EXTENSION SPEAKER (K)
- PERMANENT MAGNET SPEAKER WITH 6in. CONE.
- ATTRACTIVE CABINET, 9in. HIGH x 12in. WIDE x 6in. DEEP. IN DARK BROWN WOOD WITH CREAM ESCUTCHEON.
- FITTED WITH 5000 OHMS VOLUME CONTROL.
- IMPEDANCE OF SPEAKER (APPROX. 20,000 OHMS) PERMITS CONNECTION TO ALL TYPES OF RECEIVERS, WHETHER MAINS OR BATTERY, HAVING HIGH IMPEDANCE OUTPUT.

Cat. No. ES749 35/-

SAXON 12-in. SPEAKERS. (K)
Real life-like tone from these whopper 12-inch Speakers offered while present stocks last. Field 2,500 ohms. Supplied complete with input transformer for single pentode.
Cat. No. ES812  Each 35/-

SELECTOR SWITCHES (K)
The I.C.A. Selector Switches for changing wavelengths. Excellent for analysers, tube testers, and for general radio laboratory use or for use as rotary toggle switches. 5in. Single Hole Mounting. Single gang. Supplied in various positions. Made of laminated bakelite. The springs are of sturdy phosphor bronze for positive contact. The shaft extension is 6in. dia. x 24in. long.
Cat. No. E5000—SPDT  E5001—DPDT  E5002—3PDT  E5003—4PDT  E5004—5PDT  E5005—6PDT  3/9  4/6  5/-  6/-  7/-  7/6

JENSEN 12X SPEAKER. (K)
A new Jensen model Speaker. Embodies high fidelity design in a reasonably priced speaker. Specification: New Curvilinear cone, high efficiency, exceptional power handling capacity, voice coil impedance 5.5 ohms. Supplied complete with input transformer. (State valves used). Diameter 12in. Made in U.S.A.
Cat. No. ES767  £5/10/-

CABINETS FOR THE ABOVE SPEAKERS.
- Cat. No. ES500—SPDT
- Cat. No. ES501—DPDT
- Cat. No. ES502—3PDT
- Cat. No. ES503—4PDT
- Cat. No. ES504—5PDT
- Cat. No. ES505—6PDT
- Cat. No. ES506—SPDT
- Cat. No. ES507—DPDT
- Cat. No. ES508—3PDT
- Cat. No. ES509—4PDT
- Cat. No. ES510—5PDT

C.O.D.S., SPEAKER. (K)
- Cat. No. EC197—6ft. Speaker Cords, lugs one end, tips the other.
- Cat. No. EC198—10ft. Speaker Extension Cords, tips both ends.
- Cat. No. EC199—Connector Extra 1/-
- Cat. No. EW100—4-wire Speaker Cable—yard 8d.

JENSEN HIGH FIDELITY SPEAKER. (K)
Model A12.
The High Fidelity model provides a practical solution to the problem of single speaker equipment in receivers which are to be "Audibly" better than the usual set. 12in. diameter and 15in. voice coil. Will handle 10 watts continuously and a peak of 15 watts. Voice coil has an impedance of 8 ohms at 400 CPS. This speaker can be used anywhere it is required to have perfect reproduction.
Cat. No. ES760  £10

WRIGHT DE COSTER.
Hyflux Magnetic Speaker. (K)
Ideal for battery sets, extension speakers, P.A. systems, etc., etc. Built to the high quality standard of "Wright de Coster." 6in. diameter.
Cat. No. ES799—7000 ohm (for most single output valves). £2 6d.
Cat. No. ES760—10,000 ohm. (for valves in push out). £2 6d.
Cat. No. ES761—750 ohms. Each 22/6
Cables for the above speaker. Each 22/6
See page 52. Each (Extra) 27/6
R.C.S. MIDGET COIL CAN. (K)

Cat. No. ES907—
10 Each

R.C.S. 2-PIECE COIL CAN. (K)

Two pieces, one used for the can, the other being the base, which is punched with a 11/2 in. hole in the centre for leads, and three special holes to suit the Marquis Former, on which most R.C.S. Coils are wound. With a 11/2 in. diameter former coil, it is important that the coil can be of the correct height and diameter for complete coverage of the band.

Cat. No. ES900 Each 1/2

VALVE SHIELDS. (K)

ES901 ES903 ES902

Valve Shields for modern receivers. All supplied with Cap and Base.

Cat. No. ES901. This is the usual 58 type shield Each 1/3

Cat. No. ES902—A new type of shield for modern sets. Parallel sides. The advantage of this type is their neat appearance and the fact that they take slightly less room on the chassis than other types. Each 1/3

Cat. No. ES903—Known as the 24 type. Now used mainly in connection with battery type screen grid valves. Each 1/3

COIL SHIELDS. (K)

Aluminum Coil Shields.

Cat. No. ES904—Size 4 x 21/2 in. Each 1/
Cat. No. ES905—Size 3 x 21/2 in. Each 1/

GOAT VALVE SHIELDS. (K)

Goat form fitting Valve Shields. Complete with base clips.

Cat. No. ES910— 6 Each

EBY LOW LOSS SOCKETS. (G)

Eby Low Loss Isolatite Sockets, as the name implies, are made of the highest quality of ceramic material, which is well known as high quality insulation for ultra high frequency circuit use. The exposed upper surface of the socket is glazed to resist moisture absorption or dust accumulation, the underside being unglazed.

Special contacts are used, which are made of highest grade Phosphor Bronze obtainable, which is hot tinned. The socket is adapted for mounting on chassis at 11/16 in., or 1 27/32 in. centres.

Cat. No. ES654—4 prongs 3/3
Cat. No. ES655—5 prongs 3/3
Cat. No. ES656—6 prongs 3/3
Cat. No. ES657—7 prongs 3/3

EBY WAFER SOCKETS. (K)

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

Cat. No. ES651—4-pin 5/3 Each
Cat. No. ES652—5-pin 5/3 Each
Cat. No. ES653—6-pin 5/3 Each
Cat. No. ES654—7-pin 5/3 Each
Cat. No. ES655—8-pin 5/3 Each
Cat. No. ES656—7-pin Socket for 09 Valves, etc. 6 Each

AMPHENOL MOULDED BAKELITE SOCKETS. (K)

A new type of Socket that will be welcomed by all radio fans and service-men. The slotted mounting holes enable this socket to be used as a replacement for standard sockets, having mounting holes from 1 1/2 to 2 inches between mounting centres. The contacts make a firm grasp of the tube prongs. Easy to wire.

Cat. No. ES614—4-pin
Cat. No. ES615—5-pin
Cat. No. ES616—6-pin
Cat. No. ES617—7-pin small
Cat. No. ES618—7-pin large
Cat. No. ES619—8-pin

SOCKETS—Baseboard Mounting (K)

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

Cat. No. ES605—4-pin (U.X.) 1/3 Each
Cat. No. ES606—5-pin (U.Y.) 1/3 Each

WAFER TYPE VALVE SOCKETS. (K)

For 4-pin English base valves.

Cat. No. ES640—
9 D. Each

For 8-pin Ditto.

Cat. No. ES641—
9 D. Each

BASEBOARD MOUNTING VALVE-HOLDERS. (K)

(Key for English Base Valves Only)

Cat. No. ES512—4-pin
Cat. No. ES611—5-pin

COMPOSITE SOCKETS. (D)

For Valve Testers, etc., and everything new. A silver plated laminated contact that floats in a moulded pocket and cannot get jammed. Life tests exceed one million seven hundred and fifty thousand perfect contacts without failure. Mounting centres, 1 19/30 inches; diameter of body, 1 3/16 inches; 4-5-6 composite socket takes four, five, or six pin valves.

Cat. No. ES652—
3/6 Each
7-9 SocketS take both types of seven-pin valves
Cat. No. ES650—
3/6 Each
8th Contact Octal Sockets take all types Metal Valves, with Octal Base.

SPEAKER SILK. (K)

A fabric specially woven for use behind the speaker opening frets in a cabinet. Just woven loosely enough to permit free air movement.

Cat. No. ES65—12in. x 12in.
Cat. No. ES66—16in. x 16in.
Resin Core Solder is recommended for the home constructor. It looks like wire and is filled with a resin preparation which eliminates the necessity of 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 (preferably in a gas flame) just enough to melt the solder. "Tin" the copper bit by first filing lightly and then rubbing with the core 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.

K.
Cat. No. ES411 — Small ree! 6 each about 31 feet.
Cat. No. ES413—1 Ib. ree! 4/6 each

BELL SWITCHES. (K)
Bell type Push Switch for making momentary contact which is required for testing apparatus, etc.
Cat. No. ES481—1 each

SWITCH ARMS. (K)
A sturdily built Switch Arm with laminated copper contact arm.
Cat. No. ES472—10 each Nickel — plated contact studs for above.
Cat. No. ET39—1/3 dozen

SOLDER 50/50. (K) Full size sticks.
Cat. No. ES418—2/6 each

SOLDERING PASTE. (K)
Oxford Soldering Paste, 1 oz. tins.
Cat. No. ES419—4 each

RADIO SWITCH. (K)
11 Contact Rotary Switch, lighter in construction than the above, Supplied without knob.
Cat. No. ES471—each 1/6

TWO-BANK DUAL-WAVE SWITCHES. (K)
Each has 9 contacts in sets of 3, and has 3 positions. Lengths of projecting shafts 2 1/2". diameter of shaft 1 1/8".
Cat. No. ES510—2-gang 8/-
Cat. No. ES511—3-gang 11/6

TOGGLE SWITCHES. (K)
Quick make and break in A.C. mains work. Will handle currents up to 250 volts with perfect reliability. On-and-off toggle switch. Rating 250 volt, 3 amp.
Cat. No. ES451—Each 1/3

Double pole on-off Toggle Switches.
Cat. No. ES452—Each 1/9

Single pole change-over Toggle Switches (S.P.D.T.)
Cat. No. ES453—Each 1/9

Double pole change-over Toggle Switches (D.P.D.T.)
Cat. No. ES455—Each 2/9

LISSEN S.P. PUSH PULL SWITCHES. (K)
On-Off type. The heavy springs will retain their tension in spite of prolonged and rigorous use.
Cat. No. ES440—1/6 each

ROTARY RADIO SWITCHES. (K)
Rated 230 volt, 2 amp. These are the rotatmg type of switches and are supplied with lin. shaft, so that a knob can be fitted to match the other controls on the set. One hole fixing. Switches mounted in hermetically sealed cases perfectly reliable contact durable construction.
Cat. No. ES460—Single pole on-off 2/3
Cat. No. ES461—Double pole on-off 2/6
Cat. No. ES462—Single pole change-over 2/6
Cat. No. ES464—Double pole change-over 3/9

S.P. ON-OFF SWITCHES. (K)
For low tension flush mounting with neat moulded plate.
Cat. No. ES452—1/6 each

10-POINT ROTATING SWITCHES. (K)
A 10-Point Rotating Switch for use on testing apparatus, crystal sets or any other outlet requiring a multi-contact switch arm. Made of moulded bakelite with solid studs and connecting lugs. Supplied complete with knob.
Cat. No. ES470—2/6
<table>
<thead>
<tr>
<th><strong>CLIPS, SCREEN GRID. (K)</strong></th>
<th>For attaching leads to the top of screen grid valves, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EC22</td>
<td>1 D. each 9 D. gross</td>
</tr>
<tr>
<td>Cat. No. EC24</td>
<td>Screen Grid Clips for metal valves each</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>METAL TUBE GRID CAP ADAPTOR. (D)</strong></th>
<th>Permits making grip cap connection on metal valves without additional wiring. Plugs into regular grid clip. Clip end fits metal tube grid caps. Useful for tube checkers, set analysers, metal tube replacement adaptors, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EM224</td>
<td>1/6 each</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>R.C.S. COIL MOUNTING FEET. (K)</strong></th>
<th>Ideal for Coil Mounting.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. ES212, ea.</td>
<td>9 D.</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th><strong>CELLULOID CEMENT. (K)</strong></th>
<th>For joining celluloid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. ES217</td>
<td>1 oz. bottle of cement</td>
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<thead>
<tr>
<th><strong>INSULATING MATERIAL (D)</strong></th>
<th>Chatterton's Compound (In 4 oz. sticks).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. ES270</td>
<td>6/- lb</td>
</tr>
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<thead>
<tr>
<th><strong>FOR EXPERIMENTER. (K)</strong></th>
<th>Here's a line that will appeal to experimenters. You can have a lot of fun with these P. &amp; T. Telephone Generators. They are worth the price for the four large, powerful magnets alone.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EX454</td>
<td>(Postage 1/6 extra)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>TERMINAL</strong></th>
<th>Low-priced Terminal with insulated top for Crystal Sets, Wave Traps, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. E70</td>
<td>1/6 dozen.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>BIG BATTERY BARGAIN. (D)</strong></th>
<th>6 vol. 85 amp. Radio or Car Accumulators. Plenty of pep, and what a bargain!</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. EA170</td>
<td>39/6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SCREWS WITH NUTS (K)</strong></th>
<th>2BA—1.06in. outside diameter.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. Size</td>
<td>Doreen.</td>
</tr>
<tr>
<td>ET414—1 x 2BA</td>
<td>10 D. 9/6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>SCREWS AND NUTS, ROUND HEAD.</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Cat. No. Size</td>
<td>Doreen.</td>
</tr>
<tr>
<td>ET421—1 x 2BA</td>
<td>11 D. 10/6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>ANCHORING STRIPS. (K)</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat. No. Size</td>
<td>Doreen.</td>
</tr>
<tr>
<td>ET434—2BA</td>
<td>2 D. 1/10</td>
</tr>
<tr>
<td>SOLDERING LUGS. (K)</td>
<td>TERMINALS. (K)</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------</td>
</tr>
<tr>
<td>2 B.A. Double Ended Soldering Lugs. Cat. No. ET17 3D. doz. 2/3 gross.</td>
<td>Wood screw patterns, with bolt. Nickel plated. Cat. No. ET4 3D. each.</td>
</tr>
<tr>
<td>A useful collection of 100 items of assorted Spade End and Cable Lugs. Suitable for the serviceman and experimenter. Cat. No. ET44 the lot 2/-.</td>
<td>Insulated Spade Terminals are useful for easy connection of wires under terminals. Colours: Red and Black. Cat. No. ET8 1D. ea. 1/10 dozen.</td>
</tr>
<tr>
<td>A miscellaneous selection of 72 items of various types of Soldering Tags and Lugs. Cat. No. ET47 the lot 1/2</td>
<td>TERMINALS—BANANA PLUGS AND SOCKETS. (K)</td>
</tr>
<tr>
<td>Serviceman's selection of Tags, Spade Ends, Insulating Washers, etc. 500 assorted pieces. Cat. No. ET45 10/-</td>
<td>Banana Plugs and Sockets have all sorts of uses, such as for aerial gain, and tapping, battery connections, etc. Assorted colours. Cat. No. ET22—Banana Plugs and Sockets 2D. each. Cat. No. ET23—Banana Plugs only 2D. each. Cat. No. ET24—Sockets for above (all metal) 2D. each. Cat. No. ET30—Sockets with insulating collar (red or black) Each 3D.</td>
</tr>
<tr>
<td>A useful collection of assorted Spade End and Cable Lugs. Suitable for the serviceman and experimenter. Cat. No. ET46 the lot 2/-</td>
<td>BANANA PLUGS. (K)</td>
</tr>
<tr>
<td>Auto Electrician's assortment Cable Ends, etc., for motor car wiring. 144 assorted pieces. Cat. No. ET44 7/6</td>
<td>Extra long type Banana Plugs. Cat. No. ET25, each 6D.</td>
</tr>
<tr>
<td></td>
<td>BANANA PLUG CONECTOR. (K)</td>
</tr>
<tr>
<td></td>
<td>A useful Single Wire Connector that has a socket for the standard size Banana Plug. Cat. No. ET27, Each 3D.</td>
</tr>
<tr>
<td></td>
<td>TERMINAL STRIPS.</td>
</tr>
<tr>
<td></td>
<td>Plain Bakelite Terminal Strips. For mounting terminals, etc. 5/8 in. long, tin. wide. Cat. No. ET38 Each 6D.</td>
</tr>
<tr>
<td></td>
<td>TERMINAL STRIPS.</td>
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<tr>
<td></td>
<td>Plain Bakelite Terminal Strips. For mounting terminals, etc. 5/8 in. long, tin. wide. Cat. No. ET38 Each 6D.</td>
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</tr>
</tbody>
</table>
HALLDORSEN AUDIO TRANSFORMER. (K)  

HALLDORSEN PUSH-PULL CLASS "B" TRANSFORMERS. (K)  
Ratio 1:1, mounting centres 3 9/16 in. Core 1 in. x 1 in. Over-all dimensions, 25 x 4 x 21. Cat. No. ET608 17/6  
Lighter type. Ratio 1:1. Mounting centres 2 13/16 in. Core 3 in. x 2 in. Over-all dimensions 2 x 3 /1 x 2. Weight 1 lb. Cat. No. ET609 12/—  
PUSH-PULL INPUT TRANSFORMER. (K)  
Push-pull Input Transformers. 12 to 1 ratio. Unshielded replacement type, mounting centres 2 5/16 in. Weight 10 oz. Core size 8 in. x 8 in. Cat. No. ET610 9/3  
COMBINATION OUTPUT TRANSFORMER. (K)  
Combination Tube Output Transformer. This is rather a sensational job, and what has been needed by dealers and servicemen for a long time. It is not just an output transformer with a tapped secondary, but is made up of definitely matched Impedance combinations carefully worked out. Instructions supplied with each transformer give the accurate combination for each of the principal power tubes to match the Voice Coils in general use. This is both single and push-pull operation. Medium size core 8 in. x 8 in. Core mounting centres 2 13/16 in. Weight 1 lb. Cat. No. ET613 10/6  
LISSEN TOREX TRANSFORMERS. (K)  
A small Transformer, but a giant in performance. The core is made of silicon steel. The recognition of high grade transformers. The windings are accurately wound with the best quality copper wire. This is an entirely British-made transformer; the only expensive transformer sold with a curve—a curve which is practically straight from 100-7000 cycles, covering the most useful range of audible frequencies. In handsome brown moulded case, hermetically sealed against atmospheric changes. Ratio 3:1. Cat. No. ET601 8/9  

AMPLION'S NEW MULTI-IMPEDANCE TRANSFORMER. (K)  
A good Transformer is primarily dependent on its iron and copper content. The T.S. Multi-Impedance Transformer weighs 33 ounces. The Transformer will safely carry up to 80 m/a. It is fitted with 12 lugs, numbered 1 to 8, and lettered VC and PC. Impedances can be obtained by connecting the various lugs as follows—  
Terminals:  
1—5 = 12,000 ohms centre tap.  
2—6 = 7,000 ohms centre tap.  
3—7 = 5,000 ohms centre tap.  
4—8 = 2,000 ohms single output.  
5—7 = 2,000 ohms single output.  
6—8 = 5,000 ohms single output.  
8 Cat. No. ET709 30/—  

AMPLION SPEAKER TRANSFORMERS. (K)  
For Q and R Type Speakers.  
ET706—Single Pentode 13/9  
ET706—Push-Pull Pentode Each 12/6  
ET707—Single Triode Each 12/6  
ET708—Push-Pull Triode 10/6  

TELEN L.F. TRANSFORMERS. (K)  
The Telen is eminently suitable for receivers where highest efficiency is required at a low cost and where space is limited. Its characteristics will bear comparison with that of any other transformer.  
Cat. No. ET604—Ratio 5:1 8/6  

VIBRATOR POWER TRANSFORMER. (K)  
The R.C.S. Power Transformer for Vibrator Units is contained in a new bakelite case. It is designed to supply correct voltages and current for the receiver, and the finest grade materials procurable are used in their construction. They are given individual tests during manufacture, as well as a rigid test and inspection before shipment.  
Cat. No. ET814 16/6  

FERRANTI CLASS B. PUSH-PULL TRANSFORMERS. (K)  

MICROPHONE TRANSFORMER. (K)  
A coupling transformer. Ratio 1:35 with C.T. 10 ohm primary, 1:70 ratio thus being obtainable. Two microphones in Push-Pull can be used. Primary currents (max.) 25 MA for 1:70 ratio. For push-pull connections 65 MA max. Cat. No. ET600 8/6  

HALLDORSEN STEP-DOWN TRANSFORMER. (K)  
Step down Transformer. 240 volt to 110 volt. Useful for using 110 volt Radio Sets and other appliances from the 240 volt mains.  
Cat. No. ET620— 45/7 Each 25/6  
Cat. No. ET621— 29/6 Each  

VOLTAGE REDUCER, SINGLE OUTLET. (G)  
Measuring 6 x 4 x 3 in., this reducer supplies 6 volts 5 amps from the 240 volt light or power. A 2-pin plug outlet is provided.  
Cat. No. ET622— 23/7 Each  

LISSEN Q.P.P. AUDIO TRANSFORMER. (K)  
Specially designed for Q.P.P. output circuits.  
Cat. No. ET607 18/9  

JENSEN SPEAKERS. (K)  
Moving Coil Speaker which represents the latest word in speaker design. All electrical connections are thoroughly covered and the field coils are wound with the heaviest possible gauge of wire. Supplied complete with 18in. cord (plug extra).  
Cat. No. ES762—5 in. 20/— 
Cat. No. ES763—6 in. 22/6  
Cat. No. ES764—8 in. 27/6  

**TABLE:**  
<table>
<thead>
<tr>
<th>Type No.</th>
<th>Cat. No.</th>
<th>A.F. 15c EN608</th>
<th>A.F. 17c EN650</th>
<th>O.P.M. 15c EN707</th>
<th>O.P.M. 16c EN751</th>
<th>O.P.M. 17c EN872</th>
<th>Brand</th>
<th>Price</th>
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<td></td>
<td>10/—</td>
<td>24/—</td>
<td>40/—</td>
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</tbody>
</table>
R.C.S. Power Transformers

Guaranteed for twelve months. Ratings are very conservative. R.C.S. Transformers have a tapped primary for 220-40-60 volts. They function with low voltage drop low temperature rise and have high insulation which is imperative for efficient working.

2.5 Volts

- Cat. No. ET650—60 mil.
  Filament Windings:
  2.5v., C.T., 5 amp.
  5v., 2 amp.
  11/9

- Cat. No. ET651—80 mil.
  Filament Windings:
  2.5v., C.T., 3 amp.
  2.5v., C.T., 8 amp.
  5v., 3 amp.
  16/9

- Cat. No. ET652—100 mil.
  Filament Windings:
  2.5v., C.T., 3 amp.
  2.5v., C.T., 8 amp.
  5v., 3 amp.
  18/–

- Cat. No. ET653—125 mil.
  Filament Windings:
  2.5v., C.T., 3 amp.
  2.5v., C.T., 10 amp.
  5v., 3 amp.
  26/–

- Cat. No. ET654—150 mil.
  Filament Windings:
  2.5v., C.T., 8 amp.
  2.5v., C.T., 10 amp.
  5v., 3 amp.
  39/6

6.3 Volts

- Cat. No. ET655—60 mil.
  Filament Windings:
  6.3v., C.T., 3 amp.
  5v., 3 amp.
  14/9

- Cat. No. ET656—80 mil.
  Filament Windings:
  6.3v., C.T., 3 amp.
  5v., 3 amp.
  16/9

- Cat. No. ET657—100 mil.
  Filament Windings:
  6.3v., C.T., 3 amp.
  5v., 3 amp.
  18/–

- Cat. No. ET658—125 mil.
  Filament Windings:
  6.3v., C.T., 3 amp.
  5v., 3 amp.
  26/–

- Cat. No. ET659—150 mil.
  Filament Windings:
  6.3v., C.T., 3 amp.
  5v., 5 amp.
  39/6

RADIOKES AUDIO TRANSFORMER.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Type No.</th>
<th>Application</th>
<th>Suitable Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET550</td>
<td>AF-3</td>
<td>&quot;A&quot; class single coupling transformer.</td>
<td>Match triode types 56, 76, 30, 55, 85, 6C6, etc.</td>
<td>20/–</td>
</tr>
<tr>
<td>ET551</td>
<td>AF-3C</td>
<td>&quot;A&quot; class push-pull trans.</td>
<td>Match triode types 56, 76, 30, 55, 85, 6C6, etc.</td>
<td>21/–</td>
</tr>
<tr>
<td>ET552</td>
<td>AF1</td>
<td>High impedance audio choke 250 Henrys.</td>
<td>Matches plate resistance pentode valves such as 6C6, 57, 6J7, etc.</td>
<td>18/6</td>
</tr>
<tr>
<td>ET553</td>
<td>AFB</td>
<td>&quot;B&quot; class input transformer.</td>
<td>Suitable for battery valves, typical combination 30 and 19 or B240. Also suits 49's, etc.</td>
<td>18/6</td>
</tr>
<tr>
<td>ET554</td>
<td>AFAB</td>
<td>Class &quot;AB&quot;</td>
<td>Using Pentode output valve as a triode driving pentodes in &quot;AB&quot; class. Typical combination 2A5 (triode) and two 2A5's (&quot;AL&quot;), or 42 driver and two 42's output.</td>
<td>28/6</td>
</tr>
</tbody>
</table>

FILAMENT TRANSFORMERS, R.C.S. (K)

These Filament Transformers are the Midget types and have a carrying capacity of 7 watts, and can be procured in any secondary voltage. The primary winding is for 240 volts and have been flash-tested between windings and earth at 1,000 volts. These Transformers are ideal for use when English and American valves are used in the same set. Stock types are as under:

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET710</td>
<td>240 volts Primary, 7 watts</td>
<td>9/9</td>
</tr>
<tr>
<td>ET711</td>
<td>240 volts Primary, 7 watts</td>
<td>9/9</td>
</tr>
<tr>
<td>ET712</td>
<td>240 volts Primary, 7 watts</td>
<td>9/9</td>
</tr>
<tr>
<td>ET713</td>
<td>240 volts Primary, 15 watts</td>
<td>9/9</td>
</tr>
</tbody>
</table>

R.C.S. SPEAKER TRANSFORMERS. (K)

The primaries are of specially matched impedances, and can be supplied, centre tapped, for push-pull. The secondaries are wound for both low and high impedance voice coils, and if the coils are required for replacement we would advise the quoting of the type of speaker that they are required for.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>ET709</td>
<td>Single 245 or Triode</td>
<td>10/–</td>
</tr>
<tr>
<td>ET701</td>
<td>Push-pull, 245 or Triode</td>
<td>10/6</td>
</tr>
<tr>
<td>ET702</td>
<td>Single Pentode</td>
<td>10/–</td>
</tr>
<tr>
<td>ET703</td>
<td>Push-pull Pentode</td>
<td>10/6</td>
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</table>

R.C.S. SPEAKER REPLACEMENT TRANSFORMER COILS. (K)

Replacement Coils for Speaker Transformers.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET696</td>
<td>Single Triode</td>
<td>5/9</td>
</tr>
<tr>
<td>ET697</td>
<td>Single Pentode</td>
<td>5/9</td>
</tr>
<tr>
<td>ET698</td>
<td>Push-pull Triode</td>
<td>6/3</td>
</tr>
</tbody>
</table>

"B" CLASS AUDIO TRANSFORMER. (K)

R.C.S. "B" Class Radio Transformers have been improved in design and are now supplied in handsome bakelite cases. The special pie coils are vacuum impregnated, assuring freedom from electrolysis. Only high grade specially coated steel laminations are used. This R.C.S. product is unsurpassed for use in battery operated receivers.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>ET660</td>
<td>&quot;B&quot; Class Audio</td>
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</tr>
</tbody>
</table>

CLASS "A" PUSH-PULL TRANSFORMERS. (K)

R.C.S. High Grade Audio Transformer, ratio 31 to 1.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>ET641</td>
<td>Each 15/6</td>
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R.C.S. AUDIO TRANSFORMER. (K)

Class A, 31 to 1 Audio Transformer of first grade make.

<table>
<thead>
<tr>
<th>Cat. No.</th>
<th>Description</th>
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<tbody>
<tr>
<td>ET662</td>
<td>Each 15/–</td>
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</table>
Only the best British Wires stocked.
Prices per Reel.

S.W.G.

<table>
<thead>
<tr>
<th>Cat No.</th>
<th>Price</th>
<th>Cat No.</th>
<th>Price</th>
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<td>EW37</td>
<td>3/4</td>
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<tr>
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<td>$1/2</td>
<td>EW35</td>
<td>3/4</td>
</tr>
<tr>
<td>19</td>
<td>$1/2</td>
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<td>22</td>
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<td>5/10</td>
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<tr>
<td>40</td>
<td>$1/10</td>
<td>EW46</td>
<td>5/10</td>
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</table>

**WIRE, THIN SINGLE FLEX. (K)**

1/4 0.0076 Flexible Insulated Wire Insulated with a covering of vulcanised rubber. Assorted colours. Handy for temporary connections, etc. Cat No. EW63, per yard $2.50.

1/6 dozen per coil, 72 yds., 13/6.

**HEINLEY PUSH-BACK WIRE. (K)**

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<tr>
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<th>Price</th>
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<tr>
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<td>1/2</td>
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<tr>
<td>1/2</td>
<td>1/2</td>
</tr>
<tr>
<td>1/2</td>
<td>1/2</td>
</tr>
</tbody>
</table>

**POWER CABLES AND ELECTRIC WIRES.** See page 24

**MOTOR CAR WIRES AND CABLES.** See page 33

**BATTERY AND SPEAKER CABLES.**

- Cat. No. EW100-4-wire Battery Cable, Yard 8D.
- Cat. No. EW101-5-wire Battery Cable, 9D.
- Cat. No. EW102-7-wire Battery Cable, 1/-

**SPAGHETTI TUBING.**

Spaghetti Tubing is used for slipping over bare wires as an insulation to prevent short circuits, etc. Assorted colours.

- Cat. No. ES61-36in. lengths, 1 Mil., Each 2D.
- Cat. No. ES62-36in. lengths, 2 Mil., 3D.
- Cat. No. ES63-36in. lengths, 3 Mil., 4D.
- Cat. No. ES64-36in. lengths, 4 Mil., 4D.
- Cat. No. ES65-36in. lengths, 6 Mil., 6D.

**PANEL LAMPS.**

- Genuine Westinghouse Radio Panel Lamps, Tubular type.
- Cat. No. EL110—2 volt, 05 amp., (special low consumption for battery sets), Each 1 1/3.
- Cat. No. EL120—2.5 volt, Each 12/9.
- Cat. No. EL121—3.8 volt, Dzen 97/6 per 10.
- Cat. No. EL122—6 volt, Each 1 1/3.
- Cat. No. EL123—6 volt, with small bayonet base, Each 1 1/3.
- Cat. No. EL107—Lectra (Foreign), 2.5 volt, 1/2 each.
- Cat. No. EL110—Ditto, Each 1/2.
- Cat. No. EL108—Ditto, 6 volt, Each 1/2.
- Torch Lamps are listed on page 28.
**RAYTHEON and RADIOTRON VALVES**

**STANDARD GLASS VALVES.**

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<tr>
<td>1A4</td>
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</tr>
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<td>1A6</td>
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<td>1B4/9S1</td>
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<td>1B5/2S5</td>
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<td>1C4</td>
<td>13/-</td>
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<td>1C6</td>
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<td>34</td>
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<td>35/31</td>
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**Type No.**

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**GLASS, METAL OR OCTAL GLASS VALVES.**

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<tr>
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<td>6L5G</td>
<td>11/6</td>
</tr>
<tr>
<td>6L6G</td>
<td>15/6</td>
</tr>
<tr>
<td>6L7G</td>
<td>11/-</td>
</tr>
<tr>
<td>6N6G</td>
<td>11/-</td>
</tr>
<tr>
<td>6N7G</td>
<td>16/-</td>
</tr>
<tr>
<td>606/6ETG</td>
<td>12/-</td>
</tr>
<tr>
<td>6Q7G</td>
<td>9/6</td>
</tr>
<tr>
<td>6R7G</td>
<td>10/-</td>
</tr>
<tr>
<td>6S7G</td>
<td>11/9</td>
</tr>
<tr>
<td>6BTG</td>
<td>9/-</td>
</tr>
<tr>
<td>6V5G</td>
<td>10/-</td>
</tr>
<tr>
<td>6V7G</td>
<td>10/-</td>
</tr>
<tr>
<td>6X5G</td>
<td>10/6</td>
</tr>
<tr>
<td>6Y6G</td>
<td>15/-</td>
</tr>
<tr>
<td>6Y7G</td>
<td>12/-</td>
</tr>
<tr>
<td>6Z7G</td>
<td>12/-</td>
</tr>
<tr>
<td>25A6G</td>
<td>10/6</td>
</tr>
<tr>
<td>25A7G</td>
<td>14/-</td>
</tr>
<tr>
<td>25B6G</td>
<td>10/9</td>
</tr>
<tr>
<td>25L6G</td>
<td>10/-</td>
</tr>
<tr>
<td>25Z6C</td>
<td>9/6</td>
</tr>
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</table>

**ALL METAL VALVES.**

<table>
<thead>
<tr>
<th>Type No.</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>OZ4</td>
<td>11/6</td>
</tr>
<tr>
<td>ST4</td>
<td>16/-</td>
</tr>
<tr>
<td>5W4</td>
<td>8/6</td>
</tr>
<tr>
<td>5ZH</td>
<td>11/-</td>
</tr>
<tr>
<td>6A8</td>
<td>12/6</td>
</tr>
<tr>
<td>6B8</td>
<td>13/6</td>
</tr>
<tr>
<td>6C5</td>
<td>8/6</td>
</tr>
<tr>
<td>6F5</td>
<td>10/6</td>
</tr>
<tr>
<td>6F6</td>
<td>10/6</td>
</tr>
<tr>
<td>6H6</td>
<td>9/-</td>
</tr>
<tr>
<td>6J7</td>
<td>10/6</td>
</tr>
<tr>
<td>6K7</td>
<td>10/6</td>
</tr>
<tr>
<td>6L6</td>
<td>16/6</td>
</tr>
<tr>
<td>6L7</td>
<td>12/-</td>
</tr>
<tr>
<td>6N7</td>
<td>12/-</td>
</tr>
<tr>
<td>6Q7</td>
<td>11/-</td>
</tr>
<tr>
<td>704</td>
<td>13/-</td>
</tr>
<tr>
<td>6R7</td>
<td>12/-</td>
</tr>
<tr>
<td>6X5</td>
<td>13/-</td>
</tr>
<tr>
<td>25A6</td>
<td>12/-</td>
</tr>
<tr>
<td>25L6</td>
<td>12/-</td>
</tr>
<tr>
<td>252Z6</td>
<td>11/6</td>
</tr>
</tbody>
</table>

Only The Best—RAYTHEON and RADIOTRON

SEND id. STAMP FOR POSTAGE ON FREE VALVE CHART.
PHILIPS VALVES. (G)

METAL CLAD SUPER SERIES, 4-volt A.C. "P" base.

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>AH1 — Hexode</td>
<td>13/6</td>
</tr>
<tr>
<td>AE2 — Duo Diode</td>
<td>9/6</td>
</tr>
<tr>
<td>AK1 — OCTODE Frequency Changer</td>
<td>13/6</td>
</tr>
<tr>
<td>E443H — Power Pentode (direct heating)</td>
<td>12/6</td>
</tr>
<tr>
<td>E444 — HF Pentode</td>
<td>12/6</td>
</tr>
<tr>
<td>E446 — HF Pentode (variable Mu)</td>
<td>12/6</td>
</tr>
<tr>
<td>E447 — HF Pentode (variable Mu)</td>
<td>12/6</td>
</tr>
<tr>
<td>E444 — Duo Diode Triode</td>
<td>9/6</td>
</tr>
<tr>
<td>E443 — Power Pentode</td>
<td>10/6</td>
</tr>
<tr>
<td>E451 — Full Wave Rectifier</td>
<td>10/6</td>
</tr>
<tr>
<td>EM1 — Full Wave Rectifier</td>
<td>9/6</td>
</tr>
</tbody>
</table>

See separate list for prices of American types.

PHILIPS METAL CLAD SUPER SERIES, 200 MA. AC-DC. "P" base.

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>CB1 — Duo Diode</td>
<td>9/6</td>
</tr>
<tr>
<td>CB2 — Duo Diode Triode</td>
<td>9/6</td>
</tr>
<tr>
<td>CB6C — Duo Diode Triode</td>
<td>12/6</td>
</tr>
<tr>
<td>CC2 — Triode Oscillator, Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>CF3 — HF Pentode (variable Mu)</td>
<td>12/6</td>
</tr>
<tr>
<td>CF7 — HF Pentode</td>
<td>12/6</td>
</tr>
<tr>
<td>CK1 — OCTODE Frequency Changer</td>
<td>12/6</td>
</tr>
<tr>
<td>CL2 — Power Pentode</td>
<td>12/6</td>
</tr>
<tr>
<td>CL1 — Barreter (resistance lamp)</td>
<td>11/6</td>
</tr>
<tr>
<td>CY2 — Full Wave Rectifier</td>
<td>9/6</td>
</tr>
<tr>
<td>F11 — Full Wave Rectifier</td>
<td>9/6</td>
</tr>
</tbody>
</table>

2-volt Battery.

(K) With universal "P" base.

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBC1 — Duo Diode Triode</td>
<td>12/6</td>
</tr>
<tr>
<td>GC3 — Triode Amplifier, Driver</td>
<td>16/6</td>
</tr>
<tr>
<td>KP3 — HF Pentode (variable Mu)</td>
<td>12/6</td>
</tr>
<tr>
<td>KP4 — HF Pentode</td>
<td>12/6</td>
</tr>
<tr>
<td>K31 — OCTODE Frequency Changer</td>
<td>13/6</td>
</tr>
<tr>
<td>KDD1 — Twin Triode Output (Class B)</td>
<td>12/6</td>
</tr>
<tr>
<td>KL4 — Power Pentode</td>
<td>12/6</td>
</tr>
</tbody>
</table>

(With standard American base.)

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>KBC1 — Duo Diode Triode</td>
<td>12/6</td>
</tr>
<tr>
<td>KP1 — HF Pentode</td>
<td>12/6</td>
</tr>
<tr>
<td>KP2 — HF Pentode (variable Mu)</td>
<td>12/6</td>
</tr>
<tr>
<td>K52 — OCTODE Frequency Changer</td>
<td>13/6</td>
</tr>
<tr>
<td>B17 — Triode Amplifier, Driver</td>
<td>9/6</td>
</tr>
<tr>
<td>B20 — Twin Triode (Class B)</td>
<td>12/6</td>
</tr>
<tr>
<td>C245N — Power Pentode</td>
<td>14/6</td>
</tr>
<tr>
<td>B262 — S/G RF Amplifier Detector</td>
<td>11/6</td>
</tr>
<tr>
<td>6262 — S/G</td>
<td>11/6</td>
</tr>
<tr>
<td>B217 — Triode Amplifier Driver</td>
<td>9/6</td>
</tr>
<tr>
<td>B240 — Twin Triode (Class B)</td>
<td>12/6</td>
</tr>
<tr>
<td>C245N — Power Pentode</td>
<td>14/6</td>
</tr>
<tr>
<td>B262 — S/G RF Amplifier Detector</td>
<td>11/6</td>
</tr>
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</table>

PHILIPS METAL CLAD SUPER SERIES.

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>E443 — Power Pentode</td>
<td>13/6</td>
</tr>
<tr>
<td>C443 — Power Triode</td>
<td>15/6</td>
</tr>
<tr>
<td>E406 — Power Triode</td>
<td>14/6</td>
</tr>
<tr>
<td>E408N — High Power Triode</td>
<td>27/6</td>
</tr>
<tr>
<td>E409 — Triode Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>E415 — Triode Detector Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>E428 — Special Detector</td>
<td>12/6</td>
</tr>
<tr>
<td>E436 — High Gain Detector</td>
<td>12/6</td>
</tr>
<tr>
<td>E443 — 3/G Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>E445 — 3/G Triode Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>E448 — Special High Gain Detector</td>
<td>12/6</td>
</tr>
<tr>
<td>E457 — Power Pentode</td>
<td>16/6</td>
</tr>
<tr>
<td>E457 — 3/G Amplifier</td>
<td>15/6</td>
</tr>
<tr>
<td>E445 — 3/G Amplifier (variable Mu)</td>
<td>12/6</td>
</tr>
<tr>
<td>E490 — Special High Gain Detector</td>
<td>12/6</td>
</tr>
<tr>
<td>E499 — Power Pentode</td>
<td>16/6</td>
</tr>
<tr>
<td>FZ1 — Full Wave Rectifier</td>
<td>11/6</td>
</tr>
</tbody>
</table>

STANDARD DC TYPES.

(The first figure represents filament volts.

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>A409 — General Purpose Triode</td>
<td>12/6</td>
</tr>
<tr>
<td>A415 — Triode Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>A442 — S/G Amplifier</td>
<td>15/6</td>
</tr>
<tr>
<td>A607 — General Purpose Triode</td>
<td>15/6</td>
</tr>
<tr>
<td>A615 — Triode Detector Amplifier</td>
<td>12/6</td>
</tr>
<tr>
<td>B405 — Power Triode</td>
<td>13/6</td>
</tr>
<tr>
<td>B406 — Power Triode</td>
<td>13/6</td>
</tr>
<tr>
<td>B409 — Power Triode</td>
<td>13/6</td>
</tr>
<tr>
<td>B605 — Power Triode</td>
<td>13/6</td>
</tr>
<tr>
<td>CE85 — (171S) Power Triode</td>
<td>8/6</td>
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</tbody>
</table>

STANDARD RECTIFIERS.

(For Philips Apparatus.)

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>325 — For 325 Charger</td>
<td>15/6</td>
</tr>
<tr>
<td>373 — For 373 Eliminator</td>
<td>15/6</td>
</tr>
<tr>
<td>450 — For 450 and 453 Chargers</td>
<td>18/6</td>
</tr>
<tr>
<td>506 — For 506, 450, 4000 Eliminators</td>
<td>11/6</td>
</tr>
<tr>
<td>1002 — For 1002 Charger</td>
<td>9/6</td>
</tr>
<tr>
<td>1010 — For 1000 and 1013 Eliminators</td>
<td>9/6</td>
</tr>
<tr>
<td>1018 — For 1018 Triode Charger</td>
<td>15/6</td>
</tr>
<tr>
<td>1561 — Full Wave Rectifier</td>
<td>10/6</td>
</tr>
<tr>
<td>3006 — For 3006 Eliminators</td>
<td>7/6</td>
</tr>
</tbody>
</table>

RESISTANCE LAMPS.

(For Philips Apparatus.)

<table>
<thead>
<tr>
<th>Valves</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>329 — For 329 Charger</td>
<td>6/6</td>
</tr>
<tr>
<td>452 — For 452 Charger</td>
<td>6/6</td>
</tr>
<tr>
<td>1003 — For 1003 Charger</td>
<td>8/6</td>
</tr>
<tr>
<td>1002 — For 1002 Charger</td>
<td>9/6</td>
</tr>
<tr>
<td>1457 — For 1457 Charger</td>
<td>6/6</td>
</tr>
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</table>

Technical information on any of the above valves will be supplied on application.

DSRM VALVES. (K)

2-VOLT BATTERY RANGE.

<table>
<thead>
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<th>Valves</th>
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<tbody>
<tr>
<td>S28</td>
<td>17/6</td>
</tr>
<tr>
<td>S24</td>
<td>15/6</td>
</tr>
<tr>
<td>V54</td>
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<td>VP21</td>
<td>15/6</td>
</tr>
<tr>
<td>X34</td>
<td>10/6</td>
</tr>
<tr>
<td>HL2</td>
<td>10/6</td>
</tr>
<tr>
<td>HL210</td>
<td>13/9</td>
</tr>
</tbody>
</table>

*KT2 replaces PTZ.

MANUFACTURERS' VALVES. (K)

At times it is possible for us to buy surplus manufacturers' stocks of valves, etc., at a big saving. Every valve is guaranteed brand new and to give a first-class performance. Makes at time of writing in stock are: Sonotroin, Hytron, Sylvania.

<table>
<thead>
<tr>
<th>Each</th>
<th>Each</th>
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</thead>
<tbody>
<tr>
<td>201A</td>
<td>4/6</td>
</tr>
<tr>
<td>24 (224)</td>
<td>4/6</td>
</tr>
<tr>
<td>26 (230)</td>
<td>4/6</td>
</tr>
<tr>
<td>27 (227)</td>
<td>4/6</td>
</tr>
<tr>
<td>30 (230)</td>
<td>4/6</td>
</tr>
<tr>
<td>31 (231)</td>
<td>4/6</td>
</tr>
<tr>
<td>32 (232)</td>
<td>4/6</td>
</tr>
<tr>
<td>35 (255)</td>
<td>4/6</td>
</tr>
<tr>
<td>46 (245)</td>
<td>4/6</td>
</tr>
<tr>
<td>59</td>
<td>9/4</td>
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</table>

H.M.V. VALVES. (K)

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
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</thead>
<tbody>
<tr>
<td>MPT4 — Plain and Cat.</td>
<td>12/6</td>
</tr>
<tr>
<td>MS1B — Plain, Metal and Cat.</td>
<td>14/6</td>
</tr>
<tr>
<td>U12 — Plain</td>
<td>8/6</td>
</tr>
<tr>
<td>MH14 — Plain, Metal, Cat.</td>
<td>13/6</td>
</tr>
<tr>
<td>VMS1B — Plain, Metal, Cat.</td>
<td>12/6</td>
</tr>
<tr>
<td>MS14 — Plain, Metal</td>
<td>16/6</td>
</tr>
<tr>
<td>MH14 — Plain</td>
<td>12/6</td>
</tr>
<tr>
<td>PX4 — Plain</td>
<td>12/6</td>
</tr>
<tr>
<td>S23 — Plain, Metal</td>
<td>12/6</td>
</tr>
<tr>
<td>HS1 — Metal</td>
<td>7/6</td>
</tr>
<tr>
<td>PT2 — Plain</td>
<td>10/6</td>
</tr>
<tr>
<td>VS2 — Metal</td>
<td>16/6</td>
</tr>
<tr>
<td>MHD1 — Metal</td>
<td>12/6</td>
</tr>
<tr>
<td>MU2 — Plain</td>
<td>11/6</td>
</tr>
<tr>
<td>MU4 — Plain</td>
<td>12/6</td>
</tr>
<tr>
<td>MX10 — Plain, Metal</td>
<td>14/6</td>
</tr>
<tr>
<td>VDSB — Metal</td>
<td>16/6</td>
</tr>
<tr>
<td>VDS — Metal</td>
<td>15/6</td>
</tr>
<tr>
<td>DI1 — Metal</td>
<td>11/6</td>
</tr>
<tr>
<td>DI1F — Metal</td>
<td>15/6</td>
</tr>
<tr>
<td>DSB — Plain, Metal</td>
<td>15/6</td>
</tr>
<tr>
<td>XR1 — Metal</td>
<td>17/6</td>
</tr>
<tr>
<td>N11 — Plain</td>
<td>11/6</td>
</tr>
<tr>
<td>NST1 — Metal</td>
<td>14/6</td>
</tr>
<tr>
<td>VMP1K — Metal</td>
<td>12/6</td>
</tr>
<tr>
<td>VMS1 — Plain, Metal</td>
<td>11/6</td>
</tr>
</tbody>
</table>

LISSEN VALVES. (K)

Full technical details on request. These valves can be supplied with English type bases only.

<table>
<thead>
<tr>
<th>Type</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Each</td>
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</tr>
<tr>
<td>6H2</td>
<td>8/6</td>
</tr>
<tr>
<td>6L2</td>
<td>8/6</td>
</tr>
<tr>
<td>L2</td>
<td>8/6</td>
</tr>
<tr>
<td>SG20</td>
<td>19/6</td>
</tr>
<tr>
<td>SG215</td>
<td>19/6</td>
</tr>
<tr>
<td>PT2A</td>
<td>19/6</td>
</tr>
</tbody>
</table>

VALVE ORDERS.

When ordering Philips or Mullard valves it is important to make sure you get the right type of base. State type of base you require on your order. The diagrams below will be helpful to you.
A New T.R.F. Tuning Unit

A "WIRELESS WEEKLY" CIRCUIT.

This Tuner has been designed for the music lover who has an Amplifier for his favourite records. 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 swing amplifier described elsewhere in this issue.

The main justification for the T.R.F. tuner at all, as against the more popular superhet, is in order to preserve a better frequency characteristic, and to avoid undue -hand cutting as far as possible. To do this, without going to special superhet intermediiates which are expensive and hard to obtain, a straight T.R.F. tuner is often used.

The one point which might be said against a T.R.F. tuner is that selectivity is not of a very high order. In other words, although at one a time a receiver which had two R.F. stages was considered a satisfactory "intermediate" receiver, it is not now considered valuable in the main except as a local station set. We are apt to forget that when the T.R.F. set was in vogue, about 5 years ago, we had nothing like the number of stations on the air, now were those which were in operation anything like as hard to separate. They were spaced farther apart, and were of very much lower power. It is not the type of set that has changed—i.e., in fact, better T.R.F. sets are now possible than those built in 1923. It is the broadcasting conditions which have ruled that the T.R.F. set is no longer a sufficiently selective type for general use.

However, a clear statement of the selectivity, position of such a set is indicated in the interest of all. In our experience, a tuner such as that detailed here is selective enough to separate all the local stations in Wellington, and also to tune in several other V.A. stations where there is a chance of separating them. It has very good sensitivity, but should not be used within a mile or two of a local transmitter unless the operator realises that by so doing, some of the local stations must inevitably suffer from interference. Provided the locality is reasonably distant from any of the strong local stations, the operator should be able to receive all clear of each other, and under more difficult conditions possibly lose one of them through interference.

Now this isn't so bad when we remember that the man who wants very high quality results, and has an amplifier capable of giving him the same, isn't much concerned with any but local stations. It can be reasonably assumed that distant stations are not very useful when high quality is concerned. One of the first essentials for a high quality programme is plenty of signal strength—strong enough to over-ride any average static, etc., which is always present more or less on distant stations. In fact, it might be that only one or two of the local stations are really strong enough to satisfy the exacting requirements of the seeker after perfect radio reception. This being realised, there is no great deprigation in building a tuner only for local programmes.

When using an amplifier capable of high quality, and a first-rate speaker, there is a very definite difference noticeable when changing from a superhet, tuner of the average type to a T.R.F. tuner as described here. It is in the high-note response that the difference lies. It is a difference, too, which is not fully realised immediately, although no one can fail to hear the difference after a few minutes listening. It is something which the ear must be more or less adjusted to hearing—the better high note response shows itself up in the extra clarity of the announcer's voice—the extra sense of realism that comes into the voice of a singer, and the "wide-range" effect when a good dance orchestra is playing.

Failing the evolution of a really satisfactory form of variable-selectivity intermediate, which will allow the same quality to be obtained from a superhet, we always favour the use of a tuner of this type with a good amplifier, and have built more than one of them for use with such amplifiers.

CONNECTING THE TUNER.

The output of the tuner, as will be seen, is from a single terminal mounted in the front left-hand corner of the chassis. In this position it is fixed, up against the input terminal of the amplifier, which means that the important terminals may be kept as short as possible. In a tuner described some time ago, the change-over switch and terminals were mounted on the tuner chassis. The increase in length of the leads, even by those few inches, was enough in some cases to set up an induction hum—hence our suggestion in this instance to mount the change-over switch on the front panel of the chassis, if one is used, or on the amplifier itself, if no panel is available. This will keep all leads in this part of the set short enough to make hum pick-up almost impossible.

Of the switch are connected together, and these run to the present input terminal of the amplifier to which has been connected the "hot" side of the pick-up. The "hot" pick-up lead which was connected to it is now connected to one of the vacant points of the switch. To the other vacant point is connected the output from the tuner.

PARTS LIST.

1 1.05 mitts condensers.
1 2.0002 mica condensers.
1 2.0000 ohm resistor.
1 3- gang coil condenser.
1 600 ohm potentiometer.
1 6510 ohm resistor.
1 1.125 m e g . resistor (see text).}

K) Complete Kit of Parts, as listed above. Cat. No. EK4 £4/12/-
K) Ditto without Valves—Cat. No. EK6 £3/10/-
MORSE CODE OSCILLATOR

The Morse Code is one of the first things to learn if you have ambitions to become a radio operator or amateur transmitter. 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 code oscillator is illustrated in both wiring schematic diagrams.

CONSTRUCTION.

Mount the transformer, valve socket, condenser, and rheostat on the 6 x 6 recessed block, screw in the terminals for the battery, phones, etc., and wire the oscillator in accordance with the diagrams. Varying the condenser will alter the pitch of the notes. An oscillator of this nature is the best way to learn the code, as it gives you the same note as you will hear when you start deciphering real signals.

MORSE CODE OSCILLATOR CIRCUIT.

**Here is a circuit of the Air-Cell Pentagrid, a 4-valve broadcast battery set. This is remarkable for its low battery consumption. The total drain from the "A" battery is only .3 of an amp, and the set is built for use from an Air-Cell which will give about 3,000 hours' life. The drain from the "B" battery is also very low. Full details of the set were given in the 'Wireless Weekly,' October 8th, 1937. A copy of this issue will be given with each Kit Set.**

R.C.S. Coil Kit for Air-Cell Pentagrid Four.
Cat. No. EK-04 .......................... 44/-

Complete Kit of Parts for R.C.S. Air-Cell Pentagrid Four, without valves, battery, or speaker.
Cat. No. EK14 .......................... 56/10/-

BRITISH

MONARCH

(G)

ELECTRICAL APPLIANCES

A Crowning Achievement in Quality and Value!

TOASTER, (G)

One you will be proud to own. Finished in highly polished nickel plate. Has a turnover feature. Just lower the side and the bread is automatically turned over. Element designed so that the bread toasts quickly and evenly. Supplied complete with cord, etc, ready for use.

Cat. No. EE750 .......................... 19/6

LAMPHOUSE GUARANTEE.

If for any reason whatever you are not fully satisfied with any goods purchased from the LAMPHOUSE, return them within 7 days and we will refund your money without question.

Mail All Orders to the Electric Lamp House
27 MANNERS ST.
WELLINGTON
ECONOMY THREE PARTS LIST.

1 Economy Three Aerial Coil.
1 23-plate Reaction Condenser.
1 30038 Tuning Condenser.
1 RF Choke.
1 60 mA Power Transformer.
1 2 Mfd. Electrolytic Condenser.
1 Valve Sockets.
1 Valve Socket for Speaker.
1 600 ohm. W.W. Resistor.
1 80,000 ohm. 1-watt Resistor.
1 6 mfd. 1-watt Resistor.
1 20035 Condenser.
1 15,000 ohm. Voltage Divider.
1 Chassis.
1 Dial.
1 Valve Shield.
3 Valves, 80, 68, 2AS.
Sundries, including wiring wires, lugs, bolts and nuts, and sundry hardware.
1 1500 ohm. Speaker.

Complete KIT OF PARTS, including valves and speaker. £4/19/6

NOTE—Only complete sets of parts as above will be supplied at this special price.

UNDER-CRASHIS WIRING DIAGRAM
is on page 38.

The Economy Three has been designed for constructors who want a set for local station reception. There are plenty of listeners who are satisfied with programmes from their several local stations, and to whom DX means nothing—this set will suit these folk admirably. The tone is excellent—quite as good as many five and six valves commercial sets; the construction is simple and the upkeep low. Although this set is described as a local receiver, constructors in the country away from the powerful broadcast stations should have no difficulty in logging all the main VA stations and several Australs.

The layout and construction follow usual practice, and from the diagrams given here no difficulty should be experienced in completing the set. There are no other instructions available than those given in this Annual, so if you do not think you can build the set from the diagrams do not attempt it without help.

SIMPLE TESTING.

Probably the simplest of all testing instruments. Easily made. Test probes can be fitted to the leads A and B.

With it anyone can conduct numerous tests. In use this simple device forms an excellent tester of contacts and terminal connections, and of low resistance metallic paths such as are provided by loudspeaker connecting cords, battery leads, and so on.
All Wave Double
"Forty Nine"

This set is the second of the "49 Family" which we have described, the first, "The Hiker's One," being put on the market in 1937. It met with amazing success and is still one of the "best sellers." This two-valve all-wave model is a little more advanced, and, with plug-in coils, covers from 20 to 500 meters. On test, no difficulty was experienced in receiving Davenport, Zeeland, Paris, Sydney, and Melbourne on short wave, as well as amateurs on the 80-meter band at good headphone strength, whilst the "locals," on broadcast, successfully operated a speaker.

**CONSTRUCTION.**
Commence by mounting all the components on the chassis and panel as shown in the illustrations. The audio transformer is mounted so that the correct terminus come opposite the holes marked C1, C2, HT and P on the under-chassis diagram. Do not as yet attach the panel to the chassis, but you can solder the leads to C1, C2 and C3, leaving them long enough to connect to their respective destinations under the chassis. Also wire the moving plates of C3 (which are insulated from the panel by means of two of the insulating washers provided) to the fixed plates of C2. The moving plates of C2 and C3 are also connected, the lead from these being left long enough to pass through the chassis to earth. The aerial series condenser should have the outside rotor plate bent in a little, so that when the plates are fully meshed it will touch the stator plate, thus shorting itself out. Turning now to the chassis, wire up the components as shown in the diagrams. Always try to do your wiring from the schematic diagram, not the under-chassis diagram. Note particularly the connections to the coil socket. If 2 volt accumulators is to be used in place of the two only 1½ dry cells for the "A" supply the A negative resistor (5 ohms) will not be required, the A lead being taken direct to the valve socket. If you are unable to obtain a 5 ohm resistor, you can use a centre-tapped 10 ohm one, connections being taken from one end and the centre tap. You can now attach the panel and phone jack, which must be insulated from the chassis with two insulating washers. As you are wiring in the battery cable, make note of the colours and their battery connections, such as "Red A," etc.

**THE COILS.**
These are close wound on 1½in. former with ½in. spacings between the grid and reaction coils. All coils must be wound in a clockwise direction and connected to the correct base pins. See Coil Connection Illustration. Gauge 26DGC is used for the short-wave coils and gauge 32 or 34 enamel for the broadcast coils. If heavier wire is used for the BC coils difficulty will be experienced in getting all the turns on the former. On the BC coils, the reaction coil wound over the grid coil at the bottom end, being separated by a piece of paper wrapped round the grid coil and gummed in position. The large reaction coils are necessary because of the low "A" supply.

**COIL DETAILS.**

<table>
<thead>
<tr>
<th>Band</th>
<th>Grid Coil</th>
<th>Reaction Coil</th>
</tr>
</thead>
<tbody>
<tr>
<td>20 meter</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>40 meter</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>60 meter</td>
<td>22</td>
<td>34</td>
</tr>
<tr>
<td>160 meter</td>
<td>45</td>
<td>21</td>
</tr>
<tr>
<td>165 to 200 meters</td>
<td>155</td>
<td>36</td>
</tr>
<tr>
<td>210 to 350 meters</td>
<td>210</td>
<td>35</td>
</tr>
</tbody>
</table>

**OPERATION.**
Having connected up the batteries, aerial and earth, plug in the phones and switch on the set. The reaction condenser (C3) should only be large enough to produce a faint rushing noise in the phones. The aerial condenser (C1) is used on the broadcast coils to obtain greater selectivity, and the short wave coils to remove blind spots and ensure smooth oscillation over all the wave-lengths. If the set oscillates uncontrollably, it will be necessary to remove
some of the turns, one at a time, from the reaction coil. On the short-wave coils, only remove turns if moving the reaction coil further away from the grid coils does not produce the desired result. In tuning, turn the tuning condenser (C2) slowly and listen for station whistles. When a station is located, the whistle will change its note as the receiver is tuned over and past the station. When such a whistle is heard, tune till it is lowest in note and decrease the reaction condenser. The whistle will either get a little higher or lower, but re-tune as reaction is being adjusted until oscillation just stops. The station will now be heard clearly on music or speech. Do not allow the set to remain oscillating on a phone station. This will cause trouble with your neighbours. If the set goes out of oscillation with a loud howl, reducing the "B" voltage will remedy the complaint. When the "feast" of the tuning and reaction coils is found, the aerial coupling condenser should be adjusted. This will probably require further adjustments to both G1 and G3. The smaller the capacity left in G1, the better local stations can be separated, but with a slight loss in signal strength. Should oscillation not be strong enough, either increase the turns on the reaction coil or, in the case of short-wave coils, move it nearer the grid coil. Remember, the valve is most sensitive when it is just not oscillating for phone and when it is just tuning.

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**PARTS REQUIRED.**
1 Midget 13-plate Condenser (C1)
2 Midget 23-plate Condensers (C2 and G3)
1 Varnier Oba
2 Knobs
1 Collar Choke
1 Choke
1 Audio Transformer
1 On-off Switch
1 2-meg. Resistor
1 16 ohm G.T. Resistor
1 2001 Macon Condenser
1 25 Tubular Condenser
1 6-pin Valve Socket
2 E-pin Valve Socket
1 Phone Jack
1 Phone Plug
2 No. 43 Tubes
Renewals, including terminals, bushing washers, bush, battery cable, bolts, connecting and coil wire

**Complete Kit of Parts, as above, without valves**
Cat. No. EK25  
70/-

**EXTRAS.**
1 16-volt C Batteries ....... 3/3
1 pair Phones .......... 7/6, 15/ or 17/6
2 14-volt Dry Cells ...... 7/6 each
How to Build

CrystaL SETS

("Wireless Weekly")

In every home, whether a "real" radio set is installed or not, there is room for a crystal set or two. The boy can listen to a thriller on the crystal set without disturbing the household, his sister can use one under her pillow so that she is crooned to sleep by Bing Crosby. You can easily build such a set for yourself at the cost of a few shillings. Here are the instructions:

The simplest of all radio receivers is the crystal set. In the early days of radio crystal sets were particularly popular, mainly because they were so simple, and also because, in the days when radio was so expensive, the crystal set could be built for less money.

The crystal set is quite a good one for the small boy to build as his first radio set. With it he will be able to get a practical demonstration of many fundamental radio principles, and, at the same time, have a good deal of fun.

It is not good policy to use a crystal set farther than about 30 miles from a strong station. There is no amplification in such a set, and the only energy available is that picked up by the aerial itself. At 15 miles the energy, as a rule, is getting pretty small for the average station, and conditions would therefore tend to become difficult. However, by the use of good high aerials, country people have often achieved some most remarkable reception over long distances with crystal receivers. Such cases are the exception.

AERIAL AND EARTH.

The aerial and earth should be something better than a length of wire round the picture rail. An out-of-date aerial should always be used with a crystal set for best results. Do not make it too long in case interference trouble becomes too annoying—the longer the aerial the less selective it tends to make the set. We would suggest about 6ft. to 8ft. long and as high as possible.

PARTS LIST.
1. Baseboard, wooden, about 6in. x 6in. x 3in.
2. Bakelite front panel. 6in. x 6in. x 3in.
3. Tuning Condenser. 00055 or 00056 mfd.
4. Knob for same.
5. Crystal Detector.
6. Coil Former.
7. 50 feet of 24 gauge d.c. wire.
8. 10 feet of hook-up wire.
10. 1 pair headphones.

THE LAMPHOUSE ANNUAL—1938

The earth may be a kerosene tin buried in the ground or one could use a nearby water-pipe and an earthing clip for it. See that the aerial is well insulated to prevent losses in pick-up.

There is very little to the construction of the receiver itself. The main component to worry about is the tuning coil, and there is very little worry to it. The gauge and type of wire we suggest is 24 gauge double-cotton covered. Actually the wire is not a very important factor within limits, and may be anything between gauges 22 and 26, either d.c.c. enamelled, or silk-covered.

The total number of turns to wind on is 80. If a couple of holes are placed at the beginning and end of the winding, and the ends of the wire threaded through them, you will be able to anchor them quite firmly, and thus prevent the coil from unravelling when finished.

When you have wound on 15 of the turns twist the wire into tight little loop to make a tapping, and continue with the remainder of the turns. Make another such tap after 30 turns have been wound, and a third tap at 45 turns. When the coil is finished the insulation is scraped from these loops so that the aerial clip can make contact with the bare wire underneath.

The schematic circuit diagram.

LeaVe about 6 inches of wire at the ends of the coil for connecting it into the circuit.

The base-board as shown in our picture can be made of wood. The front panel may also be of wood or bakelite or other insulating material.

The coil may be mounted to the base-board by lying it on its side and tapping a couple of tacks through the cardboard into the wood to keep it in place.

Immediately in front of the coil is the tuning condenser. A condenser of .0005 would probably be suitable, although it would not have such a wide tuning range as the .0005 type.

WIRING UP.

In wiring up the set, the earth terminal of the set is connected to the terminal of the condenser which connects with the moving plates. The nearest end of the tuning coil is also connected to the earth terminal. The other end of the coil is connected to the fixed plates of the condenser. The 30th turn tapping, which is actually the centre of the coil, is connected to the cup containing the crystal.

The other terminal of the crystal detector unit is connected to one of the headphone terminals. The other headphone terminal is connected to the earth terminal of the moving condenser plates (which is really the same thing). A wire connected to the aerial terminal has a clip fastened to its free end, so that it can be connected to either of the two vacant tappings.

This completes the construction of the receiver.

(5) COMPLETE KIT OF PARTS
Cat. No. EK30 13/-

"Phones extra.

OPERATION.

To operate the receiver, the aerial clip is fixed to the tapping furthest from the earthed end of the coil. Set the dial or pointer about the centre of the scale where you are pretty certain to be roughly tuned to a station. Now carefully adjust the crystal, moving the condenser control to and fro on each adjustment until you can tune in a station. Tune in a good strong signal and adjust the cat whisker until you get the best results.

Headphones.

The limited application and low cost of the crystal set do not encourage one to spend much money on the headphones, and there are quite cheap "phones available which will do the job very well. However, the better the "phones, naturally, the better the reception will be in tone and volume. Therefore, if you have the opportunity to get a good pair of "phones, by all means do so. Either 2000 ohms, or 4000 ohms. "Phones would be suitable, but 2000 ohms should be regarded as the lowest possible rating.

TWO MORE CRYSTAL SET CIRCUITS.
Concerning Joining Wires

(Wireless Joints.

The subject of wire joints and their making is not perhaps as important as it was a few years ago, when radio soldering operations were much more extensively carried out than they are at present. And consequently, the present-day constructor has to some extent lost the knack—for a knock it is and nothing else—of making wire joints in a manner which combines neatness with strength. Of course, as far as actual electrical efficiency goes, the soldered joint is infinitely better than any of the older split, twisted or interwoven joints, no matter how neatly and correctly they may have been made. But the fact remains that a soldered joint is not always a strong one, and that, in many instances, it is very desirable to splice up two pieces of wire which have to be connected together before soldering them.

It is, therefore, with the aim of giving the constructor a little extra information on the subject of wire-joint making that we have drawn up the information contained in this article. Let us deal with the joints which are generally made in the aerial and earth systems of a receiving installation, for it is in the construction of those systems that a good method of joining two or more wires proves the most effective. With stranded aerial wires of the usual 7/22 variety the effecting of a good strong joint is comparatively simple, as will be evident from a glance at the diagrams Fig. 1 (a) and (b). Here we see the making of a downlead joint from the aerial wire. The strands of wire are first separated and cleaned, after which they are smeared with a little soldering flux, and finally interlaced in the manner shown in the diagram. The joint should then be tightened with the aid of a pair of pliers, and finally the whole area of the joint should be fairly heavily, but at the same time neatly soldered. Such a joint in an aerial system will certainly last for the lifetime of the aerial, and it will be electrically efficient.

If single wire is used for any portion of the aerial earth system of the receiving installation, any necessary joint in it may be affected in the manner shown in Fig. 5. Here the two wires are loosely twisted together for a few turns, and then the last inch or so of free wire is tightly twisted round the second wire. It is, therefore, with the aim of giving the constructor a little extra information on the subject of wire-joint making that we have drawn up the information contained in this article. Let us deal with the joints which are generally made in the aerial and earth systems of a receiving installation, for it is in the construction of those systems that a good method of joining two or more wires proves the most effective. With stranded aerial wires of the usual 7/22 variety the effecting of a good strong joint is comparatively simple, as will be evident from a glance at the diagrams Fig. 1 (a) and (b). Here we see the making of a downlead joint from the aerial wire. The strands of wire are first separated and cleaned, after which they are smeared with a little soldering flux, and finally interlaced in the manner shown in the diagram. The joint should then be tightened with the aid of a pair of pliers, and finally the whole area of the joint should be fairly heavily, but at the same time neatly soldered. Such a joint in an aerial system will certainly last for the lifetime of the aerial, and it will be electrically efficient.

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A good method of making an effective temporary connection of an earth lead to a water-pipe or metal rod buried in the earth is the one illustrated at Fig. 6. Here again the construction of the joint is self-explanatory, and therefore it does not require further elaboration. It should be borne in mind, however, that the majority of earth connections rapidly corrode, and, therefore, if they are required for permanent use, the soldering iron must invariably be brought into efficient operation.

Sometimes in experimental work it is necessary to make temporary connections between two nearby leads. Terminals may not always be convenient or even provided. Fig. 7 illustrates one way of doing this. Of course, whenever possible all joints and wire connections in a set should be well soldered. After all, the practice of soldering is not difficult, and for electrical efficiency a simply soldered joint must necessarily be far better than the most elaborately twisted-together joint.

One point which some amateur constructors might do well to note is the making of a soldered T-joint, which is illustrated in Fig. 8. In the top diagram we have the method by which a T-joint in square-sectioned wire or strip should not be made. Such a joint may, of course, be electrically efficient but nevertheless it does not possess much strength. T-joints of this nature are much better made in the way indicated in the lower diagram. Here it will be seen that the two wires or strips are soldered together for a distance of about half an inch.

A USEFUL JOIN T.

One of the most useful joints for strip conductors is that which is known as the "seamed" or "lapped" joint. The ends of the metal strips which are to be connected are turned over for a distance of about half an inch. These turnovers are then inserted into each other. The joint is then laid down upon a flat surface, and the area is subjected to a thorough hammering in order to compress the joined surfaces of the strip conductors together. Finally, the joint is finished off by means of the application of solder around the edges of the joined strips.

This method applies only to thin metal strips or sheets, of a thickness up to about a tenth of an inch. Thicker sheets than these usually have to be riveted and soldered in the ordinary manner. The above method, however, carefully applied, is most useful for joining strips or sheets of lead or tinfoil. It is also of use in the installation of copper-strip aerials. A lap joint, carefully made, is extremely strong, and if a little solder is really applied to the joined surfaces, a connection of the highest electrical efficiency will result.

**R.C.S. STANDARD**

**4-5 VALVE DUAL-WAVE "Cir-Kit"**

**S-VALVE DUAL-WAVE KIT FOR £7/15/-**

For those requiring an inexpensive yet extremely efficient five-valve dual-wave kit set, the R.C.S. "Cir-Kit" will fit the bill. The usual R.C.S. quality has been maintained throughout. Excellent reception of the main N.Z. and Australian stations is obtained on the broadcast band, while in favourable localities the Americans come in with a bang. On the short-wave band (15-50 metres), London, Paris, Berlin, etc., will be heard with good speaker strength. Each "Cir-Kit" is supplied with blue print circuit diagram and full size layout wire diagram. Constructors are recommended to purchase the complete "Cir-Kit," but the dual-wave box is available separately if desired.

**PRICES. (K)**

| Cat. No. EK356—Complete "Cir-Kit" set of parts | £7/15/- |
| Cat. No. EK357—As above, but with Raytheon Valves and Jensen Bin. Moving Coil Speaker | £10/12/6 |
| Cat. No. EC376—Dual-Wave Coil Box only | £10/12/6 |

**KIT, only £7/15/-**

HERE'S A USEFUL PAIR OF 7in. PLIERS, WITH INSULATED HANDLES—

| Cat. No. EU57 | 2/11 |
This Dual-wave Receiver is sensitive and selective and at the same time of good tonal quality. The cost of a Kit of Parts is comparatively cheap, and any experienced person will have no difficulty in building a set in his spare time. New-comers to Radio construction are not advised to attempt to build sets of this nature unless they can get someone to advise and help.

NOTE.—Kit of Parts do not contain any other instructions than those given in this article.

Here is a circuit for an effective receiver, a circuit suitable for either a straight broadcast receiver or for a dual-wave receiver. But it is also something more, it is a circuit which was designed from theoretical considerations, and then built from the simple components, and were then assembled on the kitchen table. Even as you, gentle reader, might assemble them on your kitchen table. Immediately on completion the loud-speaker was fitted and the chasis connected to the power, and it brought into action from near and far with tonal quality and power seldom attained in even the most expensive factory-built receivers. Without any adjustment at all, both short-wave and broadcast tuning was sufficiently accurate to allow truly excellent reception. The receiver was placed side by side with a commercial receiver costing at over £40, and in every way it was found that the sensitivity and selectivity of the kitchen-table model equalled that attained by the former.

Later, the alignment of the circuits was checked, and it was found that only a half turn on the padded adjustment was necessary to bring every circuit into proper resonance. Maybe, we happened to be very lucky, but that is the true story of how this receiver worked out in practice, and any handy man who follows our instructions should be able to get the same satisfaction.

THE POWER OUTPUT.

The normal power output of a 1A3 or 2A3 valve is only about 7 watts, which is about the same as the rating given for the pentodes usually found in commercial receivers. But don't let that rating fool you.

Actually by the time the distortion content amounts to the same as the distortion present when the pentode is delivering its rated power output, the 1A3 will be turning the loud-speaker inside out (and the neighbours will be throwing stones on your roof).

The Dual-wave Unit.
The dual-wave unit is supplied in a form which allows quick mounting in the base, which is supplied with all holes cut, and the switching is all built into the unit. In practice, this means that the dual-wave model is just as easy, in fact slightly easier to build than a straight broadcast set. Some readers appear to have gained an impression that a dual-wave receiver is more difficult to build than a broadcast set, but we proved to ourselves in no uncertain way that this is quite wrong. A good receiver is just as easy to build and not at all difficult to get into proper alignment.

CONSTRUCTION.

In the assembly of the original receiver we adopted the safe policy of trying to fit every component into position with as short a length of wiring as possible. This is a very good plan and is a sure way to satisfaction. Long wires running about the base are always a possible source of feed-back, and when attached to tuning circuits often result in capacity effects which upset the normal tuning of the circuit. The total amount of wire used in the original receiver did not amount to more than a few feet.

PARTS LIST.

1 Base, size 14 x 10 x 3.5
1 Power transformer, 385v. 80mA, 6.3 and 5v.
1 Filter Choke, 100ma.
1 Dual-wave coil kit, complete with gang, intermediate, pad and etc.
1 Suitable dial.
3 5-mfd. electrolytic filter condensers.
1 25-mfd. electrolytic tubular condensers.
1 2.000-mfd. mica condenser.
1 0.01-mfd. mica condenser.
1 0.1-mfd. mica condenser.
1 1.01-mfd. mica condenser.
1 2.5-mfd. tubular condensers.
1 2.5-mfd. tubular condensers.
1 450-ohm 100 m. wire-wound resistor.
1 2500 ohm, 25ma., wire-wound resistor.
1 15,000-ohm voltage divider.
1 1.0-meg. 1-watt resistors.
1 1.5-meg. 1-watt resistors.
1 5.0-meg. 1-watt resistors.
1 10.0-meg. 1-watt resistor.
1 25.000-meg. 1-watt resistor.
1 1000-ohm potentiometer.
1 1megohm potentiometer.
Sockets—2 4-pin, 2 small 7-pin, 2 6-pin.
Sundry hardware, screws, wire, mounting posts, etc.
Valves—2 6D4, 1 6AT, 1 6BT, 1 6A3, 1 8C.
Speaker—1000 ohms field coil, 2500-ohm load impedance.
second condenser, and these can be arranged so that the grid-leaf of the 6A3 mounts directly to this lead.

THE EARTH RETURNS.

A most important feature of the construction of a dual-wave chassis is to get efficient earth returns. Run earth wires from the earth lugs on the gang directly back to the coil unit in each case, and also connect up every earthing lug on the base with heavy-gauge copper wire, using several pieces, if necessary, and connecting around in loops, so that every earth return will be as short as possible. It will be found that the coil kit will have an earth wire running around it, and by-passes which are actually in the tuning circuit, such as those going to the F leads, are best connected direct to the earth wire.

The use of the metal of the base as the earth return is not sufficient, even if an aluminium base is used. Be sure to fit adequate earthing wires.

SHEILDING WIRES.

The shielding of wires is sometimes necessary to avoid hum troubles, but the shielding of wires to avoid instability is usually a complete failure, and we strongly advise the builder to avoid any shielding of wires. In the original receiver there was no shielding at all, and hum was only just detectable when the set was not tuned to any station and when the volume control was fully advanced. The last trace of this hum could be removed by shielding the three wires running to the volume control and the lead to the cap of the G17 valve, but this was not considered worth-while.

Shielding of the plate leads from the intermediate and such wires is sometimes carried out by the over-zealous set builder, but is nearly always a complete failure, resulting in the circuits failing to resonate on account of the capacity affected introduced. Avoid shielding wires.

THE AERIAL LEAD.

It is not good practice to feed the aerial lead in back through the wiring of the first detector and the intermediate amplifier, as it is a possible source of feedback trouble. It is far better to use a lead-in running straight through a hole drilled in the end of the base near to the aerial coil.

THE SENSITIVITY CONTROL.

A potentiometer with a resistance of 1000 ohms or 2500 ohms is used as a sensitivity or stability control. It controls the basic bias on the r.f. amplifier, pentagrid converter and intermediate amplifier, and is adjusted to give the best all-round performance of the set. The control is brought through to the back of the base and on completion of the set the whole resistance is left in circuit and then advanced slowly until the set bursts into oscillation or takes up. Then it is set back a fraction of a turn from this point and left at this setting until further notice. In practice it may be found that after a month's service or so the control may be re-adjusted to give maximum performance. The control results in maximum performance being obtained from every set, and ensures stability. It is also invaluable when the alignment process is being carried out.

ALIGNMENT.

To check over the alignment of the set the specially calibrated dial should be fitted so that the needle is on the end of the scale when the condenser is fully meshed. The screws clamping the dial to the shaft of the tuning condenser are then tightened.

The automatic volume control is then put out of action by soldering a short piece of wire to short-circuit the 0.5 mfd. condenser, which is attached to the F lead of the first intermediate transformer.

Then the set is tuned to any station down around 120's place on the dial, the volume being regulated by the sensitivity control to keep it at a whisper. Then a small screw-driver is applied to the trimmer in the top of the oscillator coil can, and a fraction of a turn tried to see which screw controls the broadcast tuning. Having found the right screw, it is adjusted whilst the dial is rotated until the station tuned comes in at its proper setting of the dial. The trimmers in the r.f. and aerial coils, are also adjusted to give best results, whilst the pointer is indicating the station on the dial. Then swing up to 2YA or other station at that end of the dial and apply the screw-driver to the padding adjusting screw, adjusting until best result is obtained from this station with the dial pointer in correct position.

Similar procedure is used to get correct alignment on the short-wave stations, and these will be found to come into alignment even easier than those for the broadcast, since there is no adjustment provided for a padding on the short-wave band.

Then the a.v.c. control is released by cutting the wire which short-circuits the a.v.c. voltage.

COMPLETE KIT OF PARTS FOR 1938 DUAL-WAVE SET (K)

Including
DE LUXE R.C.S. COIL KIT.
Cat. No. EK1 £13/13/6

FOR 1938 DUAL-WAVE SET (K)

Including
DE LUXE R.C.S. COIL KIT.
Cat. No. EK1 £13/13/6

R.C.S. Coil Kit for 1936 Dual S.W.

R.C.S. Coils with wave change switch and BC paddlers. Completely assembled on a rugged steel bracket.


USE R.C.S. COILS FOR BETTER RESULTS!
The Improved "Hiker's One"

The Hiker's One Set, which we described in our last Annual, proved to be one of the most popular of our Kit Sets. Hundreds of these little "Battery Miser" are in use every day all over New Zealand, in cities and bush countryside and in huts where power is not available, and the average battery receiver expensive to run.

It was originally described to run off torch cells, and the components used were such as to cut down the weight as much as possible. The set was then used by hikers, trampers, and others, who had carried their Hiker's One from one end of New Zealand to the other.

We recommend using the batteries listed for more satisfactory operation and long-lasting economy. In country districts (away from powerful "local" stations) reception of all the main New Zealand stations and many Australian stations can be had in the evenings, whilst your nearest Y.A. station will come in during daylight even in summer; and all this without the need of a large and expensive B battery.

CONSTRUCTION.

We advise you to purchase your kit complete—odd used parts DO NOT give efficient operation. First, screw the panel to the baseboard. Then slide the condenser up to the panel and mark the position for the holes 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 potentiometer. You can now mount these two, fastening to the panel by means of the nuts—then mount the two terminals for the phones, making sure that the one nearest the tuning condenser does not touch the condenser frame. This finishes the panel.

Next mount the seven fahenstock clips along the back of the baseboard by means of the 1/8 in. wood screws provided. Looking at the back of the set, mark these clips from left to right as follows: 6 1/4" = 9v, 7 1/4" = 11v, 8 1/4" = A-A = E-A. Screw down the valve socket behind the condenser, the two filament pins being at the back of the set. 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 of 100 turns, finishing off the same as the first winding. The third winding is put on in the same way as the second winding, and has 40 turns. You should now know about JIN. Former left below this winding, to which the coil tests are now attached. Do not mount the coil yet, but commence the wiring. All joints should be soldered and not with liquid solder or spirit 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 wiring list will be found helpful. All wires should be laid flat on the board and be short. Neatness here will count a lot.

Wire from A—clip to one side of switch on potentiometer. Wire from other side of switch on pot. to F—(next to A) on valve socket.

Wire from centre contact on pot. to nearest phone terminal. Wire from top of third winding on coil, also to centre contact on pot.

One side of 0.001 mica condenser to frame of tuning condenser (the coil should now be mounted) and the other side also to centre contact of pot. Wire other phone terminal to clip marked B—9v. Wire G on valve socket to clip marked B—9v. Wire from tuning condenser frame to remaining F terminal on valve socket and on to clip marked B. and on to A—+2v.

Connect bottom of first coil to A on valve socket. Bottom of third coil to A on valve socket. Wire from left lug on pot. also to A on valve socket.

Place resistor and remaining .001 condenser side by side, and twist together the pigtail of these and run the soldering iron along them. Connect one side of this combination to CAT 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 carefully 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 E respectively.

Clip A—goes to side terminal or wire on No. 6 cell.

Clip A—goes to the centre terminal on No. 5 cell.

Clip B—goes to the +9v on the C battery.

Clip B + 1v goes to the +7v on the C battery.

Clip B + 5v goes to the +10v on the C battery.

MUST be in the same direction and spaced JIN apart. Make a small hole JIN away from one end on the former and pass the wire through this twice, looping it the last time and leaving about JIN. to connect up to the A clip on the set 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 JIN. apart, and leaving about JIN. wire for connecting up; JIN 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 in the same way as the second winding, and has 40 turns. You should know about JIN. Former left below this winding, to which the coil tests are now attached. Do not mount the coil yet, but commence the wiring. All joints should be soldered and not with liquid solder or spirit 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 wiring list will be found helpful. All wires should be laid flat on the board and be short. Neatness here will count a lot.

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Clip A—goes to side terminal or wire on No. 6 cell.

Clip A—goes to the centre terminal on No. 5 cell.

Clip B—goes to the +9v on the C battery.

Clip B + 1v goes to the +7v on the C battery.

Clip B + 5v goes to the +10v on the C battery.
The Hiker's One

This is the circuit of the original "Hiker's One," which was described in the 1937 Lamphouse Annual. Anyone preferring to make up this circuit can still obtain Kits of Parts as follows:

- EK585—Complete Kit of Parts, without batteries 35/6
- EK585A—Complete Kit of Parts, with torch batteries 38/6
- EK585B—Complete Kit of Parts, with 9-volt battery and 1.5-volt dry cell 29/6

What Users Say!

Pokichio, Hawkes Bay, 21/10/37.

"I wish to congratulate you on designing a set like the 'Hiker's One.' I have built up the set and am more than pleased with its performance. I have logged 27 stations so far, 6 of these being Australian stations. I wish also to thank you for the prompt attention which my last order was given."—D.O.R.

11/9/37.

"The 'Hiker's One' purchased from you some time ago is going wonderful. It is a real little set."—E.W.W.

Te Kauwhata, 13/9/37.

"I think the 'Hiker's One' is a wonderful little set, as I have logged 17 Australian stations on it."—J.S.

Frankton Junction.

"Dear Sir,—I am very satisfied with the "Hiker's One" set I bought a few weeks ago, and can recommend it as a set well worth making. So far I have received fourteen N.Z. stations and four Australian stations. I have increased the plate voltage to 15 volts. The goods arrived in good condition."—D.F.

R.D., Te Kauwhata.

"I received the 'Hiker's One' on Friday and am more than pleased with it. I have an aerial about 50 feet long running above the ceiling and about two feet below an iron roof. So far I have received about twelve stations at good strength, including 1YA and 2YC. 1YA is too loud to listen to at full volume."—C.S.

Parts List Improved "Hiker's One.'

2 3651 Mics Fixed Condenser.
1 1-meg. Carbon Resistor.
1 0.0035 Tuning Condenser.
1 1-meg. Potentiometer, with switch.
7 Fenderstock Clips.
2 Terminals.
6 P-in baseboard Type Valve Socket.
1 1½-in. Coil Former.
1 or (approx.) gauge 22 Enamelled Copper Wire.
2 Coil Felt.
4 Type 40 Valve (Raytheon Radiotron).
9 6BA x ½in. R.H. Screws.
5 6BA x ½in. R.H. Screws.
2 6BA x ½in. Bolts with Nuts, R.H.
1 Coll Hook-up Wire.
1 Baseboard.
1 Panel.
2 Pointer Knobs.

Batteries.

1 1½v. Columbia, No. 6 Cell.
1 9v. C Battery.
3 Wander Plugs for above.

View From Another Angle.

The last three connections might 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 - 9v, the - ½v socket gives us + ½v, and the + ½v socket gives us + 9v. In operation it might be found necessary to increase B + ½v to 5v, or 4½v, to obtain satisfactory oscillation. If so is move the connection from + ½v socket to - 5 or - ½v sockets.

Operation.

Turn the volume control clockwise until a plop is heard in the phones. This plop indicates oscillation. Now rotate the tuning condenser until a whistle is heard. Turn back the volume control until the whistle just disappears. Slight retuning will now bring in your station. The set is most sensitive at the point just before oscillation begins, but stations are more easily located just past the oscillation point. If desired, the baseboard and panel could be stained—before assembling, of course. In conclusion, let us wish you 365 days and nights of good reception, with all the other Radio listeners on their "Hiker's One."
Hikers' "49" Amplifier.

Here is a one-tube amplifier which can be used to pep up the volume from your "Hiker's One" or Crystal Set. It uses the 49 type tube in a space-charge circuit operating on 15-volt "A" supply, and only 15 volts "B" supply, and will operate a small sensitive magnetic speaker if you have a "local" station close handy.

First of all, mount the components in position as shown in the (diagram) picture. The two input clips on the left of the baseboard are wired to the HT+ and P terminals on the transformer respectively. Another wire connects transformer terminal G to lug marked CAT on the valve base. Then connect terminal P or GB to filament (F) lug on valve base, which is next to CAT lug, and carry the wire on to A--clip on baseboard. A--clip goes to the other filament lug on valve socket. G lug goes to one speaker-clip on baseboard, and the wire then carries on to the clip marked B--15 volts. The last wire connects the other loudspeaker clip to valve lug marked A or P.

There are one or two points to note regarding the operation of this amplifier. When connecting up the "Hiker's One" make sure that the input terminal which is wired to HT+ or B--on the transformer connects to the phone terminal on the "Hiker's One" which is connected to the +P terminal on that set. The other input clip, which is wired to the P terminal on the transformer connects to the other phone terminal which you will notice is wired to the coil and centre contact on the potentiometer.

Connect A-- and A+ clips to A-- and A+ clips on the Hiker's One. Let us remind you here that it will be necessary to disconnect the A-- before connecting up the "Hiker's One". Then connect clips A-- and a spare clip to the "local" station.
How to Build the
"WIRELESS WEEKLY" WAVETRAP

There are many instances in which simple sets are being operated near a strong station, in which case this strong station takes up more than its fair share of the tuning dial. Often the "spread" of the station may be so bad that as much as half the tuning dial is just swamped with the strong signal.

Under such circumstances, it is obvious that reception of stations near this strong local would be unsatisfactory, because they would be accompanied with a strong background from the heavy signal.

Under such circumstances, it is a comparatively easy matter to make up a simple little device which will greatly reduce and generally eliminate this interference. It is called a "wave-trap" because it forms a trap-circuit for any signals near the frequency at which it is tuned.

A common fallacy which is often held about a wave-trap is that it makes a receiver more selective. This is not the case. The selectivity of the set is not affected at all by one wave-trap. What the wave-trap can do is to practically remove a strong station from the dial altogether, so that it will not swamp out other stations near it.

The wave-trap is connected in series with the lead-in wire to the set. In other words, instead of connecting the lead-in to the aerial terminal of the set, it is connected to the tapping we have shown on the wave-trap coil. Then the terminal marked "to set" on the wave-trap is connected to the aerial terminal of the set instead.

The wave-trap can be built in a little box, and let permanently installed. It would be a good idea, if the interfering station is very close, to enclose the trap in a metal box, so as to prevent any direct pick-up by the wave-trap, which would spoil its efficiency.

CONSTRUCTION.

It is very easy to make a wave-trap. Use a .005 air-spaced condenser for best results.

The coil can be wound in a few minutes. We suggest making it 2 inches in diameter, and using 55 turns altogether of 22 enamelled wire. From one end of the coil make about four taps each of which you can use the one which gives most effective results. The connections to be made are only about four in number, and are shown in our diagram.

USING THE TRAP.

The method of procedure is as follows:

- Connect the trap as directed above, and swing its condenser until the plates are out of mesh. Now turn in to the station which is causing all the bother. Leave this station tuned in, rotate the wave-trap condenser until you reach a spot where signals will either fade out altogether, or else reach a very low volume. Leave the trap tuned to this spot, and proceed to tune in the stations you desire. You will find that the strong station will no longer interfere with your reception.

Unfortunately, it is not always possible to remove the strong station without also affecting the reception of stations a few degrees on each side of it. This is because the trap is not razor-sharp in tuning, but generally, as in the case of local stations, they are well enough spaced out for the trap not to interfere with reception when tuned to one of them.

THE TAPINGS.

It will be found that the trap is most effective when using the highest or 20-turn tapping, but in this position the trap will affect the largest section of the dial. Moving the aerial connection down to the lower-value tapping will sharpen the trap tuning a good deal, but make it less effective in action. The advantage of the tapings is that you can select the one which gives the best results in any particular case. It is quite a good idea to tap the coil every 5 turns, so that you can have a large number of settings to choose from. If the aerial is clipped to the top end of the coil, so that all the turns are in the circuit, the trap will be very effective in action, but will probably affect reception over a good portion of the dial.

When reception of the strong station is desired, the trap condenser may be swung fully out of mesh, or alternatively, a switch could be included which short-circuits the coil altogether when the trap is not wanted.

The wave-trap will be found of great value for small one, two, or three valve sets, either A.C. or battery, where the initial selectivity is not very high. In the case of bigger sets, it is also useful if located very near a local station, which sometimes will place an annoying background on the carriers of other stations. Amateur transmitters also find the trap valuable should their transmissions unfortunately cause interference with broadcast sets, as sometimes unavoidably happens.

Only one trap at a time can be used—it is not practicable to connect, for instance, two traps in series to deal with two stations. If the locality is so unfortunate that more than one station has a swamping effect, the only remedy is a better receiver.

PARTS LIST—WAVETRAP.
1. 005 Air Spaced Variable Condenser.
2. Terminals.
4. Base Board.
5. Speaker.
6. Wiring.
7. Coil Form.
8. Dial.

COMPLETE KIT OF PARTS for "WIRELESS WEEKLY" WAVETRAP: (K)
Cat. No. EK27 13/-

ABOUT THE BATTERY SKY SWEEPER.

(See page 168.)

Tasago, 17/3/37.

"I am the satisfied owner of a Sky Sweeper Battery 4 I purchased from the "Lamphouse" last year."—J.H.

Hastings, 20/3/37.

"I am the satisfied owner of a Sky Sweeper Battery 4 I purchased from the "Lamphouse" last year."—W.P.N.

Walfrith Bay, 11/6/37.

REFERENCE BATTERY SKY SWEEPER 4.

I am very pleased with the Sky Sweeper 4 I purchased off you. It is all you say and more.—W.P.N.

Pahautu, 21/3/37.

"Just a note to let you know I received the "BATTERY SKY SWEEPER KIT O.K., and it has surpassed all expectations. Enclosed please find further orders for speaker and batteries for same."—L.A.
We designed this 5-valve dual-waver to give its excellent performance with less battery drain than any similar receiver. It uses the latest type of economy valves, and makes a great set for long-distance daylight reception. It sets the pace for 1938 battery receivers.

By JOHN MOYLE (abridged from Wireless Weekly)

Battery set design is always a matter of balancing performance against economy. The best battery set of a given type is the one which gives the best performance on the least battery drain.

This new receiver, the New Year Battery Five, does just this. To our knowledge, no dual-wave five-valve battery set has so far been released which calls for a smaller overall battery consumption. And as we really need five valves to get really good short-wave results, we could say, therefore, that it is the most economical dual-wave battery set one could construct.

It uses a converter valve which will give the best performance on short waves, even at the expense of more battery drain. Such a valve is the well-known 105, which accounts for an extra .06 amps of filament current.

The R.F. and I.F. amplifiers as well as the second detector valve, may all be .06 types. Thus we have three valves drawing .86 amps each, the converter valve drawing .12 amps, and the output valve, of the 1F4 type, drawing another .12 amps. The total, therefore, is .42 amps. We do not think this total can be reduced, even if we were to sacrifice results.

It is just about the irreducible minimum. It may be obtained from a 2-volt accumulator, and at the same time it is well within the limits of an aircraft.

THE CIRCUIT.

First, however, we shall have something to say about the circuit in general.

The five valves are used as follows:- R.F. amplification followed by the frequency converter. Then comes a stage of I.F. amplification at 465 kc. The second detector is of the duo-diode-pentode type, resistance coupled to a pentode output valve. It is almost superfluous to dwell on the value of the R.F. stage in a set of this type. It is an excellent thing to have on the broadcast band, and even more valuable on the short waves. Its extra amplification results in better signal strength, and a much better signal-to-noise ratio, which is the same thing as saying that the background noise of the set will be less. The tendency to second-satellite is also less with the R.F. stage, and this makes tuning easier than it is with a set having no R.F. amplifier.

A single I.F. stage is deemed sufficient and using high-gain intermediate coils such as are obtainable nowadays, there is plenty of amplification to be had.

PARTS LIST.

1 Gunes, 16 x 10 x 3.
2 Dual-wave tuning coil assembly.
3 465 kc. intermediate.
4 Tuning dial to suit coils.
5 2-gang tuning condenser to suit coils.
6 Battery switch.
7 .6 meg. volume control.
8 1.1 mfd. tubular condensers.
9 3.001 mfd. mica condensers.
10 1.5 mfd. tubular condenser.
11 1 meg. resistors.
12 .25 meg. resistor.
13 .1 meg. resistor.
14 15,000 ohms resistor.
15 Sockets—5 Octal, 1 4-pin, 1 5-pin.
16 Wires—1 10G, 1 10TG, 1 1F7G, 1 1FG, or equivalents.
17 Batteries—3 6-volt H. B. Batteries.
18 6-volt C Battery.
19 2-volt accumulator or aircell.
20 Speaker—Permagneto type matched for pentode.
21 Valve caps, battery plug, hook-up wire, nuts and bolts, 2 terminals, battery cable.
22 Knobs, etc.

NEW YEAR BATTERY FIVE. (K)

Complete Set of Parts, including R.C.S. Coil Assembly for New Year Battery Five.
Cat. No. K37 £7.00-

Ditto, with valves and P.M. speaker.
Cat. No. K41 £12.00-

R.G.S. Coil Kit for New Year Battery Five.
Cat. No. E608 £3.00-

Cat. No. E824 Each 9/9

SHOWS POSITION OF COMPONENTS ABOVE CASHE.
volts on the screen, and 125 volts on the filament. A2. Use a simple A.V.C. circuit, which runs the grid to earth, to give a better tube. In this case, the grid would be more sensitive and less likely to produce any noticeable improvement in result when using other operating conditions, and we have arranged the circuit using the operating conditions above.

We had intended to simplify the circuit by using a simple A.V.C. circuit, which runs the grid to earth, to give a better tube. However, as the result was not as good as expected, we decided to try a different type of circuit. In this case, we used a simple A.V.C. circuit, which runs the grid to earth, to give a better tube. The result was not as good as expected, but we found that the circuit was more sensitive and less likely to produce any noticeable improvement in result when using other operating conditions, and we have arranged the circuit using the operating conditions above.

The output period, the PCF (and also the I.F.), and the 10A, were obtained by using only 12 amps filament current. However, for the same bias (1.5 volts) as the IDA, which takes 24 amera, it will require about 2 milliamps in the battery current. With the bias of this valve, which we found suitable, the B battery drain will be about the same as with the IDA, and the volume and quality appear to be very little altered. Thus, we decide this valve operated in this manner as the most economical operating arrangement of them all. Should the IDA be used, the bias at 12 volts should be increased.

We found with our set, a B battery drain of 111 milliamps, when tuned to a strong local station, with a 16 inch aerial lead, and within a 50 ft. radius, the figures should hold good for any set built to this design, and must be regarded as very satisfactory. The sensitivity on the broadcast band still remained excellent, with only 25 volts on the screen, and the B battery drain was, of course, even lower. However, this voltage is not enough for full sensitivity on short waves.

THINGS TO TRY

We would mention, while on the matter of operating conditions, one or two points the constructor might feel like trying. The first is to try our trimmers. We have shown here the circuit for this, and we found that both types of trimmer (one to the top right hand for a broadcast, and one for a short wave), have a good effect on the performances observed. We have used the standard type four-pin socket for speaker connections, and for the I.F., heavy-duty types should be used.

The filament may be supplied with current either from an accumulator, or from an aerial cell. The former will need recharging at intervals, according to its capacity, and the latter cell may work longer. However, the filament may be supplied with current either from an accumulator, or from an aerial cell. The former will need recharging at intervals, according to its capacity, and the latter cell may work longer. However, it is not necessary to connect the circuit to the aerial when the station is not in use. The filament may be supplied with current either from an accumulator, or from an aerial cell. The former will need recharging at intervals, according to its capacity, and the latter cell may work longer. However, it is not necessary to connect the circuit to the aerial when the station is not in use.

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IMPROVE RECEPTION!

No matter which way you look at it, your set cannot give you its best results unless you have a decent aerial.

A set with a good aerial will give much more pleasure and satisfaction than when it is used with an odd piece of wire in place of an aerial.

For best all-round radio reception on short-waves as well as long, under average conditions, nothing will produce appreciably better results than the standard single-wire aerial, provided it is properly installed. However, in locations where electrical interference is so bad as to prevent proper reception of short-wave stations, it may become necessary to employ a special type of aerial that tends to reduce the pick-up of man-made static.

AERIAL.

Height is more important than length in the horizontal part of the wire, though the length of the latter should not be cut down too much if the set is an all-waver. Forty-five feet or thereabouts is a good length to use.

If possible, the wire should be in one piece right from the far insulator through the lead-in to the aerial terminals of the set. If you have any joints they must be soldered, and should also be covered with insulating tape or a protective covering.

Broken strands in stranded wire, loosely twisted points in the wire, such as at an insulator, or any point where two parts of the wire can rub together, are to be avoided, as they may cause clicks and other noises in reception.

When insulators are used, two small ones "in series" will stand the weather longer without giving than one. Steel halyards, while being acceptable because they are strong and do not stretch, are not desirable. They may introduce noises and can conduct interference of the "man-made" static type to the aerial.

For the same reason both the aerial and the down-lead should be kept a couple of feet or so away from metal gutter, pipes, and so on. Also they should not run too near to brick walls or slate roofs even. When these get wet they can become quite passable conductors.

Lastly there is the question of waving in the wind. On short waves this can alter the tuning sufficiently to cause fading, or even to make the reception of weak stations impossible.

An anchoring stay, such as that shown, can keep the down-lead away from the side of the house as well as prevent it from moving in a strong wind.

This type of aerial is known as the inverted "L" type, and is the most suitable kind. A "T" aerial, in which the down-lead is taken from the middle is all right, provided the down-lead really does come from the middle. The trouble is that it should be the electrical middle, which does not always exactly coincide with the physical middle.

"ANTI-NOISE" AERIALS.

The fitting-up efficiency of one of the numerous anti-noise aerials now on the market, of the all-wave or broadcast wave type, is not a difficult matter provided the important considerations receive due attention. To appreciate fully what these important considerations are, and therefore to treat them properly, it is necessary to have some idea of how these special aerials work.

First of all it must be appreciated that the horizontal or higher part of the average aerial picks up the greater proportion of the signal energy, while the down-lead, or lower part of the aerial picks up the greater part of the interfering currents. So, provided we can stop man-made interference from reaching the lead-in we can be fairly sure to overcome man-made static. The use of screened lead-in wire prevents pick-up by loss on short-waves in some cases is quite effective in overcoming the trouble. To be really effective, however, the shielding should be earthed at both ends, and in the case of a long lead-in it should also be earthed in the centre. It may be found that, owing to the shielding running parallel to the lead-in proper, there is a loss of signal strength.

To overcome this there has been designed special filter systems (such as Lekinek). These consist of a length of lead-in cable which has a special matching transformer on each end. These transformers prevent the signal loss mentioned above.

It must be borne in mind that as the lead-in will no longer be able to pick up signals (or noises) the signal strength may be reduced; but, as our main consideration is the signal strength to noise level ratio, the nett result is better listening volume. In the event of signal strength being reduced too much it may be necessary to increase the length of the flat top of the aerial.

SHORT-WAVE AERIALS.

Is a special aerial required for short-wave? It's a question often asked these days, and is answered in a practical and interesting way in this article.

Short-wave reception is becoming more and more popular both with special short-wave and dual-wavers, and the question of a suitable aerial is very important to the owners of these sets, so we are going to try and deal with this matter in a non-technical manner.

The numerous special aerials on the market have many advantages, but it is possible to get good short-wave reception from a single-wire aerial, and if you can erect this type of aerial and it will work well on the short waves, you will find it will give you good results on broadcast also.

It must be borne in mind that, due to the higher frequencies in use, losses on short-waves take place slower and consequently more care in erection is needed. The points at which care should be taken are illustrated.

DOUBLE DOUBLES.

The ideal aerial for use in areas where man-made interference is bad is what is known as the double double. The system really consists of two distinct aerials which are controlled by a switch and special matching transformer. As with other types of noise reducing aerials it is essential to get the flat top at least 20 to 30 feet away from or above any possible source of interference radiation. The double doublet uses a twisted lead-in cable which balances out any interference picked up on the lead-in. Double doublets are sold already assembled and ready for erection. They are moderately priced at 4/6.
**POWER PACK FOR SHORT WAVE SETS**

Many short wave circuits described in the monthly magazines require a separate Pack for their power supply. While some short wave sets may work on an ordinary power pack, it is usually found necessary for a special pack that is properly filtered so as to obviate any possible chance of hum arising from the power supply.

The Circuit Diagram given will be found suitable for all types of sets, and has sufficient filtering to make it humless. The voltage divider can be adjusted so that the different voltages required can be obtained.

**PARTS FOR THE SHORT-WAVE PACK.**

1. Power Transformer 50 m/a. 18/2
2. 3-8 mfd. Electrolytics Lot 12/-
3. 100 Henry 100 m/a. Chokes Lot 6/1/2
1-15,000 ohm. Voltage Divider 2/10
1-2-Value Sockets Lot 106.
1-Chassis Base 7/1/2
Sunrise, including Wire, Flex and Bushy etc. 3/-

**SPECIAL OFFER.**

Complete Kit of Parts for making Short Wave Power Pack, as described above.

Cat. No. EX526 2/9/1/2
(Stated whether 2.5 or 0.5 Volt Filament Valves are to be used.)

**A MONARCH**

A LOVELY IRON. (G)

Although priced within the reach of all, this iron will compare favourably with the much higher priced lines. Easy to hold without strain. Thumb rest. Element clear mica and highest grade resistance wire. Stand at back. Beautifully finished. Weight 6 lbs., two years' guarantee. Supplied complete, ready for use.

Cat. No. EE710 18/6
PENTAGRID
FOUR

Thousands of Pentagrid Fours are operating all over New Zealand and Australia. Our readers have supplied the evidence that this set has been, in its several versions, the most popular of all "Wireless Weekly" battery receivers. Here we present the latest "W.W." Pentagrid Four—still simple, straightforward and economical—and a better performer than ever.

The "Wireless Weekly" range of Pentagrid receivers is probably the most famous among Australian battery sets. Originating in 1934, just three years ago, they commenced with the Pentagrid and—the simplest 4-valve battery set ever described. As time went on and the Pentagrid sets "went over" others were produced—the A.V.C. Pentagrid Four, the Dual-wave Pentagrid Four, the Pentagrid Six, and the De Luxe Pentagrid Six—built before the days of diode-triode valves. Then followed the Dual-wave Pentagrid Six, which so many of our readers in the country are using.

The name Pentagrid refers, of course, to the use of the pentagrid converter type of valve used as the mixer valve.

The set to be described here is the latest of the Pentagrid—for broadcast work. It is the most satisfactory solution to the problem of the man who wants a small and inexpensive receiver, which costs little to run, and which is sensitive enough to give him good daylight and night-time reception.

 Naturally, having only four valves, it is not quite a six-valve performer. But it comes as close to it as one can expect a four-valve set ever to come close to a six. We are confident that it will give the fullest satisfaction to every owner, and keep him happy in its modest requirements in battery consumption. It is wonderful just what this set can do.

THE CIRCUIT.
The first valve in the set is the Gutode KK2, which operates as the frequency changer. It is a very efficient valve, and we have used it in former Pentagrids.

A single stage of i.f. amplification is used, the i.f. amplifier being 104 RF pentode. This feeds into the 1K6, which is interesting because it is also a pentode with a pair of diode plates. The result is that we can get diode detection and A.V.C. using these diodes, and also obtain the extra gain which the pentode gives when used as an audio amplifier.

As will be seen from the circuit, "Inverse Feedback" is used in conjunction with the output valve and the 1K4. This circuit has the effect of lowering the harmonic distortion which follows in the wake of the ordinary pentode, and allowing better effective output with less battery drain. The alterations to the circuit are small, and really consist of two extra resistors which are shown across the input to the loudspeaker in the circuit and wiring diagrams.

CIRCUIT POINTERS.
Now we come to a few matters dealing with the circuit which call for some comment. It will be noted that the voltage for the oscillator plate and the screen of the KK2 are shown as obtained from resistors connected across the high tension. This is done for two reasons. One is to avoid having more leads to the batteries than are necessary, and the other is that, as the batteries drop in voltage, there is a better chance of maintaining these somewhat critical voltages in proportion to the plate voltage, than otherwise would be.

It is, however, quite permissible to run leads...
after all the wiring has been completed.

There is nothing much to be said about the 11 (6, being a pentode amplifier. Both the KX2 and the 1C4 are zero bias valves—in other words, they do not need a standing negative bias under any conditions. The A.V.C. line therefore does not return to the C battery, and need not do so except in special cases where intermediate oscillation might be present, due to rather high gain, or a bit too much gain throughout the set. As a rule, a standing bias of 1½ volts, obtained by running the A.V.C. load resistor to the bias battery, will decrease the gain, but improve stability should the be in doubt. Operating properly, the bias is not generally required.

The 1K6, being a pentode amplifier, has, of course, a screen as well as a plate. The screen is fed from the high tension tapping through a 0.5 meg. resistor, bypassed with a 0.1 mfd. condenser. The plate resistor is 25 meg., making the most of the high gain allowed by the 1K6. Note that the plate of this valve is bypassed with .0005 mfd., as a precaution against unwanted r.f. currents in the output circuit.

The feedback coupling from the output valve to the 1K6 is via a pair of resistors across the output of the valve. The values are standard, .1 meg. and 11,000 ohms, and to the junction of these is connected the plate resistor for the 1K6. There is nothing more or less to it than that. The output valve, under the inverse feedback conditions, is biased back to 6 volts. This in itself allows a saving in battery drain, and is one reason why the set draws so little current.

CONSTRUCTION.

When mounting the gang make sure that the dial will fit snugly before making fastenings—it is very annoying to find that the dial can't be fitted without removing the gang condenser after all the wiring has been completed.

for these points direct to the batteries should the constructor do so snugly before making fastenings. In the case of the KX1, the makers advise up to 135 volts for the oscillator plate, and 45 volts for the screen. Slightly better sensitivity may be obtained by running the screen volts at 60 volts.

There is nothing much to be said about the 1C4 I.F. amplifier. Both the KX2 and the 1C4 are zero bias valves—in other words, they do not need a standing negative bias under any conditions. The A.V.C. line therefore does not return to the C battery, and need not do so except in special cases where intermediate oscillation might be present, due to rather high gain, or a bit too much gain throughout the set. As a rule, a standing bias of 1½ volts, obtained by running the A.V.C. load resistor to the bias battery, will decrease the gain, but improve stability should the be in doubt. Operating properly, the bias is not generally required.

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We have shown the C battery on the chassis, as with other Pentagrids. It can, of course, be included at the bottom of the cabinet with the other batteries, but we have always found it more convenient to place it on the chassis out of the way, and thus reduce the number of leads out the back, which often tend to become confusing.

After mounting all the coils, valva sockets, etc., the wiring should be commenced, keeping an eye on our point-to-point diagram if necessary. There is nothing much to the wiring—just a straightforward connecting up of points with insulated hook-up wire. Where a lead in the circuit is to be connected to earth, it may be soldered to a lug firmly screwed under a nut on the chassis. In our set you will notice a network of heavy gauge tinned copper wire connecting all such points together, and the whole to the earth terminal. This is to guard against a poor earth at one point on the chassis, and also to prevent eddy current losses which might occur, particularly with a steel chassis.

Note that the leads to and from the volume control are encased in copper braid, which is earthed, and forms an effective anlied and precaution against audio feedback. Insulated wire ready braided can be bought for this purpose, and we mention one number of extends, to avoid confusion. Thus the speaker should have four pins and the battery plug five pins. Now you cannot plug the speaker in the battery socket by mistake.

BATTERIES.

We advise that this set be operated at all times from 125 volts, such as would be supplied by heavy duty batteries. This voltage will ensure maximum efficiency as well as maximum output. Should it be necessary to work the set from 90 volts, performance will suffer somewhat, mainly by a drop in output. The bias will have to be reduced probably to 3 volts on the output pentode, and, incidentally, the battery consumption will drop considerably. Battery figures are given elsewhere in this article.

The bias battery is a 9-volt unit, or possibly a 5-volt battery tapped at 6 volts, should

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**W. W. PENTAGRID FOUR (K)**

R.C.S. Coil Kit for W. W. Pentagrid Four comprises:

1. Aerial Coil with Shield
2. 1K2 Oscillating Coil and Shield
3. Special Padder
4. Low Gain Iron-Cored Intermediate

Cat. No. EC 415

Complete Kit of Parts for Pentagrid Four, without valves, speaker or batteries.

**£4/19/6**

Cat. No. EN 15

Complete Kit of Parts, with valves and P.M. Speaker. Batteries extra.

**£9/4/6**

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**Bird's-Eye Drawing of Chassis.**
a straight 6-volt battery be unobtainable. A 4.5-volt battery could be used, with slightly better quality, but the advantage of the feedback circuit in giving output with lower drain would not be realized.

The A battery for the set may be either a 2-volt accumulator of whatever size is most convenient (say, between 30 and 60 amp), or it may be one of the new aircrafts, which need no recharging, and run over 1000 hours at practically constant voltage.

If an air-cell is used, a resistance of .5 ohm to carry a .5 amp. must be included in series with the negative lead to the air-cell. Save for the occasional addition of tap water, the air-cell needs no attention until worn out.

ADJUSTMENT.

Assuming that the set has been correctly assembled, and is ready for work, connect up the batteries. Connect the A battery first and make sure that the filament are slight (they will glow dimly) before connecting the B battery. It is a good idea to include in the negative lead to the B battery a small fork globi to act as a fuse. Should a short circuit occur it will burn out before the valves.

Having connected the batteries and received some kind of life from the set, slacken the paddle about 1 turns, and the gang trammers nearly all out. Now tune to a station low on the dial, such as 22B, and see if you can line the aerial trimmer (rear trimmer) until you find the spot where the station is loudest.

Now turn to the top of the dial, and tune in a station up there, such as 2YA, keep rocking the dial across the station, and adjust the paddle until it is also resolved at best strength. Now return to the lower end of the dial, and return for fine results on a weak but steady station. All being well, these instructions should be sufficient to get the set going.

It is permissible to reline the intermediate trammers with a wooden screw-driver, to see that they are peaked properly. Do not touch the paddor or gang trammers while doing this, and mark the original position of the intermediate trammers so that you can return them if necessary. The trimmer across the secondary of the second I.F.T. is probably the one which will need the most adjustment, as it is damped by the diode circuit of the valve. If any but this trimmer needs more than a fractional adjustment, suspect something wrong, and return it to its first position, to check over the set again. Remember that if you lose the intermediate adjustment, you will probably have to send these back to the factory to be re-lined.

Use this set with a good aerial, although don’t make it too long. Height is far more important. A good ground is also essential. An old ker键3e tin punched full of holes sides and bottom, filled with ashes, and buried in deep soil, is an excellent earth. Solder a heavy wire to the can first, of course, and keep the spot damp.

CLASS "B" For Battery Sets

By altering the audio end of their set to Class "B" amplification, owners of old battery sets can get much stronger tone and volume. Proceed as circuit as follows:

First, examine the existing audio transformers. Usually the first transformer has a ratio of 5 to 1, while the second transformer is 3 to 1, and if this is so, replace the former with the latter, discarding the 6 to 1. Should the first transformer have a ratio of 2 to 1, or if you have only one transformer in your set and the ratio is 3 to 1, you can leave them just as they are connected. You also leave in your first audio valve socket, and this is used for the 30 valve, which constitutes the driver stage.

Now be your class "B" transformer is close to this socket as practical, and then by a six-pin socket for the type 9 valve. You are now ready to wire up in accordance with the diagram. Check wiring carefully connecting batteries. Bear in mind that the valves used require only 2 volts for the filaments, and

joined batteries. It is a good idea to include in the negative lead to the B battery a small fork globi to act as a fuse. Should a short circuit occur it will burn out before the valves.

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The B-less One-der

Following the remarkable success of the HIKER'S ONE, our Technical Department have pleasure in now submitting particulars of the "B" Less One. This set can actually be used without a "B" battery, and excellent results have been obtained with just a 2-volt "A" battery. Particulars of the battery connections, etc., are given later in this article.

It must be pointed out, however, that with a "B" battery of even 1½ to 3 volts much better results will be obtained.

This is a most interesting circuit as the "B" voltage can be varied from nil to 45 volts.

This little receiver is rather unusual in that it utilizes the 1E7G valve, which is a twin pentode (Detector and Audio Amplifier) and can be successfully operated over quite long distances without any "B" potential. Naturally greater volume and more sensitivity are to be had when a "B" voltage from only 1½ volts to the usual 45 volts is applied.

**PARTS REQUIRED**

1. 00,000 ohm Potentiometer with switch
2. 0000 Tuning Condenser.
3. 1 megalohm Resistor.
4. 1.1 mf Tubular Condenser.
5. 0.001 mf Mica Condensers.
6. 0.0011 mf Mica Condensers.
7. 1 to 5 Audio Transformer.
8. R.F. Choke.
9. 1 in. Coil Forming; Gauge 30 Enamel Wire; 1 in. x 3 in. x 3 in. Baseboard; 1 in. x 3 in. x 6 RA Nuts and Bolts; Wood Screws.
10. Coils Connecting Wire: 1 1E7G Valve.

**CONSTRUCTION.**

The lay-out diagram clearly shows the positions of the various components which are mounted on a 1 in. x 3 in. baseboard. The 1.1 mf condenser shown in the top left-hand corner is mounted upright, which accounts for its unusual position.

The coils are all close wound and spaced 3 in. apart, all turns being in the same direction. Start by winding L1 first, close to the top of the former so as to allow sufficient room at the other and for the mounting bracket. When fitting the bracket, make sure it does not come in contact with L3. The start and finish ends of each coil are anchored by passing the wire through two small holes in the former. Be sure and leave the ends long enough to reach their various connecting points. The tuning condenser is of the solid dielectric type and is mounted by two brackets. The large bracket supplied is used to mount the .5 meg. potentiometer which controls regeneration and volume. This pot has a switch mounted on the back of it, which is wired in between the A+ B terminal and socket 1 on the valve base, and is used to turn off the set. In both diagrams, the valve socket contacts are numbered from the key in an anti-clockwise direction, which is correct when viewed from the top. After the wiring has been completed, check carefully before connecting up the batteries.

**OPERATION.**

The A Battery can be 1½ volts, although 2 volts is really necessary to get the best out of the 1E7G. If two dry batteries are used (i.e., 3 volts), a rheostat should be connected in the A lead. When used without a B battery, terminals A+B and B+1 and B+2 are connected together. With 1½ volt to 3 volt B supply—terminals B+1 and B+2 are joined in one lead to the other of the B battery. When using 4½ volt B+3 volts is applied to B+1 and 4½ volts to B+2. With higher B voltages, half the total voltage is applied at B+1, that is 5 volts to B+1.
THE SIMPLEX SINGLE

Many readers have asked for a simple One Valve Battery Receiver, capable of supplying good headphone strength from all the local stations. An aperiodic coupled aerial is used. This consists of a small aerial winding, as shown in the circuit diagram. The effect of this winding is to make the set more selective, but at a loss of sensitivity. Construction of the receiver should be done with precision and care. The aerial coil is wound on a Mullard Aerial Core or on 1/2 inch formers. The grid winding requires 46 turns, and should be wound with a 0.0003 mfd variable condenser in the grid lead. Should the aerial be coupled directly to the grid winding, this latter coil is not necessary, and tappings should be made at the 5th, 10th and 15th turns on the grid coil. All coils are wound in the same direction.

LIST OF PARTS (4).  
S. E. L. 
1.0005 Solid Dielectric Lissene Condenser . . 106.  
1.0005 Reaction Condensers . . 3/6.  
Knob for same . . 56.  
R . 2 . 2 meg. Rheostat for phone . . 68.  
SW - Lissene P.P. Switch . . 7/16.  
VC - Tuning Valve Socket . . 7/11.  
Valve Socket . . 7/15.  
Ormond Ver ner Dial . . 4/5.  
Type 38 Raytheon Valve . . 4/6.  
Sundries, including, Backboard, Panel, Former Coil Wire, Terminals, Wiring Wires, Screws, Lugs, Brackets for coil, etc . . 5/6.  

COMPLETE KITS.  
Complete Kit of Parts without Valve . . 179.  
Cat. No. 219.  
Complete Kit of Parts with Valve . . 37.  
Cat. No. 221.  

BATTERIES EXTRA.  
1-60 volt Lissene Accumulator . . each 5/6.  
Note - Two 1½ Volt Dry Cells connected in series will do quite well for an "A" Battery, but if these are used, a 20 ohm Rheostat should be inserted in place of the Switch S.W. 30 ohm Rheostat . . 3/5.  

MOUNT COMPONENTS.  
With the standard kit a wooden backboard and enameled panel are supplied but constructors can use an aluminum chassis if they wish. Mount all components before commencing the wiring. Mount tuning condenser in the centre of the panel, then fit the switch, and 1.0001 reaction condenser, one on each side of the tuning condenser. Mount coil and valve socket on the backboard. Screw the four terminals into the back of the backboard, marking one "Aerial", another "Earth", and the other two "Phones".

WIRING.  
Little difficulty should be experienced in following the circuit diagram. Only three battery wires are needed, the negative terminals of both A and B Batteries being joined together. The start of L1 is connected to the fixed plates of VC and to one side of the fixed condenser, C. The other side of this condenser is fastened to the grid lead, R, and to the grid terminal on the valve socket, V1. The other side of L3 is taken to Earth. The beginning of the reaction coil, L3, is soldered to the fixed plates of the reaction condenser, M, whilst the other end of this winding is connected to the plate terminal on V1.

to one of the terminals on the socket mounted on the rear side of the chassis. Two other terminals on the socket are connected together, and serve the place of the other headphone terminal and the "B" positive battery connections.

Another lead is taken from one of the terminals on the socket to one side of the battery switch, the other side of this switch is taken to the positive or far side of the valve socket. The remaining terminal on the valve socket is soldered to the two remaining terminals on the socket mounted at the rear of the chassis, and act as the "A" and "B" negative battery connections.

OPERATION.  
When the batteries, aerial and earth leads are connected to their respective points, switch on the receiver and rotate the dial of VC until signals are heard. For best results, the receiver should be adjusted until the receiver is just on the verge of oscillation. This one valve receiver should provide hours of amusement to the novice who is interested in radio, and provided the directions given in this article are followed, it should be found to tune in all the local "A" and "B" class stations and many of the amateur stations at good headphone strength.

Clifton House,  
Seacliff, Otago, 26/10/37.  
I.C.A. TUNER.

"It was certainly well worth while spending a few shillings to cut out outside interference. Am well pleased with it." - J.W.L.

Seacliff, Otogo, 18/10/37.  
I.C.A. Radio Tuner, FC234, has made reception much better and cut out some outside interference, a dynamo in a workshop close at hand may have been the cause. I took the outside aerial off, found the wave trap brought in stations just as well, tuned into the Empire station at Daventry, and was very clear at B.I.P. - J.W.L.

Wakefield, 5/9/37.  
"Just a note of appreciation to you. The I.C.A. Aerial Tuner which I bought of you is giving wonderful results on my receive act. I have made it in several new stations, and I think the Tuner is a wonderful little gadget. I would not be without it on my set now. Thanking you. P.L.B."
The "3-5" AN OUTSTANDING BATTERY 3-VALVE SET

It is with a feeling of somewhat justifiable pride that the writer of this article presents "The Three-Five." Although he has designed and constructed a great many previous sets it is no exaggeration to say that he has yet to see a battery three-valve to equal this for volume or quality. Indeed the volume is such as is usually associated with a five-valve, and on any station worth hearing is not incomparable to an A.C. set. Look over the circuit diagram and the reason for this splendid performance will immediately be apparent. The first tube is a 34 high-mu variable bias point, and construction of a great many previous sets it is specified on hand you are strongly advised to purchase the set as a kit; you will then be assured of getting the identical items as used by the kit-author. The aerial terminal is insulated from the chassis, while that of the earth is mounted directly upon it.

BUILDING THE SET.—The first thing is to secure the whole of the parts. A complete list will be found elsewhere. A word of warning here. These parts have been carefully selected. Any old part of any old make will not do for this circuit. If you have not got the goods specified on hand you are strongly advised to purchase the lot as a kit; you will then be assured of getting the identical items as used by the pilot-author. The aerial terminal is insulated from the chassis, while that of the earth is mounted directly upon it.

COMPLETING THE SET.—In connection with the push-pull stage one point which should be noted is that the two grid leads should be the same length. Measure the length required from the transformer to the valve socket and cut both leads exactly this length.

Battery connections are all supplied from a four-wire cable brought in through the back of the chassis. A and the lead to C + both go to the terminal on the rheostat shown; A + goes to the appropriate filament lug of the detector valve; B — to the fuse holder; and B + to the speaker plug socket. 120 to 135 volt "B" are required, and a 5-volt "C" Battery. "D" tags are: RF — 8 volt; transformer CT — 3 volts; Real audio — 6 RF, then the Detector, and rocking the dial pointer back and forth across the station until results are optimum.

With the super-sensitive Lissen P.M. Speaker for which the set was designed, "The Three-Five" is a great little distance-getter. Tune slowly and use the other controls besides the dial-knob.

Of course, with this set, as with any other, a good aerial and earth plus a little experience, are essential for real DX.

LIST OF PARTS FOR THREE-FIVE BATTERY SET.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Three-Five&quot; Chassis, 10 in. x 8 in. x 2 in.</td>
<td>1</td>
</tr>
<tr>
<td>Aerial and 1 RF w/reaction, coils.</td>
<td>1</td>
</tr>
<tr>
<td>2-gang Condensers. 1 Aero Dial.</td>
<td>1</td>
</tr>
<tr>
<td>1003 Differential Condensier.</td>
<td>1</td>
</tr>
<tr>
<td>50,000 ohm Wire-wound Potentiometer.</td>
<td>1</td>
</tr>
<tr>
<td>20-ohm Rheostat. 2 Valve Cans.</td>
<td>1</td>
</tr>
<tr>
<td>6-pin and 2 4-pin Valve Sockets.</td>
<td>1</td>
</tr>
<tr>
<td>Class B Push-pull Transformer.</td>
<td>1</td>
</tr>
<tr>
<td>7 1 watt Resistors: 2 100,000 ohm; 1 2 meg.; 1 25,000; 1 150,000; 1 1000; and 1 10,000 ohm.</td>
<td>7</td>
</tr>
<tr>
<td>Tubular Condensers: 4.1 mfd.; 1.1 mfd.; 2 2000 mfd.; and 1 Midget Mica 00005 mfd.</td>
<td>7</td>
</tr>
<tr>
<td>Miscellaneous: 1 30 0 dial and holder.</td>
<td>1</td>
</tr>
<tr>
<td>Switch; 1 5Q clip; 2 25 volt dial bulbs; 4 wander plugs; A and E terminals; coil hook-up wire; nuts and bolts; 1ft 4-wire battery cable; 2 brackets.</td>
<td>1</td>
</tr>
</tbody>
</table>

COMPLETE KIT OF PARTS FOR THE "THREE-FIVE" (K) (Including Valves).

Cat. No. EK583 ........................................ 5/31/4
Lissen Permanent Magnet Speaker—Cat. No. EK577 ........................................ 5/19/6

Batteries recommended (extra): 3 volt 70 amp. Accumulators; 3 HD 65-volt "B" Batteries or 2 65-volt HD); and 1 2-volt Lissen "C" Battery.

BIRD'S-EYE VIEW OF THE "THREE-FIVE" SET.
A MODERATELY PRICED 4-VALVE T.R.F.
KIT. HIGH GAIN, LOW BATTERY
CONSUMPTION.

A four-valve up-to-date battery set which has
been designed with the following in view. Low
first cost, low battery consumption, good qual-
ity reception from many N.Z. and Australian
stations.

Our series of "Sky-Sweeper" Sets runs back
to 1932, and each year's set has proved more
popular than its forerunners. A glance at the
circuit indicates that it is of conventional
T.R.F. design and nothing out of the ordinary,
but even so it took several months to perfect
the circuit, and make it ready for publication.
An added condenser here or a resistance of
different value somewhere else make all the
difference to the final performance of the com-
pleted job.

To obtain good sensitivity and therefore dis-
tance getting abilities, a leaky gold throttle
controlled detector is used. On test all main
New Zealand and Australian stations were log-
ged with ease, and many "B" class Australian
stations were also received at good speaker
strength. At 11 p.m. a Japanese station was
logged. The above results were obtained in
Wellington City, and our activities were some-
what handicapped by electrical interference,
prominence of steel framed buildings, etc. In
favourable localities with a good aerial system
no difficulty should be experienced in logging
several Americans, so as regards range, the
Battery Sky Sweeper should satisfy the most
ardent D.X. fan.

SELECTIVITY.
Being a T.R.F. circuit the set is not so
selective as a superhet., but this is not of any
real importance as most listeners who operate
battery sets are situated at least half a dozen
miles or more from a powerful broadcast sta-
tion and at that distance no difficulty will be
experienced in separating stations. On test
2YA was brought in, while 2YA was on the
air, and as the set was tested within half a
mile from 2YA's aerial, the set is selective
enough for all ordinary listeners' needs.

TONE AND OUTPUT.
While wishing to keep first cost as low as
possible we did not wish to sacrifice the quality
of the output and therefore a Philips 2 volt
Pentode was decided on as the output valve.
Provided the set is used with a reasonably
good aerial the output will compare more than
favourably with many commercial sets costing
two and three times as much as the Battery
Sky Sweeper.

BATTERY CONSUMPTION.
In the selection of values to be used battery
consumption was an important item, for no
matter how well the receiver performed the
set would not be favourably received unless the
battery upkeep was low. After experimenting
with every possible combination of valves the
following were decided on: 3T Raytheon, 34
Raytheon, 38 Raytheon, 2B25N Philips. The
drain from the "B" battery at 120 volts varies
between 5 and 8 mls, and is therefore very
low indeed. The total filament current is only
just over one-third of an amp., .38 to be exact.

CONSTRUCTION.
There are no snags or pitfalls in building
Sky Sweeper Sets, as all tricky construction and
unnecessary frills are eliminated when the sets
are designed, and constructors who have had
previous set building experience will have no
difficulty in following the circuit diagram,
photographs, etc. The following points will
make it easier for those who are not as ad-
vanced.
LIST OF PARTS (BATTERY SKYSWEEPER).

1 Chassis .......................... 6d.
1 2-Gang Condenser ................. 6d.
1 Aero Dial Radios ............................ 6d.
5 Oxford Cells (unshielded) 14c. 18F
with Ria. ................................ 6d.
4-6 P. Sockets and 1 5-pin ............. 2 1
1,000 Reaction Condenser ............... 4 6
1.057 Carbon Pot .................. 2 9
1 D.P.D.T. Switch (Toggle) .............. 2 6
1 Torax Audio Transformer ............... 6 5
1 Speaker Resistors (1 watt) .......... 2 6
5 Tubular Condensers, 2-2mfd, 2-0.01mfd
and 1-0.001 mfd ........................ 3 6
1 R.C.B., R.F. Chokes ................ 1 2
3 Knobs ................................ 1 3
3 Dial Lights .......................... 2 0
3 Feet, 2 Wire Battery Cable ............ 1 0
3 D.P.D.T. Switch (Toggle) .......... 2 6
3 Feet, 2 Wire Battery Cable ............ 1 0

VALVES.
1 32 Raytheon .......................... 11 0
1 34 Raytheon .......................... 10 6
1 30 Raytheon .......................... 5 0
1 C93N Philips .......................... 14 6

ACCESSORIES.
1 P.M. Speaker, Lasson (with 4-pin plug
and cable) ............................... 39 6
1 2-Volt Accumulator, Lasson 50 amp. ........ 26 6
1 45-Volt R.C.B. & Batteries ................ 49 9
1 1-Volt C Battery ....................... 1 5

SPECIAL OFFERS FOR COMPLETE KITS.
(k)
1. Complete kit of parts without valves or

Both of the above kits are quoted without
speaker. Speaker recommended is the Lasson
Permanent Magnet moving coil type, which can
be supplied at 35/6 extra.
3. Complete kit of parts with valves, speaker
and all batteries as specified. Cat. No. EK541 .......................... E15/6.

CHASSIS BUILT AND TESTED READY FOR
USE. Chassis only, Cat. No. EK502 .......................... £14/5.
Chassis with Valves, Cat. No. EK503 .......................... £15/6.
Chassis with Valves and Speaker. Cat. No. EK504 .......................... 59/2/4.
Chassis with Valves, Speaker and Batteries. Cat. No. EK507 .......................... £15/6.

Any of the above can be supplied in nice
marble model cabinets at extra cost of 9/6.

UNDER CHASSIS WIRING.

MOUNT ALL COMPONENTS FIRST.
Make this a golden rule when constructing
a set. All components should be mounted into
position before an attempt is made to start
with the actual wiring. Care should be taken
to see that the potentiometer is insulated from
the chassis base by means of the insulating
washers provided in the kit. Reference to the
photograph will show you the correct position
of the components and looking towards the
front of the chassis they are as follows. Aerial
coil on left, 34R. valve immediately behind
this coil. Detector coil on right of chassis with
32 valve behind coil. A little to the left of
this valve is the 30 audio valve, and to the
right of the 34R. valve is the C93N output
valve. Bolt the audio transformer under the
chassis between the C93 and the 30 valve.
The condenser is placed on the top centre of
the chassis.

WIRING.
By carefully comparing the wiring diagram
with the circuit diagram no difficulty should
be experienced, but make as neat a job as
possible, making sure that all joints are elec-
trically as well as mechanically perfect. When
wiring in the battery switch make sure that
the C — lead to the potentiometer is connect-
ed to the switch.

COIL CONNECTIONS.
The coil connections are standard, but the
illustration of the windings should be of as-
sistance to new comers.

CHECK CAREFULLY.
With the wiring completed check up the wir-
ing carefully from both diagrams; it is a good
plan to mark each wire on the circuit diagram
(Continued on page 122.)
R.C.S. World-Wide Short Wave Converter

It is now only about three years since the public began to take some interest in short-wave reception. In that short time the thrill of listening to the international short-wave broadcasters has so captured the imagination of the listener that to-day no set is regarded as truly modern unless there is a short-wave section to it.

Unfortunately, there are plenty of people who have very good broadcast sets only a year or two old. These are often too good to be scrapped in favour of a new receiver, which may not measure up to their owners' personal ideas of tone, etc. They have grown used to their old sets, and don't want to see them go under any circumstances.

It is for such people that short-wave converters are designed. They allow them to enjoy the same interest and entertainment from the overseas stations as are obtainable with shortwave receivers.

We have described several converters in the past, each one with its own good features. Naturally, the art of making anything improves as times goes on, and the art of making converters is no exception. The converter to be described in this article is the cheapest, the simplest, and possesses a performance equal to that of any we have featured to date.

The home-builder is particularly interested in converters because they are so easy to make, and so fascinating to use. We have always found the greatest interest taken in every converter we have described. We are confident this one will easily outstrip the others, because, so far as we can see, it represents as nearly as possible the ideal converter.

Its Features.

Let us run through the features which make it so attractive. In the first place, it has only one tuning condenser. All other converters to date, it will be remembered, have used a double gang condenser. This has been necessary in order to tune both the aerial secondary and the oscillator coil.

A glance at the circuit will show that there is no tuned coil in the valve's grid circuit at all. Instead, there is seen a plain coil, with a 500 ohms resistor wired across it.

This comprises the aerial impedance, specially designed to give the maximum of effect over the full band. It is found that in practice, where there is no R.F. stage in a dual-wave receiver or converter, the aerial circuit is very broadly tuned, and has little selectivity or gain on its own account. To obtain what advantages we can from tuning the stage we need an extra gang, carefully matched coil, and padder condenser, or aerial manual trimmer. In short, we go to quite a bit of trouble, and proportionate expense, to get something which doesn't seem to have a great deal of advantage to offer.

Therefore, we design an untuned stage to take the place of this aerial coil, and, in practice, we cannot tell any difference between a converter which does tune this first circuit, and our latest job, which doesn't. If there is...
a difference, it doesn't matter for our purpose. We can play all the stations we want and which we are likely to hear, with plenty of volume, and have the great advantage of only one control—a tuning dial.

**LIST OF PARTS REQUIRED.**

1. BASE, 6in. x 3in. x 3in.
2. Single gang Tuning Condenser.
3. Special Coil Kit and Coupling Coil.
4. R.F. Choke.
5. Tuning Dial.
7. 50,000 ohm Resistor.
8. 1 meg. Resistor.
10. 0025 Mica Condenser.
11. 0101 Mica Condenser.
12. 1 mfd. Tubular Condenser.
13. AK2 and Valve Socket.
14. Terminal, Nuts and Bolts, Hook-up Wire, etc.
15. Double Pole Switch.

**SIMPLE CONSTRUCTION.**

The construction of the converter is also made so simple by reducing the circuit to its present form. A glance at the circuit and the diagrams will show how the number of components has been reduced to a minimum, and the possibility of confusion among different coil leads, etc. entirely eliminated. The job of wiring up the bits and pieces is as easy as falling off a log!

Other features of the set include an "on-off" switch, which, when the converter is not in use, automatically disconnects the aerial straight through to the set without any need for changing leads about each time the converter is to be used. The switch uses has the mains wired to one set of contacts, the other two being wired, one to the aerial terminal of the converter, and the other to its own output terminal. This is the only knob to worry about, and, as we could hardly leave the converter running all the time, it is essential, and cannot be termed as a control.

**CONSTRUCTION.**

Coming now to the actual construction of the converter, we obtain our base, 6 x 7 x 2 inches in size—it may be either steel or aluminium. As a matter of fact, we could have fitted all the gear to a much smaller base, but there would be nothing gained by doing so, and probably difficulties in getting all the parts nicely in place.

The position of the valve socket may be gauged from the wiring diagrams, and, of course, is not at all critical. Behind it are mounted two coils. The aerial coil, with its resistor, is mounted on top of the chassis, and immediately below it, using the same little bolts as hold the top coil in place, comes the oscillator coil. Behind the coils comes the little coupling coil for connection to the set.

The filament transformer is mounted on the other side of the chassis, being bolted to the side. The filament switch is mounted on the front of the chassis immediately below the dial itself.

**CONNECTING THE CONVERTER.**

Now we come to the matter of connecting the converter. The first step is to connect the earth terminal of the broadcast receiver to the earth terminal of the converter. Next, the H.T. wire coming through the rubber Insulation grommet at the back of the converter is connected to the radio set at a point having the full high tension applied. For instance, this could be the "hot" end of the voltage divider, which is to be found in most sets. If there is no voltage divider, make the connection to the screen terminal of the output valve, assuming that, as in about 99 per cent. of cases, the set uses an output pentode. This connection should be soldered, as it is permanent, and need not be removed once it is made.

See that the earth connection between the two chassies is made before the H.T. connection; otherwise, should the set be turned on before the earth connection is in place, it would be possible to get a spark by touching the two chassis. The correct procedure when connecting is to have the receiver turned off altogether.

**SUPERSIDING ALL PREVIOUS DESIGNS.**

The astounding efficiency of this new short-wave converter is exemplified by editorial comment in "Wireless Weekly" recently, which said: "After thorough tests we can vouch for its performance, and heartily recommend it as superseding all previous designs."

**R.C.S. RADIO WORLD-WIDE CONVERTER**—The complete R.C.S. Kit for this remarkable little converter comprises a periodic aerial coupler, with resistor, oscillator coil, and R.F. choke.

*Special Single Gang Condenser.*

Cat. No. E5019... Each... £5/6

**R.C.S. CIRKIT SET** includes everything required to completely assemble the World-Wide Converter except the valve. So simple is this kit to assemble, and so complete is the detailed instructions, that the most novice could complete it in an evening and have plenty of time to tune in foreign stations. No intricate lining up is necessary. R.C.S. Cirkit Set, complete with all wire, nuts, bolts, etc. £3/19/6

*Complete with Philips AK1 Valve.*

Cat. No. EK3A... £4/17/6

The next step is to remove the aerial connection from the set's aerial terminal, and connect it to the aerial terminal of the converter. Finally, the output terminal of the converter is connected with the aerial terminal of the set, from which the aerial itself has just been removed.

That is all there is to the connecting, and the converter is ready for use on plugging the mains leads into a power socket. It can be wired to the same plug as serves the radio set.

When operating the converter, turn the broadcast dial to some spot between 3A and 1A where there is no station. It is not critical, but unless this same broadcast setting is used each time the calibrations of the converter will also differ after each time it is used. Having adjusted the broadcast set, proceed to turn the converter dial, controlling the volume from the set itself. Short-wave signals will roll in from everywhere.

It will be noticed that all signals are tuned in two spots on the converter. This is quite normal, and it appears even on dual-wave sets with an R.F. stage. You will soon get into the habit of tuning in to the lowest spot on the dial where the stations are heard. A pencil mark on the dial will enable you always to find the short-wave stations, not forgetting to keep the broadcasting set tuned also to the same spot each time the converter is in use.

**THE BROADCAST SET.**

Any good broadcast set will be suitable for this converter, and it need not be a superhet. As long as the set has enough sensitivity to tune in Australian stations at good volume, it should be possible to get excellent results from short-wave stations. Any station which has any strength at all will be an easy mark for this great little converter.

**MAKES ANY SET A RADIO-GRAM.**

*Pick-up head which will fit the tone-arm of practically all makes of gramophones. Good tone, low noise level. Weight approx. 4 ozs.*

Cat. No. EP203... £11/6
Make Sure of a Good Job
by using the Correct Tools!

Radio work is daily becoming more complicated, and the
necessity for efficient workmanship more and more neces-
sary. The right tool for the job may save you many a
laborious and aggravating check-over because some faulty
connection refuses to work. Make your work easier and
better. Get one of these—

RADIO MAN'S TOOL KITS (B)

<table>
<thead>
<tr>
<th>TOOL KIT NO. 1.</th>
<th>TOOL KIT NO. 2.</th>
<th>TOOL KIT NO. 3.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Pair HU10 Radio Screwdriver.</td>
<td>1 HU100 Side Cutters.</td>
<td>A De Luxe Set of Finest Quality.</td>
</tr>
<tr>
<td>1 Pair HU55 Combination Pliers.</td>
<td>+ HU54 Side Cutters.</td>
<td>1 HA544 Side Cutters.</td>
</tr>
<tr>
<td>1 Pair HU57 Combination Pliers.</td>
<td>- HU55 Combination Pliers.</td>
<td>- HU57 Combination Pliers.</td>
</tr>
<tr>
<td>Listed individually.</td>
<td>- HU53 Combination Pliers.</td>
<td>- HU55 Combination Pliers.</td>
</tr>
<tr>
<td>Order Tool Kit No. 1.</td>
<td>- HU52 Radio Pliers.</td>
<td>Order Tool Kit No. 2.</td>
</tr>
<tr>
<td>Cat. No. EU250 5/6</td>
<td>- HU53 Combination Pliers.</td>
<td>Cat. No. EU251 11/</td>
</tr>
</tbody>
</table>

TOOL KIT PARTS REQUIRED. (K)
1 Alligator Clip.
2.000 Condenser and dial.
7 Terminals.
1 Piece Former, coil wire, panel, bushing, connecting wire, &c., etc.
Cat. No. EX101 3/4
Cell ready-wound. Cat. No. ED402 3/4
The Wave Trap can be also supplied already assembled (without cabinet).
Cat. No. EX103 10/6

WINDING THE COIL.
Bore a hole about 1/4 in. from one end of the
former, thread the coil wire through and wind

on about sixty turns. At about every 8th or
10th turn make a small loop or frill top. The
condenser is mounted on the panel and the
coil on the backboard.

WIRING.
The two ends of the coil are connected to
the condenser as shown in the illustration. Secure the clip to a short piece of flexible wire
the other end of which goes to the input ter-
minal. The other terminal is connected to the
end of the coil as shown.

OPERATION.
It is very simple to fit to the set, the aerial
being connected to one terminal on the Wave
Trap, and the other terminal of the Wave
Trap connected to the aerial terminal on the
set. To operate, you tune the set to the sta-
tion that is causing interference, then rotate
the dial of the Wave Trap, and at one point
it will be found that the unwanted station will
almost completely disappear.

By trying the clip on the different tapping,
you can determine which is most suitable for
your location and aerial.

Illustration shows Coil and Condenser
Connections.

HOW TO STRENGTHEN WEAK STATIONS.
This useful device can be used as an Aerial
Trimmer, leaving the connections exactly the
same as for use as the Wave Trap.

Tune the set to a weak station, then tune
the Wave Trap to a point where it is found
that the signals will be greatly increased. The
final adjustment of the receiver's controls may
now become necessary.

The difference in reception is sometimes
remarkable, and an efficient Aerial trimmer is
in many cases quite as effective in increasing
signal strength as adding another valve, and
it is well worth trying.
THE ADD-A-VALVE.

How to add an extra valve (tuned radio frequency stage) to any receiver at low cost and minimum trouble. The Add-a-Valve will extend the range and increase the selectivity of any set.

One of the most common questions we are asked is: How can I increase the range of my set? How can I add another valve to my set?

To add another valve in the ordinary way usually involves considerable expense, and in most cases, pulling the set to pieces and rebuilding it, a task that many constructors are unwilling to undertake, especially if their sets are giving moderately good results.

However, it is generally felt that if the set has a little more "pull" many more stations could be received and many stations that can just be heard could be brought in at good listening strength. For a long time we have felt that some simple attachment could be supplied to fill this definite need, and with that in mind the Add-A-Valve has been designed. It is entirely independent from the set, so that in the unlikely event of its not being a success on any particular set it can be removed and no harm done. On the other hand, with practically all sets, it will prove a definite boon, and many stations that were previously weak or inaudible will be brought in at good volume.

On test the Add-A-Valve worked equally well on both T.R.F. and superhet sets. Although designed to improve distance reception, we found selectivity was also improved remarkably.

To the radio constructor the Add-A-Valve will present no difficulties, but we would not advise the absolute novice to attempt it. However, read the following instructions, study the circuit diagram, and you can then judge for yourself whether you are able to build for yourself the "Add-A-Valve."

The filament voltage of the valve to be used will be dictated by your set; if it uses 2.5 volt valves you will use a 57, but for sets using 6.3 volt valves a 252 will be required. Should you not wish to take the filament supply from the transformer in your set a separate filament transformer can be used.

The "Add-A-Valve" is completely assembled by the constructor into a shielded metal box.

CONSTRUCTION.

Mount all components, including valve socket, condenser, dial, terminals, bush, etc., on to the metal chassis base before you start wiring.

WIRING.

1. Connect a pair of twisted flexible wires to the filament terminals on the valve socket, push them through the bush, and leave sufficient wire to connect to filament points on your set.

2. Solder the 30 ohm C.T. Resistor across the filament terminals of the valve socket. The centre tap of the resistor is earthed to the chassis.

3. Connect 250 ohm resistor and .01 MF condenser to cathode; the other end of both these parts are connected to earth.

4. From screen grid terminal on valve socket connect a .01 condenser and a 20,000 ohm resistor to earth and a 25,000 ohm resistor to blank lug on coil.

5. To the plate terminal on valve socket is connected a 25,000 ohm resistor, which also goes to blank lug on coil. A .01 condenser also connects to the plate terminal. The other end of this condenser is connected to a piece of flexible wire, which when the "Add-A-Valve" is attached to your set, connects to the aerial terminal.

6. Another flexible wire is connected to blank lug on coil and left ready to be attached to the set.

7. Connect aerial terminal on coil to aerial terminal on "Add-A-Valve."

8. Earth bottom of primary and secondary windings of coil, which completes the unfurled chassis wiring.

ABOVE-CHASSIS WIRING.

There are only two connections above chassis.

1. From coil to fixed plates on variable condenser.

2. From fixed plates of variable condenser to screen grid clip on valve.

CONNECTION TO SET.

Having completed the wiring and checked your work both from the schematic diagram and from the circuit diagram, you may connect the "Add-A-Valve" to your set. There should be four wires coming out of the bush from the "Add-A-Valve."

The two filament leads are connected to the R.F. filaments on the set. The wire from the plate is connected to the aerial terminal on set. The remaining wire is connected to the HT plus at any point where maximum voltage is obtainable such as screen of output valve, or voltage divider, etc., etc. The earth terminal on the "Add-A-Valve" can be connected to the earth terminal of the set.

The aerial is connected to the aerial terminal of the "Add-A-Valve."

OPERATION.

Tune in a station in the usual manner on the set to maximum volume (of course, select a weak station). Now slowly rotate dial on the "Add-A-Valve," and at one point volume will increase considerably. To obtain maximum volume it may be desirable to adjust the receiver slightly. To the keen experimenter the "Add-A-Valve" will not only increase the range of his set, but will also open up new fields for his experimenting, and after all there's more fun and knowledge in improving our reception by our own work and experiments. In conclusion we must state that the "Add-A-Valve" is an efficient and inexpensive unit, which will improve the reception from many sets out of all proportion to the cost, and exceed the expectations of many constructors.

"ADD-A-VALVE" PARTS LIST. (K)  

Cat. No. EK555—Complete Kit of Parts without valve 
Cat. No. EK556—Complete Kit of Parts with Raytheon Valve

<table>
<thead>
<tr>
<th>Part</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>100055 Variable Condenser</td>
<td>5 1/2</td>
</tr>
<tr>
<td>Oxford Add-A-Valve Coil</td>
<td>3 6</td>
</tr>
<tr>
<td>1 Vernier Dial</td>
<td>1 0</td>
</tr>
<tr>
<td>2 25,000 ohm Resistors</td>
<td>2 0</td>
</tr>
<tr>
<td>3 25,080 ohm Resistor</td>
<td>2 6</td>
</tr>
<tr>
<td>5 55 ohm Resistor</td>
<td>1 6</td>
</tr>
<tr>
<td>10 (2) C.T. Resistor</td>
<td>6 0</td>
</tr>
<tr>
<td>125 Value</td>
<td>2 5</td>
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<tr>
<td>1 Chassis and Metal Box</td>
<td>7 6</td>
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<tr>
<td>18000 ohm Resistors</td>
<td>2 0</td>
</tr>
<tr>
<td>225,000 ohm Resistor</td>
<td>4 0</td>
</tr>
<tr>
<td>3 Wire, Lugs, S. G. Clip, etc.</td>
<td>Lot 2 3</td>
</tr>
</tbody>
</table>

TO BE CONNECTED TO THE AERIAL TERMINAL OF THE SET.

The aerial is connected to the aerial terminal of the "Add-A-Valve."

THE ADD-A-VALVE CIRCUIT.
The

ALL WAVE

DUPLEX

SINGLE

Front View.

Here is a short article dealing with the construction of a single-valve all-wave receiver, which can be built for a very reasonable cost, yet will give the most remarkable results for a set of its size.

(A "WIRELESS WEEKLY" CIRCUIT.)

Build this wonderful little two-in-one valve set! It packs a marvellous punch, and costs only three pounds! Just as efficient on short waves as on the broadcast band. And, in good localities, will even work a loud-speaker!

This tiny receiver will go straight to the hearts—and the pockets—of hundreds of our readers. It has just about all the things they have been asking for in a set of this type, and at the same time it costs little to build, and is admirably suited for the operator.

It works just as well on the short waves as it does on the broadcast band, and for a hand phone receiver, we have never worked with anything of its size which comes anywhere near its results.

Perhaps the best way to introduce it would be to make a list of the things that make us so enthusiastic.

As far as the circuit goes, it is more or less standard. There is nothing in it which has not been tried and proved. Most of the features of this set are contained in the application of ideas destined to iron out the snags which in the past have handicapped a single-valve set which tried to be everything at once.

THE CIRCUIT.

The circuit is built round the 19-type valve. This is a 2-volt valve originally built for B class amplification in battery sets. Actually, it is two valves in one envelope, both being triodes with a high amplification factor. Although the two sections were meant to work in pushpull, there is no reason at all why they should not be regarded as two separate valves, and wired accordingly. This is just what we have done. Each section of the 19 has its own filament, grid and plate. One we use as a triode detector with reaction, and the other as an audio amplifier. So that, although there is only one valve in the set, actually it is a genuine double-purpose type, and actually works as two valves. Transformer coupling is used between the two sections to get the utmost gain.

It will be noticed, by comparing the front view picture of the set and the circuit diagram that there is an extra control which is not shown in the circuit. This is merely an aerial condenser, which is connected in the aerial lead. In country districts, this condenser will not be necessary, but it helps tuning and selectivity near local stations, and assists reaction control on short-waves.

2. REACTION CONTROL.

One of the things to watch when using reaction is to see that the control has the least possible effect on tuning. The ordinary reaction condenser circuit is very good, but, particularly on short waves, affects the tuning quite a bit. We have used a different method, by employing a reaction winding, untuned, and varying the plate voltage on the detector to give us control. This is a much better idea. The effect of reaction is much more constant, and tuning is hardly affected at all, even on short waves. There is only one control as watch and that is that there are not too many turns on the reaction coil. This would make the valve oscillate before there was enough plate voltage for best gain. We suggest using as few turns as possible on the coil, and if our coil winding data is followed everything should be fine. About 40 volts should be on the detector plate before oscillation. Control will be found very smooth in operation.

3. TUNING CONDENSER.

We have used a full-sized gang condenser, the same capacity as used in the ordinary broadcast sets. We did this so that the broadcast band would be covered without changing coils as would be necessary with a smaller capacity.

On the short waves, the large gang will make tuning very sharp, and so we have provided a vernier control in the shape of a small 3-plate midget condenser wired across the main gang. We even pulled one of the plates out leaving one moving and one fixed plate, which gives even finer tuning control. This control overcomes the disadvantage of the large condenser for short waves, and allows easy tuning anywhere on the dial.

One of our surprises was to find that only one coil was needed to tune from about 15 to 50 metres, exactly as marked out on the dual wave dial, as designed for an ordinary dual wave set. Over the full range, there was plenty of reaction and excellent results were obtained from the 15 metre overseas stations, the 20 metre amateurs, the 15 and 31 metres short-wave stations, and also the amateurs again on 40 metres.

Naturally, the efficiency of the set was not as good at 40 metres as at 15 metres, because of the high tuning capacity, so we wound up another coil which started off at 40 metres, and covered also the 80 metre amateur band with about half its capacity. At the same time, it is perfectly practicable to use the first coil over the full short-wave range, just as in the case of a big set and the advantage of having the wave-lengths marked on the dial is, of course, considerable to the average listener. For best results over the 40 metre band, the second coil can be used.

4. PERFORMANCE.

We are most enthusiastic about the performance of the set. In the first place, it is a real winner on the short waves. The overseas 19 metre stations were loud enough in the evenings to be heard with the phones on the table, as were many of the 20 metre amateurs. The same was true on the 55, 31 and 40 metre bands. Many of the weaker stations were heard by a little careful searching, the smooth reaction being a great help in this regard. For reception of Morse signals, the set was found to be wonderfully quiet and flexible.

One forecast line diameter were able to receive quite good results on a loud-speaker. Many people who will build this set will have an old-type horn speaker somewhere, with which experience has shown them to be sensitive. We have one at home, and heard a political speech clearly in every part of the house. By judicious selection of aerial lengths, we could separate all the local stations, and in the country there should be dozens of stations waiting to be picked up. Naturally, we intend this set to be used primarily with headphones, although on strong stations it is possible to get worthwhile results on a speaker, even of the magnetic type. But don't worry about a loud-speaker unless you have at least one very strong local, and, in any case, rely on head-phones for most of your listening.

All windings close wound turns, with three-p Stadium gap between reception end and grid winding, and a similar gap between grid end of secondary and start of aerial coil. S.W. coils—66 S.W.G., with d.s.e. or d.c.c. wire. Broadcast coil wound, with 32 S.W.G. enamelled wire. All formers' lip diameter.

We found it handy to mount the gang on four 1in. by 1 in. bolts, so that the dial mechanism could clear the front of the chassis. Don't drill the holes to support the condenser until
The circuit diagram. CI is the main tuning condenser, an ordinary single-gang of 0.0015, 0.0035, or 0.005 msfda capacity.

**AERIALS AND EARTHS.**

A good aerial should be used with this receiver, height being more important than length. Too long an aerial is not desirable for short waves, as it tends to load up the grid circuit and make oscillation difficult. Above 75 ft. or so should be ample, strung up as high as possible.

A good earth is also particularly important with a battery set. Our favourite earth is a heavy tin punched full of holes (particularly the bottom), fitted with ashes, and buried about a foot below the surface. The earth wire is soldered to this in several places. Throw a bucket of water over the spot occasionally. A piece of pipe reaching down into the ashes will make sure that the water actually reaches the can.

**LIST OF PARTS FOR DUPLEX SINGLE.**

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Chassis Base</td>
<td>6/6</td>
</tr>
<tr>
<td>1.5 Volt Torch Cell</td>
<td>2/6</td>
</tr>
<tr>
<td>Single Gang Condenser</td>
<td>5/11</td>
</tr>
<tr>
<td>Valve Socket</td>
<td>1/3/lot</td>
</tr>
<tr>
<td>Potentiometer</td>
<td>1/6/lot</td>
</tr>
<tr>
<td>25 meg. Resistor</td>
<td>1/3/lot</td>
</tr>
<tr>
<td>0.0075 Microcondenser</td>
<td>1/3/lot</td>
</tr>
<tr>
<td>1.5 mfd. Tubular Condenser</td>
<td>1/3/lot</td>
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<tr>
<td>1500 ohm Carbon Potentiometer</td>
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</tr>
<tr>
<td>12/6 Gd.</td>
<td></td>
</tr>
<tr>
<td>1/8 Gd.</td>
<td></td>
</tr>
<tr>
<td>300 ohm Audio Transformer</td>
<td>1/6</td>
</tr>
<tr>
<td>1/2 mfd. Capacitor</td>
<td>1/3/lot</td>
</tr>
<tr>
<td>A.E. Diat</td>
<td>15/6</td>
</tr>
<tr>
<td>Condensers, including coil</td>
<td>1/6/lot</td>
</tr>
<tr>
<td>Condensers, including coil</td>
<td>1/6/lot</td>
</tr>
<tr>
<td>Sutduries: Including Wiring Wire</td>
<td>1/8/lot</td>
</tr>
<tr>
<td>Lugs, Bolts, and Nuts, etc.</td>
<td>1/5/lot</td>
</tr>
<tr>
<td>1/2 NYL Wire</td>
<td>1/2/lot</td>
</tr>
<tr>
<td>Kit of Parts without Valve</td>
<td>£2/16/6</td>
</tr>
<tr>
<td>Kit of Parts with Valve</td>
<td>£3/3/-</td>
</tr>
</tbody>
</table>

**ACCESSORIES.**

- 25-volt Light Duty Batteries or 10-volt L.D. Battery
- 1.5-volt Accumulator
- 1.5-volt Torch Cell for Blue
- 1 pair Headphones

**SIMPLE CRYSTAL SET**

**PARTS LIST. (K)**

1. I.C.A. Tuner
   - Cat. No. ED291 3/11 each

2. Crystal Detector
   - Cat. No. ED755 1/5 each

1. Piece of Wood

Break into the radio game. You can make a real good crystal set out of this tuner and detector. Just connect them up as shown in the diagram. Nothing more simple has been devised for the newcomer to radio.

**INSTRUCTIONS.**

The I.C.A. Tuner and Detector are screwed down upon a small baseboard to form a convenient mounting. For the aerial a regular broadcast aerial may be used provided it is a long outdoor one. If not, a good outdoor wire, about 150 feet long, high and clear of surrounding objects and well-insulated, should be erected. An insulated lead-in is attached to one end of the aerial (preferably soldered) and run down to the crystal set. Here it is attached to spring A (see diagram). For earth, connect a wire to a convenient water pipe or other earth. Use a good clamp to ensure good contact. Connect earth wire to spring B, connect ear-phones to A on tuner and one side of detector. Connect other side of detector to B, and the crystal set is ready for use. To tune in stations slide ball on tuner back and forth. If no station is heard, adjust catwhisker spring of crystal detector lightly on surface of crystal until a sensitive spot is found. Then slide the ball on the tuner again until a station is tuned in.
A SWING AMPLIFIER

For all lovers of True Music — Swing or Classic

(Abridged from "Wireless Weekly")

At the request of prominent members and officials of the Swing Club and the Recorded Music Society our Technical Editor has produced this amplifier as the most effective way of getting true fidelity of reproduction from recordings at low cost. It is a remarkable job in many ways.

It was only after attending a recent meeting of the Sydney Swing Club that we realised the need for a technical article on the construction of a simple but effective amplifier. At the Swing Club we found that hundreds were present to listen to recordings of famous overseas swing bands, and when we made enquiries amongst members we found that few appeared to appreciate that they could enjoy these recordings in their own homes by installing an amplifier at a total cost well under £10. Some said that they had ordinary radio sets at home with pick-ups attached; a few even boasted the ownership of radio-gramophone combination sets, but it was very evident that few of these equipment gave reproduction of the kind that can be obtained even with a simple amplifier which is designed to get as much as possible from the recordings.

In fact, few realise just how much there is in a record which can be brought out if the amplifier is designed to be capable of handling everything that the pick-up can give it.

For a start we tried out the experimental amplifier, from which this amplifier is evolved, on Stan Bourne, whose Ginger Jar Band broadcasts through 2GB and 1UW. Stan is a keen member of the Swing Club and an enthusiastic right in to the band. Stan came over to the laboratory on a Sunday morning to play over a few records, and was soon engaged in picking out the harmonies in the recordings and the instruments which he had never previously heard from these recordings when he had played them on his own radiogramophone, although until he heard our amplifier Stan had thought his own was perfection.

Stan listened and listened, and it must have been 2:30 that afternoon when he went home for lunch.

And so it has been with everybody who has heard the amplifier — they have simply implored us to run an article on the construction of the amplifier to be published with their solid recommendation to everyone who likes music, whether it be swing or classic. From records you can get music which is miles ahead of anything which comes out of an ordinary radio set or gramophone.

FUNDAMENTAL FACTS.

To get down to facts — in order to reproduce records properly you need first of all a turntable to turn the records, which can be an electric motor or a spring one, or the turntable in an old-style gramophone. All that is necessary is to have a device to turn the record at 78 revolutions per minute and maintain this speed, irrespective of the dragging of the pick-up.

The next thing is this pick-up, and many are the types and styles of pick-ups available on the market.

Next in the chain is the amplifier itself, and it is here that we have the fullest detailing, an amplifier which can be built by any handy man at a cost of about £5. The original amplifier was built in an evening. You, too, can build an amplifier with exactly the same performance as the one which we have tested and proved in the home of the most enthusiastic listener. The cost of ours was £5.

On account of the wide difference in prices we have gone into the position very thoroughly, and tested dozens of different speakers, with the result that we have no hesitation in recommending the medium price speakers between £5/- and £7/10/-.

THE BAFFLE.

It is necessary to baffle the speaker. The most effective way to do this is to mount the speaker on a piece of plywood or cedars about a yard square, and with a suitable circular hole cut in the middle, with the speaker mounted on a base of this kind it is possible to get a reasonable response of low notes. The baffle becomes a sort of baffle box or resonating chamber, and resonant cavities are most important for the reproduction of records. The baffle must be mounted so that the red

ROOM ACOUSTICS.

The next problem is the acoustic properties of the room, although these are seldom taken enough to be really considerable, a little experimenting often pays good dividends with improved reproduction. It is most important to have the speaker across a corner or mounted out in the room somewhere, but not close up to a flat wall; otherwise there will be reflections from the back. In a big room it is generally found that there is an apparent improvement in the brilliance of the reproduction when the amplifier is turned up to fairly loud volume. To obtain the same brilliance at low volume it is necessary to operate the amplifier in a smaller room, or in some one which does not contain a soft carpet, curtains, cushions and other sound-absorbing materials.

MOUNTING ELECTROLYTICS.

The mounting of the electrolytic filter condensers calls for some care. There are three of 8 microfarad condensers. There is a central terminal lug, which is the positive side, and the can is the negative side. In the case of one of the condensers the negative side is earthed, and so this condenser is mounted so that the can is the negative side. In the case of the other two the negative side running to the centre-tapping of the power transformer's high-voltage winding, and so the cans have to be mounted in the mounting washers which are provided with the condensers, so that the cans are insulated from the base. The condensers are arranged so that the terminals are arranged for contact to the terminal washers also provided, and it is to these terminals that the cans are soldered. The 8000 ohm bias resistor is mounted directly between the terminal washers of the second and third electrolytics.

POLARITY.

The polarity of the electrolytic condensers is the most important. In the case of the filter condensers this is fully covered in the above explanation, but there remains the high-voltage by-pass condenser, a tubular type of electrolytic with a capacity rating of 25 microfarads and a peak voltage rating of 25 to 30 volts. This condenser must be connected so that the red
CIRCUIT SWING AMPLIFIER

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THE VOLTAGE DIVIDER.

The voltage divider is fitted, although it really serves little purpose. If at any time the amplifier is to be used with a tuner or with a pre-amplifier, the divider may be needed, anyway, but in the present amplifier it only serves to keep a small load on the high tension to stabilise it and prevent peak voltages, and to ensure adequate field energising for the loud-speaker. The clips on the divider are not used, and there are no connections required to them except at the ends. One end going to the main h.t. line and the other end being "earthed." GRIDEAKS.

The half-megohm resistor in the grid circuit of the 2A3 is used to return the grid to a negative voltage to ensure correct bias, and the value specified is the highest value which is recommended for use with a valve, such as the 2A3. The use of a higher resistance in this position gives greater gain and better tonal quality, allowing a fuller reproduction of the very low bass. On this account, some enthusiasts prefer to use a 1 megohm or even a 2 megohm resistor in this position, and so far we have not heard of any valves giving unsatisfactory service on this account. In some cases, however, especially if the high tension voltage is a little higher than normal, there is a chance that trouble may result, taking the form of the output valve overheating, drawing more than normal plate current, with distortion in the reproduction, and the valve soon losing its emission and requiring replacement. All of which is supposition, as we have never actually heard of such trouble occurring in practice.

ECONOMISING.

As we know from experience there are always those who want to cut down a bit on our instructions. Sometimes this is a great success, but sometimes a failure. Let us consider some points first about the turntable. If you have a good reliable spring motor on hand it should be quite O.K. Generally speaking a spring motor has plenty of torque and its biggest drawback is having to wind it up by hand.

VOLTAGES.

For those who have a suitable motor we give a few of the voltage checks which should be made to make sure that everything is in order. First, the a.c. filament voltages should be checked and they should be within 10 per cent. of ratings, 6.3 volts for the 604 or 6A3. High tension voltages, read in respect to earth should be 250 at the top of the voltage divider. Although not true readings the plate and screen voltages of the first valve can be read with a 50 volt scale on a 1000 ohm per volt meter. The screen should show between 40 and 50 volts, and the plate between 58 and 68. Watching the polarity of the meter the bias on the output valve can be read across the 500 ohm resistor, and should be exactly 40 volts. Distortion due to overloading can be checked at this point by watching the meter needle. It should not show any variation of more than a volt or two on loud passages.

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LIST OF PARTS FOR "SWING" AMPLIFIER.

<table>
<thead>
<tr>
<th>Part Description</th>
<th>Code</th>
<th>Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metal Chassis Base (already drilled)</td>
<td>12 x 7 1/2 x 7 1/2</td>
<td>8/-</td>
</tr>
<tr>
<td>HCS Power Transformer, 110 MA, with 63 volt windings</td>
<td></td>
<td>18/-</td>
</tr>
<tr>
<td>160 MA RCS Filter Choke</td>
<td></td>
<td>9/-</td>
</tr>
<tr>
<td>MF Electrolytic Condensers valve case ready</td>
<td></td>
<td>15/-</td>
</tr>
<tr>
<td>2MF DITTO</td>
<td></td>
<td>3/-</td>
</tr>
<tr>
<td>.1MF Tubular Condensers 1/6 lot</td>
<td></td>
<td>1/-</td>
</tr>
<tr>
<td>1 watt Grid Leak, 250,000 ohms</td>
<td></td>
<td>1/-</td>
</tr>
<tr>
<td>Ditto 5,000 ohms</td>
<td></td>
<td>6d.</td>
</tr>
<tr>
<td>1 megohm Ditto</td>
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<td>6d.</td>
</tr>
<tr>
<td>Wire wound Resistor, 500 ohms at 25 MA</td>
<td></td>
<td>1/-</td>
</tr>
<tr>
<td>500 ohms at 160 MA</td>
<td></td>
<td>6d.</td>
</tr>
<tr>
<td>15,000 ohms Voltage Divider</td>
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</tr>
<tr>
<td>3 pin Valve Sockets</td>
<td></td>
<td>1 1/3</td>
</tr>
<tr>
<td>8 pin Valve Socket</td>
<td></td>
<td>1/3</td>
</tr>
<tr>
<td>Valve Can</td>
<td></td>
<td>1/3</td>
</tr>
</tbody>
</table>

SUNDRIES.

Including 2 Terminal, Soldier Lugs, Wiring Wire, Screws, etc. 2 1/2 lot

1 0.6 Valve

1 6A3 Valve

1 6B Valve

1 5/6
Characterised by the usual neatness, simplicity, and ease of construction of the series, the Popular version of the Sky Sweeper Four makes its bow.

In designing the various Sky Sweepers over the past few years we have endeavoured to supply sets that give good tone and are sensitive enough to bring in all the main N.Z. and Australian Stations. The success of the various Sky Sweepers has well repaid us for the trouble we have gone to in experimenting with the different models.

While bearing in mind that satisfactory reception must be one of the primary considerations we have also to consider that a set of this nature must be low cost and simple to build.

In the popular Sky Sweeper now described fully, we have all the most desirable features. We have used glass valves in place of metal valves used last year, without losing quality or strength of reception, but in doing so have decreased your cost considerably.

The set is fully described and illustrated, and as there are no constructional snags, it is most suitable for a beginner.

One big advantage of a T.R.F. Circuit for home construction is that the lining up is comparatively simple, and can be done by anyone who can follow the instructions given.

On test the Popular Sky Sweeper brought in all the main N.Z. stations at good speaker strength. Four Australian stations were also brought in at speaker strength and definitely logged. There were dozens of N.Z. and Australian 'BB' stations on the air, but we did not have time to log each one. However, the tests carried out were sufficient for us to say that the set will definitely bring in all main Australian and N.Z. stations under normal conditions. The tests were carried out with a short side aerial.

**BUYING THE PARTS.**

We strongly advise constructors to start right by obtaining the full kit of parts as specified. Make-shifts, or inferior parts, are not recommended for this set. They may be all right, but if you take the risk you are spoiling the whole job, and for the small saving it is not worth while.

**MAKING THE START.**

Start off by marking all the components and getting everything in position; before commencing wiring follow the circuit and wiring diagrams, noting the following. For the sake of clearance in the drawing, filament wires have been omitted.

Take a pair of twisted wires from the 6v tappings on the transformer to the filament of the 6G6, 606, and 42, marked X in the diagram. The 230v, 3-core flex has also been omitted. This is connected as follows:

- White wire to ground (i.e., to chassis).
- Red wire to C on transformer.
- Black wire to 240v tapping.

The rest of the wiring can now be proceeded with, according to the diagrams.

The only other special point to watch in the whole job is to see that the left side electrolytic condenser is insulated from the base, and that the dial lights do not short on the arms that support them. When you have finished the wiring, check every wire very carefully, then the valves and speaker can be plugged in. Now connect the set to the 230-volt supply, carefully watching the 80 valve to see that no blue flashes occur.

Should a blue flash be seen, switch off immediately, as this indicates a short circuit, and you should carefully check over again to see where this is occurring and remove it.

**TRIMMING UP.**

You now proceed to line up the gang condenser, which is best done with the set tuned to a station in the centre of the dial. Each trimmer on the gang should be rotated very slowly to bring the station up to maximum volume. When the trimmerts have been set, do not move them again on any other part of the dial, as this would upset the tuning process.

Your Sky Sweeper is now in working order, and you will be really surprised at the mellow tone, which can be varied to suit individual tastes by the tone control on the left.

---

**THE COMPLETE CHASSIS.**

- Red wire to C on transformer.
- Black wire to 240v tapping.

---

**BIRD'S EYE VIEW.**

- Red wire to C on transformer.
- Black wire to 240v tapping.

---

**WORM'S EYE VIEW.**

- Red wire to C on transformer.
- Black wire to 240v tapping.
Selectivity is good, but, of course, the set is
so sharp as a Superhet. The Popular Sky
sweeper is a receiver that you will be proud
own and to demonstrate to your friends,
and, what is more, a receiver built by your own
hands will give you more joy and entertainment
than it is possible to get from any factory-made
machine.

POPULAR SKY SWEEPER CIRCUIT.
As a further refinement a 100,000 ohm 1-watt
Resistor may be placed between the screen of
the 6C6 and 606 valves and earth.

POPULAR SKY SWEEPER CIRCUIT.

POPULAR SKY SWEEPER CIRCUIT—UNDER CHASSIS WIRING.

PARTS LIST.
1 Oxford Aerial Coil, 5 mfd. Tubular ditto.
2 Oxford F.F. ditto.
3 Valve Socket. 1 .003 ditto.
4 Chassis. 9 Assorted 1-watt Resistors.
5 Dial. 12-Gang Condenser. 2 10,000 ohm Potentiometers.
6 Power Transformer. 2 6-mfd. Electrolytic Condensers.
7 1 Set Raytheon Valves.
8 Condensers. 1 Amplifier input Speaker.
9 Sundries, including Knobs, Power Flex, Bush,
10 Terminals, Bolts and Nuts, Wire, Lugs, etc., etc.

COMPLETE KIT OF PARTS
Without Valves or Speaker.
Cat. No. £699
Ditto, With Valves and Speaker.
Cat. No. £600
Ditto, as-embled and tested, with
Valves and Speaker.
Cat. No. £605

STANDARD COIL.

Heal Disease
WITH LIGHT RAYS!

"MONARCH."
Here's the famous Radiating SUNLAMP, a sim-ple, safe and economi-cal way of employing LIGHT THERAPY (as the best authenticated healing agent). It is a hand-lamp that promotes strongly con-centrated rays of light and heat upon the affected part. Relieves pain in the case of Neuralgia, Gout, Rheumatism, all nerve complaints, skin diseases, discharging sores and open wounds.

Complete with fittings and instructions.
Cat. No. £7 £5 1/36 (G)
(See page 10 for further particulars.)

SHADE
HOLDERS. (K)
For table lamps. Strong oxidised frames, hinged in centre so that shade can be tilted.
Cat. No. £36
Each
Ditto, chrome finish.
Cat. No. £37
1/6
And now, The ALL STAR TWO

The main advantages of this set are its extreme sensitivity, economical running costs, low initial cost and surprising power. The complete set will cost about 75c, and if a good aerial and earth system is used, the set will be capable of giving quite good loud speaker results of an evening. With headphones, the volume from most stations will have to be turned down, and in most localities no trouble should be experienced in receiving the Y.A. stations in daylight. Australian and even American stations can also be well received.

The A drain is 44 amp, while the B drain is about 4A. Thus a set of batteries would last a considerable time.

THE CIRCUIT.

As will be seen from the circuit diagram, a KFI Philips Valve is used as R.F. amplifier, and a type 19 as leaky grid detector and tet audio amplifier. A KF2 valve can be used in the place of the KFI specified, with slightly better results, but the B drain of this valve is greater than that of the KFI. The KF1 will probably suit most constructors, and if light duty batteries are used, it is just as well to keep the B drain under 6A.

A 0.0033 condenser is used to tune the coils and a 0.001 variable condenser inserted in the aerial lead enables smooth action to be obtained, and helps to sharpen up tuning, which is always inclined to be rather broad in T.R.F.'s. The plate supply of the KFI is through an R.F. choke, the primary of the R.F. coil, and thence to the cap on top of the valve. This valve is spray shielded, and this is connected to one of the pins, so no shield is needed.

Leaky grid detector is used, as this method gives greater sensitivity. Reaction is controlled by means of a .1 meg. potentiometer. The B + 50 to 135 lead to the potentiometer should be tried at various lamp angles to give smooth reaction. Something about 100 volts will be found to be generally suitable.

If the rheostat breaks contact in the "O" position, a single pole on-off switch, as shown in the circuit, will be O.K., but if there is still a current flowing to the valve even when the rheostat is in the "O" position, it will be necessary to have a double pole single throw switch, one side of the switch breaking the A lead to the rheostat, and the other breaking the B and max. lead to the set. Failure to break this lead would result in continuous battery drain through the potentiometer. The 0.001 and 0.005 fixed condensers must be of the mica type, and if a deeper tone is required, a .05 or .07 tubular condenser can be connected across the phone terminals. If a 2-volt accumulator is to be used in place of the 2 only 1½-volt dry batteries to supply the filament voltages to the valve, then the rheostat can be dispensed with. In this case, the switch, which will have to be of the double pole type, can be mounted in the centre of the chassis, and the midget 23-plate condenser on the extreme right, thus keeping everything symmetrical.

CONSTRUCTION.

The construction is really very simple. First of all, mount all components, the lay-out of which will clearly be seen from the photograph of the receiver. It is advisable to run a bare earth wire from the earth terminal round the inside of the chassis, anchoring it at various points by means of solder lugs under several of the nuts and bolts used in fastening the components on to the chassis. All earth connections shown in the circuit diagram should be made to this wire. Including a lead from the wipers on the moving plates of the gang condenser. Before connecting up the batteries, check over all wiring—a fault might easily ruin your valves. Do not forget to note the various colours used in the battery cable for different voltages as you wire them up.

OPERATION.

When the construction has been completed, connect up the batteries, aerial and earth, plug in valves, connect plate gap of KFI to top of valve, and switch on the set. Tune in a station about the centre of the dial, and keeping the volume low, rotate the trimmer on the aerial section of the gang condenser for greatest volume, at the same time rocking the trimmer on the aerial section of the gang condenser for greatest volume.

PARTS LIST FOR "ALL STAR."

1. Chassis.
2. 10-ohm Condenser, .00035.
3. 22-plate Midget Condenser, .0001.
4. Aerial Coil and Shield.
5. R.F. Coil with reaction and shield.
6. R.F. Choke.
7. 100,000 ohm Condenser.
8. 250,000 ohm Carbon Resistor.
9. 1.5 meg. Carbon Resistor.
10. 1.5 mfd. Tubular Condenser.
11. .0001 Mica Condenser. 12. .0025 Mica Condenser.
13. 1 Philips KFI and 1 Raytheon 19 Valves.

SPECIAL KIT PRICES (£) ALL STAR TWO.

Cat. No. EK635—Complete kit as listed above, without valves
£2/14/-

Cat. No. EK580—Ditto, with valves
£3/13/-

Cat. No. EK577—Complete Kit as above, with Valves, Phones and Batteries
£5/15/-
improve your reception

We receive dozens of enquiries every day on the many different phases of radio sets and circuits, but there are two questions that are asked more than all the others put together. They are: (1) How can I make my set more selective? and (2) How can I increase my volume?

An improvement on all types of sets can be made by placing a variable condenser in the aerial circuit. Many old-time sets included a condenser of this nature as part of the standard equipment, but the tendency nowadays is to reduce the number of knobs as much as possible, but if we do not mind twisting an extra knob better reception is yours. The condenser is simply placed in the aerial lead—that is, the aerial is joined to one terminal on the condenser. The other condenser terminal is connected to the aerial terminal on the set. The condenser tunes the aerial, and it will be found that at a certain setting the sensitivity of the set is increased, while at another setting the selectivity is improved (with a slight loss of volume).

The condenser can either be connected in the aerial lead-in outside of the set or on the panel of the set itself. The Telcon people make a special condenser for this purpose, and a shorting switch is incorporated so that at its maximum position a straight-through connection is given. Constructors of sets would be well advised to connect a condenser of this type in any set they build. It is well worth the small outlay, and after all it’s a very cheap experiment.

utility desk lamp. (D)

A standard flexible arm reading lamp, 12in. goose-neck, heavy cast-iron base. Large size reflector, arm bends as required, putting the light just where it is wanted. Supplied with 6ft. cord and lamp.

Cat. No. EE45 ... 12/6
"Home Volume" Amplifier

This Amplifier is designed for the benefit of the home constructor, who has need for an amplifier of this nature. While primarily intended for use in the home, it has plenty of volume for dance halls, etc. The construction is simple and the cost low.

This Amplifier is designed for use in small dance halls, public address, etc. The circuit is designed to give a power output of approximately 5 watts, and its neatness and compact size will appeal to many.

A feature with triode connections is resistance coupled to a 6DC also as a triode amplifier, which in turn is transformer coupled to a pair of 6F6 pentodes in push-pull.

If a microphone is to be used, or if there is not sufficient gain from the pickup, it may be boosted by connecting the pickup or microphone to the primary side of an audio transformer and connecting the secondary winding to the pickup terminals on the amplifier.

LIST OF PARTS. (K)

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Quantity</th>
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</thead>
<tbody>
<tr>
<td>1 Chassis</td>
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<tr>
<td>6 Octal Sockets</td>
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<td></td>
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<tr>
<td>1 Lm. Potentiometer</td>
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<tr>
<td>1 P.P. Input Transformer</td>
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<tr>
<td>2 mfd. Electrolyte Condenser</td>
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<tr>
<td>1 1000 ohm Carbon Resistors</td>
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<tr>
<td>1 200 ohm Wire-wound Condenser</td>
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<tr>
<td>1 6J7, 1 x 6E5, 1 x 6X4, 2 x 6F6</td>
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</table>

CIRCUIT—HOME VOLUME AMPLIFIER

- Transformer
- 6J7, 1 x 6E5, 1 x 524, 2 x 6F6
- 2 Terminals, power flex grid clip, push-back, nuts and bolts
- Speaker—1000 ohm P.P. Pentodes
- Complete Kit of Parts as above, without valves or speaker
- Complete Kit of Parts as above, with valves, without speaker
- Suitable Ampil Speakers—18-inch $55/-

THE BATTERY SKY SWEEPER

(Concluded from page 162)

with a coloured pencil as it is put into position. This plan should disclose a misplaced wire immediately.

FINAL ADJUSTMENTS.

To line up the set tune to a station about the middle of the dial, the weaker the better, and adjust each trimmer until maximum volume is obtained. Once the trimmers have been adjusted correctly there should be no further need to touch them.

BATTERIES.

The set being of very low battery consumption could very well work off light duty B batteries, but for ultimate economy and for efficiency we have chosen 3 45-volt standard size Berco batteries as our high tension supply. This size of battery is not only admirably suitable for the Sky Sweeper, but also has an additional advantage of being tapped at every 3 volts. The advantage of this is that it allows us to adjust both the detector and screen grid voltages until smooth reaction is obtained and this is one of the secrets of success with regenerative detectors, and why our 4-valve set will give better distance reception than most 3 and 4 valve sets. Of course, if you already have B batteries with standard tappings there is no reason why you should not use them. Users of tapped batteries, however, will be able to experiment with the voltages until maximum results are obtained. The other batteries required are a 2 volt A battery and a 9 volt C battery.

In conclusion we state without hesitation that the Battery Sky Sweeper will uphold the goodwill of the Sky Sweeper range of kits and provided you use good quality parts as specified the set will give you satisfactory results for many years.

LISSEN KITS

Special Replacement Parts for Lisseen

ALL-WAVE FOUR KITS. (K)

Lisseen 2 x 1 Mansbridge Condenser Blocks.
- Cat. No. EC647 Each $4/6
- Lisseen Astatic H.F. Chokes Each $5/6
- Cat. No. EC49 Each $5/6
- Lisseen Hypernik Transformer for Q.P.P. Circuits
- Cat. No. ET607 Each $18/9
- Complete Spare Volume Controls (Potentiometer and Condenser)
- Cat. No. EP68 Each $16/6

BATTERIES.

We have specially imported Batteries as recommended by the Manufacturers for the Lisseen All-Wave Four. Each set consists of 3 45-volt Berco "B" Batteries and 1 Heavy Duty "C" Battery (15 volts).
- Cat. No. EB193 Set $52/6
THE AUTO RECEIVER

Here are the details of a receiver which can be used in a car, operating entirely from a vibrator unit taking current from the ignition system of the car. At the end of the trip the set can be lifted from the car and used in the home when plugged into the special all-electric power pack which is also described.

(From "Wireless Weekly")

Many of the followers of our technical articles have written to ask for full details of the construction of a receiver suitable for motor-car reception.

POWER SUPPLY.

The set is especially designed to operate from the power supply unit which is fully detailed on page 124.

It is also a simple matter to make up an a.c. power pack for the set, so that it can be used with the vibrator unit when installed in the car and then taken out of the car at the end of the trip and used in the home as an ordinary all-electric receiver.

CIRCUIT.

The circuit has been specially designed to give the type of performance which is required in a car set, extreme sensitivity with low noise level, together with considerable more power output than is normally obtained from a battery-operated receiver.

The sensitivity has been obtained by using an r.f. stage ahead of the first detector, and by using an intermediate frequency of 175 kc. The power output has been obtained by using a two-stage audio end, finishing off with a 75 class B twin valve in the final stage. The high audio gain is also desirable, and offers no difficulties in a case like this.

NOT FOR THE NOVICE.

We have never been very keen about recommending amateur set builders to try conclusions with a car receiver. The power unit was a very difficult problem and the suppression of noise from the ignition was another. Experience with this has proved to us that the job is really not as difficult as it might be, and we feel sure that if the average advanced experimenter follows out the instructions carefully, he will be sure of succes, but we still have doubts about the novice. We strongly advise him to start with something simpler.

By this, however, we do not mean a simpler car set. If the car has a set at all, then this is the circuit. The use of small two-valve sets in cars is seldom satisfactory, as there is insufficient pick-up from the aerial.

The use of battery type valves is also not quite satisfactory as the filaments will not stand up to the vibration of the car and the fluctuation of the voltages supplied by the car battery.

Directly heated valves also tend to feed noise into the set from the battery circuit, which is also connected to the ignition circuit. It will be seen that the indirectly-heated type of 6.3 volt valves are essential for satisfaction.

PACKING IT UP.

The construction of the receiver is slightly more difficult than usual, because the components have to be picked up into a small space, as in most cases the room in the car is very limited, and the set has to be small enough to tuck away under the dash, without interfering with the knee space.

Fortunately, there are special coils available in small cans, those in the square cans being best to arrange to make the most of a small space.

All the other components are also available in small-sized units, but even so, they need a bit more care in assembly than is usual with a bigger set.

THE LOUD-SPEAKER.

For the car set a small pernagnetic speaker is used, the one in the original receiver being a four-inch model. The speaker needs to be capable of handling a fairly solid power output of the 79 in class B amplification, which in the case of this receiver amounts to about 5 watts. A few years ago it would have been very difficult to find a small pernagnetic speaker which would serve the purpose satisfactorily.

An energised speaker could be used, but the strains on the car battery would be about an ampere, and nothing would be gained. We strongly recommend the pernagnetic model mentioned.

STOPPING NOISE.

Getting rid of interference noise is not as difficult as might be imagined, but only when the most thorough screening is carried out.

The set must be encased in a metal box, even the loud-speaker opening being covered with a grille made up of copper gauze, soldered to the car. All leads from the set must be thoroughly shielded, those running to the power supply unit being especially important. In this case one of the wires will be at earth potential, but to avoid any chance of picking up noise it becomes necessary to shield even this wire, the wire inside being earthed at both ends, and the shielding braid also at both ends.

The vibrator unit must also mount inside a metal case, efficiently earthed to the frame of the car. Provided that the leads from vibrator

LIST OF PARTS.

CAR RADIO SET

1 committee.
1 6-gang Pick-up Speaker.
4 6-pin Sockets.
1 7-pin Socket.
1 8-pin Socket.
6 Valve Cans.
1 3 Mid-set coils (Aer. R.F. and Oso., 460 kc.)
1 462 K.C. padder.
1 1.6-f. Transformer.
1 Audio Transformer, Class B.
3 5 G. Clips.
1 Combined Volume Control and Switch.
5 1 Tubular Condensers.
2 25 mfd. Condensers.
1 .0001 Mica Condenser.
1 1.0005 Mica Condenser.
1 0.0005 Mica Condenser.
1 0.01 Mica Condenser.
1 2 5000 ohm. W.W. Resistors.
1 150 ohm. W.W. Resistor.
1 150-ohm W.W. Resistor.
3 3.5 meg. Carbon Resistors.
1 1.25 meg. Carbon Resistor.
1 50,000 ohm. Resistor.
1 25,000-ohm Resistor.
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to set are well-shielded, it is often a good scheme to keep the vibrator at a distance of two or three feet from the set.

FITTING SUPPRESSORS.

There are many sources of ignition noises, and these vary with every individual installation, so that it is not really safe to give any definite advice. For an example we may take a modern American car, the latest Pontiac Six. In this case it was found desirable to fit a heavy-current filter choke in the A plus lead, a special choke for this purpose being readily available. It needs to be wound with wire capable of carrying 10 amperes. On the battery side of this choke a bypass of 5 mfd, was fitted. On the generator a special interference condenser (metal encased) was fitted, with the can and the earthed and the other side connected to the positive terminal of the generator's output.

A similar condenser was fitted at the distributor from the low tension input to earth, and this wire was encased in a shield. The main high tension lead from coil to the centre of the distributor was also shielded in copper-braid, the shielding being earthed at both ends.

Special spark plug suppressors (available quite cheaply) were fitted to each sparking plug and also in the main h.t. lead to the distributor cap, although we doubt if these were absolutely necessary. The finished job, with a well-shielded lead-in from a top aerial resulted in complete freedom from interference noises, even on distant stations.

CONTROLS.
The set can be operated by a small dial mounted directly to the outside of the box or by one of the extension units available. The best system we use will depend on the particular installation.
The control units to mount on the steering column are quite satisfactory and are readily available in a couple of different brands at reasonable prices.

A.C. POWER UNIT.
The power unit consists of a small power transformer, suitable filter system to take out hum, a plug similar to the plug on the generator unit. This can be arranged by using a valve socket for the unit, with a 4-pin plug for the set.
The filament pins being used for the 6.3 volts for the heaters and the plate pin for high tension, and the grip pin for earth.

While not essential, it is good practice to use a voltage divider across the high tension output of the a.c. unit, as shown in the diagram. This will limit the peak voltage if the unit is switched on without the set being connected, and will also serve to discharge the filter condensers under such circumstances. Not that this is really important in the case of electrolytes, as they have quite a high leakage resistance even when in perfect condition. The resistance of the voltage divider is not important and 15,000 or 25,000 ohms are suitable resistances.

R.C.S. CAR RADIO KIT SET.

As many of the components in the car radio are special, we are providing a complete set of parts, including a loud speaker, to make it easy to obtain and certain everything fine. All the components necessary are included excepting valves, cabinet, and vibrator unit, which is separate.

Cat. No. EK9 £10/17/6

A VIBRATOR POWER SUPPLY

Radio broadcasting is now being fully recognized as a service as well as an entertainment, and many people have made radio such a part of their lives that they miss it very much unless constantly in touch with a receiver.

For example, it is the thing these days to have your car equipped with a radio receiver, and the car set is invaluable in many ways—many a hen-pecked husband listens in to the description of the racing broadcast when he takes the family for a picnic on Saturday afternoon.

But the value of a radio receiver in the car is a long story, and for the moment we are more interested in the technical details, and especially interested in the technical details of the vibrator type of power-supply unit which has made the all-electric car receiver a possibility.

By all-electric we mean a radio receiver which requires no batteries, and draws its complete power supply from the starting and ignition system of the car.

THE HIGH-TENSION UNIT.

This article and circuit is published in order to show how the power unit required to supply high tension for a car set from the car's battery. The problem is rather different from the one presented when we want a power supply unit for a dual-wave type of vibrator set with directly-heated valves or a combination of directly and indirectly-heated types.

The main difference lies in the matter of filters supplied power, and also in the interposing of the low tension circuits and the filament circuits of the set.

THE VIBRATOR.
The heart of the high-tension unit is the vibrator, a delicate arrangement of springs and contacts, which is supplied inside a sealed aluminium case, with pins at the bottom so that it can be plugged into a special type of socket like a valve socket, but with five contacts arranged in a form with three pins on one side and two on the other.

THE FUNDAMENTALS.
The basic operation of the unit is something like this—the six volt direct current from the accumulator is broken up by the action of the vibrator into intermittent or pulsating d.c., and this is then supplied to the primary of the power transformer and operates in very much the same way as alternating current. The power transformer steps up this voltage to alternating current at a couple of hundred volts.

A PARTS LIST—A.C. PACK.

1 Chassis Midget Power Transformer, 6.3v.
2.004 mfd. mica condensers.
2 Choke, 300H, 100mA. 2.5 mfd. tubular condensers.
2 6-Mid. Electro-Condensers.
9 Push Terminals.
Rubber Grommet.
4-pin Socket.

Complete Kit of Parts, as above. Cat. No. EK11 £4/13/6

A MIDGET OR CAR RADIO COIL KIT.

Some constructor will prefer to purchase the main components, and for them we have the Foundation Kit which comprises: The Chassis, Coil Kit, complete with padders, special valve sockets and valve shields, and tuning Condenser. Cat. No. EK10 £4/13/6

AUTO RADIO

ORDER YOUR REQUIREMENTS FROM THIS LIST.—

Complete Car Radio Kit, with valves. Cat. No. EK32 (K) £12/2/6

EXTRAS.

Metal Case for above Cat. No. EK33 (B) £1/2/6

Sterling Column Control. Cat. No. EK36 (D) £2/16/6

Kit of Parts for A.C. Power Pack. Cat. No. EK11 (K) £2/10/-

Kit of Parts for Vibrator Power Pack. Cat. No. EK12 (K) £5/10/-

LIST OF PARTS REQUIRED.

Base, size 6 x 7 x 3. Case, size 6 x 7 x 6.
1 Special power transformer.
1 Special filter choke.
1 Special r.f. choke.
1 Electrolytic condenser unit, 12 and 4 mfd.
2.501 mfd. mica condensers.
200 ohm centre-tapped resistor.
1000 ohm hardware, knobs, lugs, wire, copper braid, shielding, etc.

Send Orders to the Electric Lamp House 27 Manners Street, Wellington
and this alternating current from the secondary of the power transformer is fed back into the vibrator unit for rectification, the rectified current then being filtered by a choke and condenser system to become the direct current, high-tension supply for the set.

**SPECIAL COMPONENTS**

The vibrator unit calls for several special components, which are not normally stocked by radio dealers. The two chokes are not ordinary filter chokes and the power transformer is also a special job. Fortunately, we have been able to make arrangements with the R.C.S. factory to supply these units, and they will, therefore, be ready for delivery by the time this article appears in print.

**SHIELDING**

The important thing about the vibrator unit is the shielding, and the plan we suggest is to build the outfit on to a conventional base, about six inches by seven inches, and then place a plate across the bottom, so that the whole unit is totally enclosed.

Shielding is also necessary for the wires leading from unit to unit and the shielding must be effectively earthed to the frame of the car, as is the box containing the unit and also the negative lead. It seems to be ridiculous to have the negative wires earthed at both ends, then surrounded by braid or copper shielding, which is also earthed, but that appears to be the way to ensure an entire absence of interference noise.

**ASSEMBLY**

The socket connections are easy to follow, as it does not matter which is of the outside terminals in the case of each set, the centre terminal on the three-terminal side being earthed. Right at the socket the 280-omr centre-tapped resistor is fitted, with the centre-tapping earthed and the ends connected to the outside terminals, which in turn are connected to the outside ends of the power transformer primary.

The power transformer windings are also colour coded to show correct connections.

---

**VIBRATOR UNIT PRICES.**

**R.C.S. VIBRATOR KIT SET. (K)**

Consists of a complete set of parts including vibrator to build a H.T. unit suitable for the Car Radio.

Cat. No. EK12 £5/10/-

**R.C.S. VIBRATOR HIGH TENSION CHOKE. (K)**

This Choke is similar in appearance to our Audio Transformer. The H.T. Choke for a Vibrator Unit requires special treatment in designing and engineering. Its core and winding are properly balanced to suit the exciting conditions for effectively filtering a vibrator.

Cat. No. EC10 Each 13/6

**R.C.S. VIBRATOR POWER TRANSFORMER. (K)**

The R.C.S. Power Transformer for Vibrator units is also contained in our new bakelite case. It is designed to supply correct voltages and current for the receiver, and the finest grade materials procurable are used in its construction. They are given individual tests during manufacture, as was a rigid test and inspection before shipment.

Cat. No. ETS14 Each 16/6


**BURDDEPT BATTERY SETS.**

See page 4.4t.

**GOING GREAT GUNS.**

"I received the 'BURDDEPT' All-wave Battery Set in good order, and I am very pleased with the set." F.R. (Wangimui).

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**"BURDEPT THREE-VALVER"**

Putaruru, 27/10/37.

'The set is giving for better results than I thought possible for a three-valve. Everyone here seems interested, and I think you will get some orders from this district. I have already had Daventry and Berlin on short wave at quite good volume. As soon as my accumulator has been charged expect to do even better." H.S.

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**Re VIOLET RAY MACHINE.**

Thames, 9/16/37.

'I am pleased to say that both Mrs. B and I have found benefit in way of relief from use of the machine. Slightly, of course, but nevertheless marked improvement. In spite of the fact that we are restricted with the use of it between the hours of 9 and 10 o'clock in the morning.' J.A.B.

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'My Firma wishes to acknowledge receipt of the 'Palco' Multimeter, and to express my appreciation of its good value. This instrument is absolutely indispensable to every serviceman and bona-fide experimenter. The Lissen Transportable also proved to be first-class value. So pleased I have the machine that I am ordering another, as per enclosed order form.' J.P.B.
**PENTAGRID SEVEN (Battery)**

Here is the circuit of a very powerful 7-Valve Dual-Wave Battery Receiver. While every effort has been made to obtain best possible form and sensitivity, battery consumption has not been lost sight of, and for such a powerful set the battery drain is very low indeed. The drain from the "A" battery is only .59 amp, which means that you will get about 1100 hours' life from a single Air-cell. On an accumulator rated at 60 a.h., it will give you a theoretical run on one charge of 100 hours, which will vary according to the condition of the battery.

**THE B BATTERY.**

Consumption varies from 5 to 15 mls. This, too, is therefore very economical for a powerful set of this kind.

**LIST OF PARTS REQUIRED.**

Chassis, 15 in. x 10 in. x 3 in.
1 Coll Kit (tuning box, 3 intermediates, low gain, and padding condenser for broadcast).
2 2-gang Condensers to suit coils.
1 Tuning Dial, to suit coils.
3 Valve Chassis.
2 Valve Comps.
1 1-meg. Potentiometer.
1 Battery Switch.
4 1-meg. Resisters.
1 1-meg. Resistor.
1 25-meg. Resistor.
3 25-meg. Resistor.
1 0.05-mfd. Tubular Condenser.
2 0.05-mfd. Tubular Condensers.
2 0.05-mfd. Mica Condensers.
2 0.001-mfd. Mica Condensers.
3 0.001-mfd. Mica Condensers.
1 B class Audio Transformer (Battery type).
Sockets: 1 "P" type, 5 5-pin, 1 6-pin, 1 5-pin.
Valves: KK2, 2 1A4, 1K6, PM2X or B217, 2 30.
Batteries: 3 45-volt H.D. B Batteries; 15-volt Battery.
1 Air-cell (or 2 volt Accumulator).
Hook-up Wire, 5-pin Battery Plug and Cap, Valve Clips, 3 Knob, 2 Terminal nuts and Bolts, etc.
Speaker: Permanetico for "B" class output.

**PRICES OF KITS. (K)**

**R.C.S. COIL KIT. (K)**

R.C.S. Pentagrid 7-coil Kit includes the new famous R.C.S. dual-wave coil box, 3 iron-cored IFS and padders. Clearly coloured coded wires are simplicity itself to connect. The astounding efficiency of this kit will more than satisfy you.
Cat. No. EC962 ... Price £3/19/6

**R.C.S. FOUNDATION KIT. (K)**

Comprises chassis, coil kit and IF as above, latest type of two-glass edged lat dial, padded, and Stromberg Condenser to suit.
Cat. No. EC17 ... Price £6/19/6

Complete Kit of Parts for Pentagrid Seven, without valves, batteries or speaker.
Cat. No. EC18 ... Price £9/5/6

Otto, with valves and permanent magnet moving-coil speaker.
Cat. No. EC19 ... Price £14/9/6

**CAT. NO. EC18 COMPLETE KIT.**

- Chassis, tuning box, intermediate, low gain, and padding condenser for broadcast.
- 2 2-gang Condensers to suit coils.
- 1 Tuning Dial, to suit coils.
- 3 Valve Chassis.
- 2 Valve Comps.
- 1 1-meg. Potentiometer.
- 1 Battery Switch.
- 4 1-meg. Resisters.
- 1 1-meg. Resistor.
- 1 25-meg. Resistor.
- 3 25-meg. Resistor.
- 1 0.05-mfd. Tubular Condenser.
- 2 0.05-mfd. Tubular Condensers.
- 2 0.05-mfd. Mica Condensers.
- 2 0.001-mfd. Mica Condensers.
- 3 0.001-mfd. Mica Condensers.
- 1 B class Audio Transformer (Battery type).
- Sockets: 1 "P" type, 5 5-pin, 1 6-pin, 1 5-pin.
- Valves: KK2, 2 1A4, 1K6, PM2X or B217, 2 30.
- Batteries: 3 45-volt H.D. B Batteries; 15-volt Battery.
- 1 Air-cell (or 2 volt Accumulator).
- Hook-up Wire, 5-pin Battery Plug and Cap, Valve Clips, 3 Knob, 2 Terminal nuts and Bolts, etc.
- Speaker: Permanetico for "B" class output.

**NOTE.** The set was fully described in "Wireless Weekly," July 30th, 1937. Constructors who cannot build from the circuit diagram should not attempt to build it, as full constructional details are not available.

**IRONCLAD SKY-SWEEPER**

One of the highlights of the 1936 season. Four-valve T.R.F. set, using metal valves. Good speaker reception from all main New Zealand and Australian stations. "Radiogram" with full particulars will be sent on receipt of three penny stamps.

Complete set of parts as above—
Cat. No. EC412 ........... £5/6 (K)

Otto, with Raytheon Metal Valves and Jensen Sin. Moving Coil Speaker—
Cat. No. EC413 ........... £7/14/6 (K)

Otto, with Sin. Speaker—
Cat. No. EC414 ........... £1/19/6 (K)
STRAIGHT SUPER-HET. FIVE

The reason for the name "Straight Five" is that in this set all "harmful" snags, etc., have been eliminated. We considered that there were still plenty of people who wanted a STRAIGHT-out broadcast set at a reasonable price. In designing this set we have therefore eliminated all fancy touches such as short-waves, metal valves, expensive dials, A.V.C., iron-cored coils, etc., all of which are very nice if you have the inclination for them and the cash to pay for them.

Now let us see what we have left. We have a 5-valve super-kit set of conventional design, glass valves (which will equal, if not better, results from metal ones). Selective enough for all but the most fastidious. Our set will bring in all the usual Australian and N.Z. stations at good speaker room strength, and is of good form. For its price it is, in our opinion, a marvel of good value. Good quality parts are used throughout.

The Superhet Five Circuit is of excellent design, cheap to build, easy to construct, and when air-tested gave excellent performance on distant reception.

The tube line-up is as follows: A 6A7 1st det. and oxo, followed by a 6B6 high gain IF stage at 460 K.C., this frequency being chosen to give better inter-channel selectivity and extra freedom from double spot tuning. Next follows a 6G6 2nd det., which is resistance coupled to a 42 type Pentode power tube.

In building this set great care should be taken to mount all components as shown in the diagrams. The filament pins on the tube sockets should face in the direction shown in the diagram.

Remember when fixing the sockets of the 6A7, 6B6 and 6G6 tubes to mount the bases of the gold shields. Care also should be taken to see that the aerial terminal is insulated from the chassis. When mounting the filter condensers, see that one of them is insulated from the chassis and that the other is making good contact with the metal chassis, this being achieved by scraping the paint away from around the hole in which it is mounted. It is advisable to attach two pieces of push-back wire to the two-pole condenser before mounting and also to earth the ging to the chassis.

Wiring up the set should present no difficulties if the lay-out diagram is carefully studied before the wiring is commenced. First take in two pieces of wire and solder to the 5V, 2-Amp. lug on the transformer panel and then connect those to the filament pins of the rectifier socket, two more wires should be taken to the plates of the rectifier socket from the 185V, 80MA, solder lugs on the panel. The filaments of the remaining tubes are supplied from one 6.3V. winding, and the dial lights can be connected to the other winding, the 63V. C.T. and one side of the other 63V. winding earthed. The remaining wiring is quite straightforward.

The most logical way to complete this is to commence at the aerial terminal and wire the aerial coil, the 6A7 tube socket, the 1st IF stage, and so on until all the wiring is completed. When wiring up the speaker socket the plate terminal should be wired to the plate terminal of the 42 tube, the screen terminal to the grid terminal, and the filament terminals one to be earthed and the other to be connected to the H.T.C.F.T., which also connects to the insulated side of the electro. The power flex should be connected to the plugs marked "240 volts." The grid clips, fitted, the knobs fitted, the tube plugged in and the caps fitted over them and the spk. plugged in.

When all this has been done the set wiring should be given a thorough check over to make sure that no mistakes have been made.

The aerial and earth leads should now be connected, and the set made ready to be switched on.

Mail All Orders to the 'Electric Lamp House' 27 Manners St. WELLINGTON.

Super Het Five

Circuit Diagram.
Cuts in the H.T. wiring. If, however, the rectifier. If there should be, switch off immediately and examine the set for any short circuits in the H.T. wiring. If, however, the filaments show a dull red glow and the other tubes light up, everything may be taken to be in order.

Next comes the more difficult task of aligning the set. This is best carried out by first setting the trimmers on the gang about half way out, and the same with the paddler. Next advance the volume control full on and rotate the dial until it reaches about 1400 K.C. Now adjust the trimmers for best results, and if the volume rises turn the volume control back in order that slight differences in volume may be detected.

When best results have been obtained, swing the dial over to 600 K.C. reading and adjust the paddler, at the same time gently rocking the dial backward and forward to gain the maximum amount of volume. The whole process should now be repeated once again—the alignment is then completed. Though strictly speaking the IF trimmers should not be interfered with unless a signal generator is on hand, there is no reason why a slight adjustment should not be attempted to ensure maximum gain.

With the set tuned accurately to a station, say 4YA, and the volume turned well down, the trimmers turning the secondary of the first IF transformer can be rotated carefully in both directions to see if any increase in volume results. It is advisable to note the original setting of the trimmer so that it may be returned to its factory setting. After this adjustment the remaining trimmers can be adjusted in turn, leaving them at their maximum volume.

### PARTS LIST

1. Chassis
2. Radiokens D Type Dial
3. R.C.S. 60 m.a. Power Transformer
4. 2-gang Condenser
5. R.C.S. Coll Kit
6. Grid Clips
7. Dial Lights
8. 6-pin Tube Sockets
9. 4-pin Tube Sockets
10. 7-pin Tube Sockets
11. Type Tube 80
12. 4T Type Tube
13. 6G Type Tube
14. 6D Type Tube
15. 6AT Type Tube
16. Knobs
17. 10,000 ohm Potentiometer, W.W.
18. 100,000 ohm Potentiometer,
19. 2 yds. Heating Fins
20. 1 Pitt. Rubber Crummit
21. 2-lug Connecting Strips
22. 8 mfd. Condensers
23. .1 mfd. Condensers
24. .25 mfd. Condensers
25. .001 mfd. Mica Condensers
26. .05 mfd. Condenser
27. .05 mfd. Condenser
28. .0025 mfd. Condenser
29. 1 meg. Resistor
30. .5 meg. Resistors
31. .35 meg. Resistor
32. .1 meg. Resistor
33. 45,000 meg. Resistor
34. 250 ohm Resistor
35. 1,000,000 ohm Resistor
36. :500 ohm Resistor
37. Cold Push-back
38. Solder Lugs
39. 6/32 W. Nuts (Waltham T.)
40. Aerial and Earth Terminals
41. doz. Jin. 4 B.A. Nuts and Bolts
42. 3 fin. 4 B.A. Nuts and Bolts
43. 3 fin. 6 B.A. Nuts and Bolts

### KITS (K)

- R.C.S. Coil Kit for 4-valve Straight Super, including L.P.S. Cat. No. EC14
- Complete Kit of Parts, including valves and moving coil, speaker. Cat. No. EK38
- Ditto, without valves and speaker. Cat. No. EK95

£7.10.0

£5.10.0

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LINE FILTER—ENDS ELECTRICAL INTERFERENCE!

No more power line noises if you use this. Designed for use with all electrical receivers. It will definitely overcome all extraneous noises except those entering the set via the aerial system.

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Designed for the purpose of reducing noise and interference picked up on the regular aerial of a Radio Receiver when the source of such noise and interference is adjacent to the Receiver. It comprises two special Filtering Transformers (one illustrated) and 50 feet Waterproof, Interference-proof Lead-in Cable.

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