

SUPREME SERVICE.

Our RADIO EXPERTS are thoroughly skilled, and they are perfectly equipped with the most modern "SUPREME" precision instruments.

Thus they can test EVERY PART of your RADIO in a thoroughly scientific manner—absolutely no guess-work.

Service is not only expeditious, but results can be GUARANTEED.

Ring 45-274 for "SUPREME SERVICE."



See page 43 for this
£60 RADIO TESTER.

The SIGN
of Efficient
Radio Service

Arthur Cleave and Co. Ltd., Printers, High Street, Auckland.

AUCKLAND'S OLDEST RADIO FIRM. ESTD. 1920.

Radio-Electrical-Tools Cycles-Gramophones-Etc.



MAY 1931.

Johns Ltd.

CHANCERY ST. AUCKLAND.

BOX: 471. G.P.O. AUCKLAND.
PHONES:— 45274, 40743.

TELEGRAMS:
"CLIVIC" AUCKLAND.



EASY TERMS.

RADIO SETS, ELECTRITS, APPARATUS, CLOCKS, TOOLS, MOTORS, ETC., ETC.

Please Note.—If you are under 21 years of age, a guarantee over that age must sign the contract, and you must be 21.

DEPOSIT.—Usually 20 to 33 1/3 per cent, depending on the nature of the articles. Please suggest the deposit which suits your convenience, and we will know this, and we will endeavour to meet your wishes.

INSTALLMENTS.—Periodically, as arranged.

INTEREST.—Twopence per £1 per month is added to interest on outstanding interest.

REBATE.—During currency of agreement, this is effected by us, and charged to customer's account.

All transactions kept strictly confidential.

1 ZJ

The Call 1 ZJ was heard for the first time last year, when we constructed a small power station and began to broadcast it on a limited but regular schedule, as follows:

Tuesday, noon-2 p.m.
Wednesday, 7.30-9 p.m.
Thursday, noon-2 p.m.

Our object was to set a high standard for clarity of broadcasting, coupled with a quiet dignity, and to meet the requirements of our listeners. We have frequently been told that 1 ZJ is received with remarkable clarity, but our transmitter is not yet up to the standard of 1 ZR.

Shortly after completing our own station, we received a contract to build a similar but more powerful station for Messrs. Lewis Eady Ltd., 1 ZR. In three weeks, 1 ZR was quite ready, and on the air, and is maintained on a very full schedule ever since.

Recently, Messrs. Lewis Eady decided to increase their power, and we are continuing with our enlarging their station for them, being responsible both for the design and construction.

GUARANTEE.

WE HEREBY CERTIFY THAT, to the best of our expert knowledge, all **RADIO SETS** and **APPARATUS** made free from all defect, either of workmanship or material, when they are despatched from our factory.

ANY PART which proves defective within the guarantee period, supplied with it in our catalogue, must be returned to us, carriage paid, for inspection, and if the defect is due to carelessness, abuse, neglect, or other extraordinary circumstances beyond our control, it will be repaired or replaced at our cost, and a full guarantee is limited to the repair or replacement of the actual part, and does not cover consequential damage of any kind. **Valves and batteries not guaranteed.**

This guarantee is void if, without our permission being previously obtained, repairs or alterations are executed by any other person or firm.

We endeavour to sell only reliable apparatus, and invariably wish to be advised of any fault or defect, and at the earliest, we can adjust the matter for you, but in any case, the matter will be taken up with the manufacturers.

FOR HIRE.

POWERFUL PUBLIC ADDRESS SYSTEMS are available for sports meetings, public addresses, political meetings, shows, etc., within reasonable reach of Auckland. The cost of a system will depend, as conditions vary extremely. Approximately, however, the most powerful outfit costs about £5 per day, including operator, microphone, cables, and this charge for records if music is also wanted.

ORDER EARLY.—We have already had to wait for some time for the apparatus we had at the time. Please advise whether A.C. current is available for the amplifiers.

ELECTRIC GRAMOPHONES.

For domestic entertainments, very powerful gramophones can be hired, to work either from D.C. or A.C.

Full particulars on application.

TELEPHONE ENQUIRIES.

PROMPT TELEPHONE ENQUIRIES.

Ring 43-274 or 40-743, and, TO SAVE TIME, ask our Exchange Attendant for the Department you want—

1. DIRECTORS: Mr. V. B. Johns
Mr. A. C. Johns
2. MANAGER—WHOLESALE AND MAIL
Order (Mr. Jarman).
3. ACCOUNTS AND OFFICE (Mr. Smith)
4. SPORTS (Mr. Muller).
5. SERVICE (Mr. Marei).
6. WHOLESALE.
7. QUOTATIONS, STOCKS, ETC. (Mr. King)
8. RETAIL.

Our Exchange Attendant will get you through much quicker to the department you want if you give the above information. If the person you want is using another 'phone or otherwise engaged, you will be advised.

ENQUIRY AND QUOTATIONS.

In future, we hope to be able to answer all **QUESTIONS** on **RADIO** and **ELECTRICAL** referred to us, freely and without charge, but request the following instructions be followed:

1. Questions are numbered.
2. Questions are numbered, as possible.
3. Full **POSTAL DETAILS** be given.

1. Stamped addressed envelope be enclosed.

And remember **TWO THINGS**—we appreciate your orders just as much as you may appreciate the enquiry of ours. AND, we will certainly appreciate your acknowledgement of our answer, with any comments you care to make. This is a small matter, but may give similar problem, and it helps considerably to get various opinions.

QUOTATIONS.

Should you always like to get comments on any quotation we make you. If our price is not right, or even the apparatus we may be able to supply is not right. Then we usually not all be given in one letter, and frequent information gained from further correspondence enables us to supply just what is required.

JOHNS LIMITED

JOHNS BUILDING, CHANCERY STREET, AUCKLAND.

(1½ minutes' walk from Queen Street, by concrete road. See Locality Chart on Back Cover.)

Retail Radio List.

PLEASE HAND THIS LIST TO A FRIEND IF IT DOES NOT INTEREST YOU.

PAYMENT.

CASH WITH ORDER, UNLESS OTHERWISE PREVIOUSLY ARRANGED. Add exchange to cheques.

DEFERRED PAYMENT. See opposite page.

FREIGHT AND POSTAGE.

COMPLETE SETS.

Freight free, and safe delivery guaranteed, to nearest railway station or port.

POSTAL ORDERS.

Free on all **CASH ORDERS** of £1 or more.

EXPRESS 6d. per parcel extra.

FRAGILE—1/- per parcel extra (large parcels 1/6).

FREIGHT—CASH WITH ORDER (£1 minimum).

On goods too bulky, heavy, or otherwise unsuitable for postage, half freight or railage will be allowed to any port or railway station in New Zealand.

HOW TO ORDER.

Write plainly, preferably on one side of paper only. Give full name and address with every order. Give catalogue number, and full description—length, size, etc.

NEVER ORDER "SAME AS LAST." It will delay your order. Give full particulars with every order.

DEMONSTRATIONS.

We will gladly arrange a demonstration of any set or speaker at customer's convenience.

INCREASED EXCHANGE RATES.

Owing to the abnormally high **EXCHANGE RATE** existing at present, we may find it necessary to increase slightly some of our prices, until exchange rates become normal again.

Customers may rest assured, however, that such increases will be kept as low as possible, if they cannot be avoided, and that prices will revert to normal again at the very first opportunity.

We ask your co-operation in this matter, remembering that, even where such extra charges are passed on, we are absorbing a far larger proportion ourselves.

OUR TENTH ANNIVERSARY.

OUR TENTH ANNIVERSARY was celebrated at the end of last year. As business firms are of course, only as good as their reputation, but to have been associated with the **RADIO TRADE** for over ten years almost makes us feel hoary with **RADIO AGE**!! We naturally feel very proud of the honour of being "AUCKLAND'S OLDEST RADIO FIRM."

Each year brings new problems for our engineers, and new accomplishments. Most of us will remember last year as one of the least pleasant, but, nevertheless, we believe that **RADIO** has done its share towards making things more cheerful, and in bringing added joy to thousands of people.

Good times must come, just as surely as the good times. The happiest times, in fact, come just after the bad, when, with the old confidence restored, everyone can look forward to several years at least of improved prosperity.

And this **CENTURY HAS** been turned better and more cheerful years are ahead. We wish each and everyone of our customers the best of luck in the future, and thank them for their support in the past—support which has been especially appreciated during last year.

WELL-MAYDE.

IN FUTURE, THE RADIOS MANUFACTURED BY OUR FACTORY, WITH

OVER TEN YEARS' EXPERIENCE

IN THE PRODUCTION OF

SETS SPECIALLY SUITED TO NEW ZEALAND CONDITIONS

WILL BEAR THE NAME

Well-Mayde Radio.

Already, the high quality of WELL-MAYDE APPARATUS is well known throughout New Zealand. This standard of excellence will, of course, be fully maintained in the future.

WELL-MAYDE MEANS:—

1. DESIGN to suit local New Zealand conditions.
2. High Quality, and Efficiency.
3. Prompt Factory Service.
4. The GUARANTEE that IS a guarantee.
5. Employment for fellow New Zealanders.

MAKE YOUR SET THE

NEW ZEALAND BUILT WELL-MAYDE.

ELECTRIC MODELS from £14/10/-. BATTERY MODELS from £13/10/-

RADIO INSTALLATION?

Probably the first bath invented was put in a corner of a room. Similarly, the first stove created a smoky nuisance in the kitchen, until steps were taken to have it "installed."

Fortunately, Radio does not create a nuisance, but one does not need to be a prophet to visualise Radio even five years hence.

So why not be ahead of the times, and consult us, not about a "RADIO SET," but about "RADIO INSTALLATION." You will at least find our information interesting.

And, if you adopt our advice, you will not get out of date. In other words, why not have "To-morrow's Radio To-day."

Your architect will make provision for the Radio Cabinet, just as he now does for your wardrobes. The Radio Chassis will be tucked away in this, while "Radio Points" will be distributed through the house, so that one or more speakers can be used just where they are wanted.

In many houses already built, such an "INSTALLATION" can be made, giving maximum convenience, and far, far better value for money.

MASTS ERECTED CORRECTLY.

WELL-MAYDE ELECTRIC RADIO.

PRICE VERSUS QUALITY.

WELL-MAYDE stands for QUALITY—real high quality. WELL-MAYDE must therefore be measured in terms of many years of service.

Let it be thought that such remarks are superfluous, may we refer to N.Z. RECORD HANDBOOK, 1931, page 24, where the following statement appears in an article dealing with imported Mantel Sets:

"Just whether they will last is another question. That their POWER PACKS are most conservatively cut is no secret."

The POWER PACK is the very HEART of a Radio set. WELL-MAYDE POWER PACKS are not stinted—they are substantially over-size, so that the above criticism could never be levelled at them. YOU are SAFE with WELL-MAYDE.

Each WELL-MAYDE ELECTRIC CHASSIS, with valves and speaker, is a complete Radio Receiver, less cabinet. You can make your own cabinet, instal it on a shelf, or use it without any cabinet at all.

Each WELL-MAYDE ELECTRIC CHASSIS is fitted with PICK-UP TERMINALS, enabling instant conversion to a RADIO-GRAMOPHONE.

W-M CHASSIS MODEL 31.

As Used in the ACE ELECTRIC.

Three valves, with famous Westinghouse metal rectifier, instead of a fourth rectifier valve, SELECTRIX DEVICE now fitted prevents interference from stronger stations.

WELL-MAYDE reliability is built in—Model 31 is small, but is very robustly constructed.

RANGE.

MODEL 31 is meant chiefly as a local station receiver. More valves, higher first cost, greater running cost, are not necessary for really satisfactory long distance reception in all localities. Yet, the majority of ACE users do report reception from Australian stations quite regularly.

1/- WEEK MAINTENANCE—See next page.
Maintenance cost is negligible—10 to 50 hours for 1d.!!
MODEL 31 is the best value for money in Radio.

W-M 31 CHASSIS, with valves and speaker £12/15/-

W-M CHASSIS MODEL 61.

As Used in RANGATIRA SETS.

When we say this entirely new chassis is in many ways the best our factory has ever produced you will realise it is something exceptional.

It is rather larger than usual mantel size, since compactness, carried too far, means skimping of parts and efficiency loss.

It is considerably heavier, too, simply because it has an oversize power pack—capable of working continuously for 24 hours daily and yet keep cool. Long life can be secured only this way.

A SCREENED GRID SET may have only one SCREENED GRID valve, but MODEL 61 has FOUR, including that latest improvement, the SCREENED GRID POWER DETECTOR.

TONE RANGE—SELECTIVITY.

Each of these sets, as would naturally be expected from exhibited in MODEL 61 to an extent that will literally amaze you, even though you are accustomed to sets with eight or more valves. It is, of course, futile to build a GOOD set, unless it has these features.

Even the heart of Auckland's IYA does not interfere at all with reception from other stations, a degree of selectivity that can be surpassed only by more expensive sets. Similarly, extra long range is secured by the four screened grid valves, each operating at maximum efficiency owing to the careful matching of components and precision construction. As already mentioned, the tone of the dynamic speaker is absolutely wonderful.

There is no cross-modulation—that is interference from another station when modulated low.

You are welcome to test the performance for yourself—a trial will convince you.

Then do not forget other WELL-MAYDE FEATURES.

- (a) General suitability for New Zealand.
- (b) Prompt factory service always available.
- (c) A GUARANTEE that IS a guarantee.
- (d) Robust construction, to give years of service.

All these are built into the MODEL 61 CHASSIS.

W-M 61 CHASSIS, with valves and dynamic speaker £24

WELL-MAYDE CABINETS.

Experience has shown us that only by manufacturing our own cabinets were we able to secure consistent high quality. Modern precision woodworking machines are installed, and only thoroughly experienced artisans are employed. Thus WELL-MAYDE CABINETS will pass the closest inspection with flying colours.

In the final process, latest SPRAY MACHINES give the cabinets a hard hand-rubbed satin finish, which is permanently retained.

JENSEN DYNAMIC SPEAKERS, acclaimed everywhere by musical experts as being the "MOST FAITHFUL," are supplied with Chasses 61 and 81.

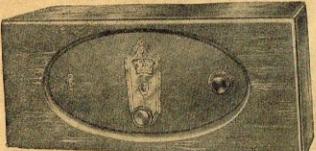
ACE ELECTRIC—BEST VALUE FOR MONEY.

W-M ACE, TABLE.

With Model 31 Chassis—See page 3.

The cabinet is very neat and highly polished. The speaker is separate, and the price includes either a horn or a cabinet speaker, the former usually giving better results on a small set.

Note our 1/- per week maintenance offer below.

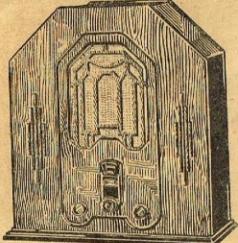


W-M ACE, Table Model, with speaker £14/10/-

W-M ACE, MANTEL.

Chassis is again the MODEL 31, but a special magnetic speaker is included in the walnut mantel cabinet. You merely connect the set to a new system and the mains, and it operates without fear or worry as long as you leave the switch turned on.

The tone is excellent, and we feel sure a trial will convince you that the ACE is the BEST RADIO VALUE.



W-M ACE, Mantel Model, complete £15/10/-

Remember the wonderful ACE GUARANTEE.

ONE SHILLING WEEKLY.

You cannot buy the ACE for this sum, BUT we will GUARANTEE, for 52/- per annum, paid in advance, to maintain your

ACE TABLE OR MANTEL RADIO.

in first class working order. This sum to include new valves and all repairs, only provided such are rendered necessary by fair usage.

We believe this is the first time in the whole world that such an offer has been made—and we are prepared to make it year after year, because the ACE will NEVER wear out.

At 2d. per unit—far more than many pay for current in Auckland—the ACE costs only about 1d. for current for 10 hours use.

YOU can now see WHY we claim ACE is the ACE RADIO.

With ACE costing so little, either to buy or to run, you simply cannot afford to be without Radio.

WE WILL GIVE SIMILAR GUARANTEES with RANGATIRA and ARIKI, but not, of course, for 1/- per week.

FULLY GUARANTEED.

W-M RANGATIRA, MANTEL.

(Rangatira—Maori Chief.)

The chassis used is MODEL 61, fully described on page 3, and including, of course, the selected DYNAMIC SPEAKER.

The WALNUT cabinet is highly polished, well proportioned, and of very pleasing appearance. The small TABLE is supplied where there is already no table or shelf for mantel sets.

The RANGATIRA MANTEL will positively delight you, and it represents the very finest value Radio can possibly offer at this price.

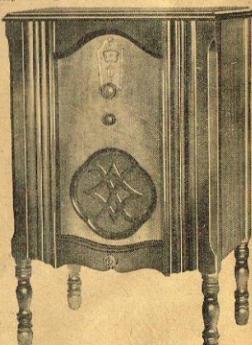
Dynamic
Speaker—
Power
Detector



W-M RANGATIRA MANTEL (less table) £26/7/-
Table as illustrated, extra 50/-.

W-M RANGATIRA, CONSOLETTE.

Similar construction to the Mantel, except that the Radio is fitted in a CONSOLETTE CABINET, walnut, beautifully designed.



W-M RANGATIRA CONSOLETTE £29/15/-

FULLY GUARANTEED.

EXPERT REPAIRS TO ALL SETS QUOTED FOR.

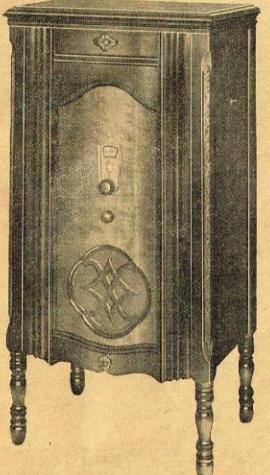
W-M RANGATIRA COMBINATION

The COMBINATION, in addition to RADIO, affords the convenience of your own ELECTRIC GRAMOPHONE. The MODEL 61 chassis is, of course, used, and with it a high-class gramophone motor (electric) and pick-up.

Thus, you can always decide whether you will have broadcast entertainment or enjoy your own records.

The price sets a new record for a high quality, reliable combination RADIO-GRAMOPHONE.

For those who may wish to add the GRAMOPHONE SECTION later, the RADIO only will be supplied in cabinet as before. Motor and pick-up can then be added any time you wish.



W-M RANGATIRA COMBINATION £24/15/-
W-M RANGATIRA COMBINATION, less
motor and pick-up £31/15/-

BRITISH OSRAM VALVES, A.C.

A satisfactory ENGLISH valve for use in the thousands of U.S.A. type RADIO SETS in New Zealand to-day has been long awaited, especially by those who prefer to BUY BRITISH where possible. We should perhaps say ENGLISH, if it is common knowledge that a large quantity of apparatus produced by U.S.A. capital, and actually to a great extent in U.S.A., comes to this country as CANADIAN, and therefore British BRITISH is not necessarily ENGLISH, though undoubtedly this impression is generally meant to be conveyed.

England is easily the best customer for our primary products, on whose export the welfare of New Zealand depends absolutely. BRITISH VALVES, you will find, are well made, and will give the ultimate advantage of every man and child in this country.

A.N.Z. WELL-MAYDE RADIO and OSRAM VALVES make a very fine combination, in the purchase of which you assist both local and British trade.

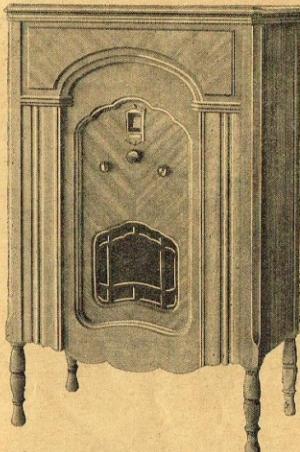
Osram valves are sold at standard prices (see page 56), and as distributors, we can give an excellent guarantee with OSRAM.

W-M ARIKI CONSOLE.

(Ariki—a Maori "Big Chief.")

In the ARIKI our BAND PASS CHASSIS, Model 81, is installed in a very beautiful cabinet indeed. This is constructed as a combination cabinet so that, if you now purchase a Radio, you can fit it when you like, a motor and pick-up added. When this is done, you will have an extremely fine combination radio-gramophone.

We cannot really tell you much more about this wonderful cabinet, but it embodies the greatest experience and care both in design and manufacture, and to prove that the best Radio CAN be built in New Zealand, you are welcome to a trial.



W-M ARIKI RADIO
W-M ARIKI Radio-Gram. Combination £52
£25

YOUR OWN RADIO CHOICE.

Although we always endeavour to offer a very complete range of RADIO of our own, we by no means confine our sales to these.

We can usually supply any make on the market, and it is possible, and probably, that you will get better service from us with any machine, simply because of the very excellent RADIO SERVICE DEPARTMENT we maintain by our firm. Any defect will receive prompt and sympathetic attention, and in long association with the trade ensures that we will be still in business when you want us.

PHILIPS RADIO.

"PHILIPS" are made in Europe, and any type can be supplied.

Q.P. 3-valve electric, Baby Grand speaker	£14 11 0
RADIOPLAYER, Baby Grand speaker	24 0 0
RADIOPLAYER, Peter Pan speaker	26 0 0
RADIOPLAYER, Seventeen speaker	26 10 0

Radioplayers are four valve electrics.

PHILIPS CONSOLE, Dynamic speaker	£9 10 0
PHILIPS CONSOLE, Radio-gramophone	19 10 0
PHILIPS CONSOLE, Radio-gramophone, De Luxe	89 5 0
PHILIPS Portable Battery Set	32 10 0

HAMMARLUND MEANS "PRECISION."

HAMMARLUND Hi-Q ELECTRIC.

THE ROLLS-ROYCE OF RADIO.

Hammarlund is to Radio what Rolls-Royce is to motor cars—a very superior apparatus, perfectly designed, perfectly engineered, and consequently, perfect in use.

Hammarlund guarantees the BAND PASS FILTER, which allows nothing except selectivity to be obtained, WITHOUT SACRIFICING those superb tonal qualities demanded of high-grade Radio. So selective is the Hi-Q, and also so sensitive, that as the radio is tuned, station after station comes into the utmost clarity, and without even the slightest trace of interference from one another. In other sets, the stations get mixed in most annoying manner.

Hammarlund supremacy does not stop at its marvelous range, its extraordinary selectivity nor its superb tone. Every item used in the construction is of the highest possible quality, and the possibility of any kind of breakdown is very remote indeed. These carefully selected parts are laboriously machined to such a fine finish, for instance, are tried one after another with the condenser with which they are eventually used, until they are matched with the utmost precision. The radio will work, if desired, with the same in ordinary Radios merely results in such set being different, some few cents, but the majority very indifferent.

HAMMARLUND LABORATORY METHODS ensure that one Hi-Q is as good as another—and both of them better than the rest.

If, therefore, you want the very best in RADIO, see the Hi-Q ownership. We can supply the Hi-Q as a chassis, or in a cabinet to your own special design, either as Radio alone, or as a Radio-Gramophone.

The Hi-Q, as listed below, is made in a beautiful WALNUT combination Radio Cabinet, or in the ARKIKI. Thus, even if you purchase the RADIO, we can, at any subsequent time, convert it to a Radio-Gramophone for you, without the slightest difficulty.

HAMMARLUND Hi-Q, Radio, Console £75
HAMMARLUND Hi-Q, Radio-Gramophone Console £87

SPECIAL PRICES will be quoted to any customer who places an order with us for a Hi-Q or similar high-grade receiver, to be cabled direct to the factory. Delivery will be obtained in about ten weeks, and a substantial saving in cost effected. Thus, you can acquire the very best receiver at an extremely modest price.

ELECTRIC GRAMOPHONES.

These Electric Gramophones are more powerful than common radio combinations, and are used in the home, tea rooms, restaurants, dance halls, cabarets, hotels, skating rinks, etc.

Provision is made for attaching extra speakers, and if required, a microphone, converting the instrument into a Public Address System.

WELL-MAYDE ALTONA.

A four-valve radio receiver, fitted in a cabinet similar to the RANGATIRA combination (see page 5), powerful dynamic speaker, electric motor and B.T.H. pick-up. Full volume control. Very suitable for home use when tone quality is paramount.

W-M ALTONA ELECTRIC GRAMOPHONE £32

WELL-MAYDE "TRIUMPH."

A dual 250 Loftin-White amplifier fitted in cabinet similar to the ARKIKI combination (see page 5).

Best quality motor, pick-up and volume control. Concert large size dynamic speaker, with provision for operating four or five more if desired.

This is an extremely powerful machine of the finest tone quality, being more powerful than the largest Radio-gramophone.

W-M "TRIUMPH" ELECTRIC GRAMOPHONE £65
Automatic record changers fitted on either above machines. Approx. £25-£30 extra.

HAMMARLUND-ROBERTS
(Well-Mayde).

The Hammarlund-Roberts (H-R) (for short) four-valve battery Radio has a remarkable record to its credit. It has consistently, for five years, proved its superiority over other sets, even though the latter may have had two or three extra valves, and we ourselves have no record to compare with it. We, dealers and experts have been literally astonished by tests, and freely admitted H-R superiority.

The H-R has been remarkably well maintained,

alarming even in these small refinements necessary to keep up with Radio progress, have been added. Other battery Radio circuits have been developed, the sound greatly improved, and a freedom from "noises" that is most pleasing. Each extra valve has increased renewal costs for both valves and batteries, so that the H-R is a "minimum" maintenance Radio, particularly when used with our SELECTED ACCESSORIES.

The following features, all possessed by the H-R, are essential for the successful battery Radio:—

1—SIMPLICITY.

Battery sets are generally used where a good Radio receiver is not easily available. The H-R is very simple indeed, and thus is very unlikely to give a moment's trouble. Operation is extremely simple.

2—DURABILITY.

While its simple construction naturally assists in the long trouble free life of the H-R, the durability is still further augmented by the very careful choice of every part used in its construction. Very rarely indeed is any repair or adjustment required.

The H-R is held in very high esteem, is abundantly proved by the fact that it is rarely offered for sale, and when it is, it commands a higher price than any other battery set.

3—RANGE.

The H-R is regenerative, neutralised, and so combines exceptionally long range, with freedom from interference. It has full Government approval.

Some customers have received as many as 70 broadcast stations, including many in U.S.A., on their H-R—please note, no short wave stations are received. Other manufacturers claim the H-R only gives you full speaker reception of the main New Zealand and Australian stations, with utmost clarity.

Except when within about 20 miles of a powerful broadcasting station, the selectivity of the H-R is excellent, and a simple device enables it to be increased still more.

We cannot too strongly recommend the H.R for country users.

RADIO ECONOMY.

The successful DRY (OR AIR CELL) BATTERY RADIO must be absolutely efficient, in order that the utmost results can be obtained from the radio economy. Even the slightest inefficiency means a continual wastage of expensive batteries and valves, etc.

Although the H-R may cost a little more originally, we have known numberless instances where its running cost has been £4 or £5 per year LESS than on other sets. When you consider the extra cost of these sets over even four years, you immediately realise how much it is to your advantage to invest in the H-R.

BATTERIES FOR THE H-R.

Although the "A" battery for the H-R may be an accumulator or a dry battery, the invention of the new AIR CELL makes the latter especially suited for the H-R. The AIR CELL is merely filled with water (any water will do), and then the air in the H-R is passed through the 250 valves for nearly two years of ordinary use. No further attention is required by the battery, except perhaps the addition of a little water occasionally.

Otherwise, it has not been possible to get any "A" battery, either an accumulator or dry, which would not need re-charging or replacing every few weeks. The first cost of the AIR CELL is naturally fairly high, but eventually it proves much cheaper than any other form of battery.

The "B" batteries on the H-R also have a very long life, so the Radio may be expected to operate for months on end without any attention whatever, where the Air Cell is used.

H-R BATTERY RADIOS ABSOLUTELY UNBEATABLE.

H-R CONQUEROR (Well-Mayde).

This inexpensive, high efficiency battery Radio has always proved to be our best seller in country districts, and not without excellent reason.

With only four valves, it has a range that many of your radio dealers could not envy, with a very clean set, coupled with "tonality" and a freedom from "noises" that is most pleasing. Each extra valve that counts for successful battery Radio that we believe that its superiority will be maintained for many years yet, particularly in NZ, where conditions are rather different from those existing in U.S.A. and Europe.

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3—RANGE.

The H-R is regenerative, neutralised, and so combines exceptionally long range, with freedom from interference. It has full Government approval.

Some customers have received as many as 70 broadcast stations, including many in U.S.A., on their H-R—please note, no short wave stations are received.

Other manufacturers claim the H-R only gives you full speaker reception of the main New Zealand and Australian stations, with utmost clarity.

Except when within about 20 miles of a powerful broadcasting station, the selectivity of the H-R is excellent, and a simple device enables it to be increased still more.

We cannot too strongly recommend the H.R for country users.

RADIO ECONOMY.

As A, but with 6 volt 30 amp. accumulator, and 221 valves. **Value, £9/10/- or with set or kitset, £9.**

Less With
Accessories Accessories

W-M CONQUEROR, Air Cell model £12 £23 (B)

W-M CONQUEROR, Accumulator £12 £21 (C)

W-M CONQUEROR, Dry Battery £12 £19/10 (A)

Meter, 15/- extra on all models.

H-R ELITE (Well-Mayde).

The Elite is exactly the same as the CONQUEROR, except that it contains a much improved timer system, and this, together with a special power valve and extra battery, considerably improves the tone and enables you to use more volume. By using a gramo. motor and pick-up with it, it makes an excellent Radio-Gramophone. See next page Ariki and Conqueror.

It costs little more to run than the Conqueror.

ACCESSORIES (D).

Aerial A123, Air Cell "A" battery, three Columbia Layerbit batteries, Columbia "C" battery, Radiola speaker, three 230 and one 231 power valves. **Value, £17/8/-, or if taken with set or kitset, £16**

ACCESSORIES (E).

As (D), but with 6 volt 30 amp. Young accumulator, three 221 and one 112 power valves. **Value, £18/0/6, or if taken with set or kitset, £16**

Less With
Accessories Accessories

W-M ELITE £14/10 £30

W-M ELITE, Radio-Gramophone £32/10 £48

NOTE.—If you have your own electric light, or even an engine, give us full details, and we will gladly quote you the most economical radio system and its running costs. Any H-R Radio, for instance, can be readily built to work direct from 32-volt accumulator lighting system, thus eliminating a separate "A" battery entirely.

H-R SUPERB (Well-Mayde).

A five-valve Hammarlund-Roberts, with powerful amplifier, employing push pull as in the largest electric sets. The tone is very fine indeed. In fact, it is unrivaled. We advise an improved iron in battery for home use. It could be supplied with it, but it could be supplied at same price with the AIR CELL. It will prove FAR more economical than many older sets now being used, and give much better results as well.

ACCESSORIES (F).

Aerial A123, 6 volt 30 amp. Young accumulator, three Columbia Layerbit batteries, Columbia "C" battery, inductor dynamic speaker in cabinet, three 221 and two 112 valves. **Value, £23/2/6, or if taken with set or kitset, £21**

Less With
Accessories Accessories

W-M SUPERB £16/10 £27/10

W-M SUPERB Radio-Gramophone £32/10 £54

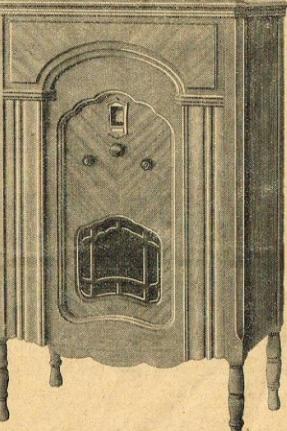
H-R RADIO-GRAMOPHONES

When you have a GOOD Radio in the house, you should certainly make use of it in a gramophone cabinet, instead of the old style gramophone. Any of the H-R sets may be so used, since pick-up terminals can be fitted, so that the only extras required are a pick-up like the B.T.H., and the only no gramophone already, a motor.

We will be glad to supply complete H-R Radio-Gramophones in the large CONSOLIDATED CABINET, just as we use on our best electric sets. All batteries, etc., are self-contained, and the very best inductor dynamic speaker is fitted.

This instrument will then be a very fine acquisition to your home, since you may play your own records or listen to broadcasting concerts from any of a large number of stations, just as you please.

Full details have already been given under the ELITE and SUPERB SETS.



W-M ELITE RADIO-GRAMOPHONE, complete . . . £48

W-M SUPERB RADIO-GRAMOPHONE, complete £54

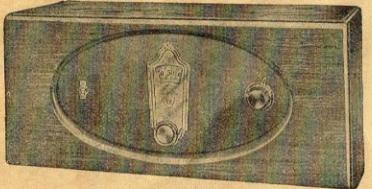
TIME PAYMENTS IF DESIRED.—Low Deposit.

W-M ACE BATTERY.

Still keeping in view the necessity for a cheap, but trouble-free Radio, the manufacturer has increased the ACE, and is aiming at a further reduction in price, but in no wise sacrificing reliability or efficiency.

The ACE is NOT as cheap as a set can be, but it is as cheap as a GOOD set can be. Similarly, accessories are probably the best we can offer with the H-R, simply because experience has shown only too clearly that cheap sets and accessories literally "eat their heads" off, and are very expensive to run.

The appearance of the ACE is greatly enhanced by the new cabinet, which is beautifully designed, and handsomely polished.



ACCESSORIES.

Aerial A138, two No. 6 Columbia batteries, two 45-volt Columbia "B" batteries, Columbia "C" battery, three 230 valves, N. and K. speaker. Valve, £7 6, or if taken with set or kitset £6 10/-

Less Accessories With
W-M ACE £7 £13 10/-

NOTE the quality of the valves, batteries, etc.

W-M "WORLD" SCREENED GRID.
ALL-WAVE, FOUR VALVE.

The interest in SHORT WAVE reception increases year by year, and the receiver which will receive SHORT WAVE STATIONS as well as ordinary broadcasting will appeal very strongly to large numbers of enthusiasts.

The "WORLD" "ALL-WAVE" is a SHORT WAVE or BROADCASTING SET at will—merely by changing two coils, the work of a moment.

Delighted customers have received on the speaker dozens of SHORT WAVE STATIONS from all parts of the world, hence its name "WORLD". On ordinary broadcasting, Australian stations come in with greatest clarity and ample volume.



For selected accessories, see page 13.

W-M "WORLD" SCREENED GRID, less
accessories £10 10 0
W-M "WORLD" SCREENED GRID, with
accessories £19 0 0

If supplied with A117 CELL, £3 12/6 extra.

PORTABLE RADIO.

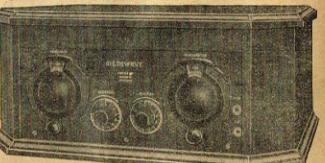
COMPACT.
A screened grid portable Radio, British made, all self-contained in a neat carrying case, complete with batteries, valve and a.c. system. PRICE, £21
Further details on application.

MENIWAVE SETS and ADAPTORS.

The components used in the Meniwave are of very high quality throughout, as it is comparatively useless expecting world-wide results with cheap apparatus.

There seems to be an impression existing that Short Wave sets are not made by Radio experts. This is entirely incorrect—the expert is merely more than usually careful in tuning, and you must be careful too, if you wish results. That is all.

The Meniwave can be supplied EITHER as a special Short Wave set, or range 1500 metres approx, OR as a combined Short Wave and Broadcasting Set, range 23-600 metres approx. Only best accessories supplied.



Less accessories With accessories
W-M MENIWAVE £10 10/- £19
W-M ADAPTOR, for working in conjunction with your present set, £2.

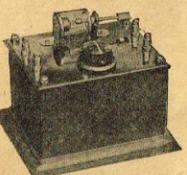
CRYSTAL SETS.

Crystal sets will always be popular, because they are cheap and the quality of reception is so perfect.

The ordinary crystal set has a range of about 10 to 20 miles from a station like Auckland, but considerably more from Wellington.

Fixed detectors like the Red Diamond give good results at very short ranges, but HERTZITE is better for longer distances, owing to greater sensitivity.

The accessories required for a crystal set include merely an aerial outfit A138 (A137 would do) and one or more pairs of telephones, say, N and K.



WELL-MAYDE CRYSTAL SET
Complete with aerial and N. and K. phones £17 6

KNOCK-OUT CRYSTAL SET.

Very cheap, but made for continual use. Specially enclosed crystal detector, instantly detachable, and beautifully made and finished. Knock-out crystal set, with detector £12 6

Complete with aerial and "Knock-out" phones £22 6



Very cheap, but made for continual use. Specially enclosed crystal detector, instantly detachable, and beautifully made and finished. Knock-out crystal set, with detector £12 6

Complete with aerial and "Knock-out" phones £22 6

LOFTIN-WHITES FOR TONE QUALITY.

LOFTIN-WHITE AMPLIFIERS.

Some little time ago, a special demonstration was held in London, and by means of very simple amplifiers and a huge throatless speaker carried by a giant, the human voice was made to cover an area 10 miles across!!!

AMPLIFIERS may be made to-day to give the increase demanded for practically any purpose. The talk of sets, has been superseded for the time being, development, and particularly for the clarity of obtained by modern systems.

To-day, the LOFTIN-WHITE system will be found to possess overwhelming advantages for most amplifier purposes. It is a simple system, and in consequence, but it is less liable to get out of order, and accomplishes a very great increase in volume with the fewest valves. In up-to-date cost, therefore, it is unique, and it involves smaller replacements of obtained by modern systems.

But this does not complete its virtues—it amplifies FAITHFULLY over the whole musical scale. Where other systems lose both or either upper or lower notes, Loftin-White does not.

It is true it has some disadvantages, perhaps the greatest being that, though it is so nearly perfect as a straight out amplifier, it is not altogether suitable for incorporating in a Radio set, unless it is coupled in with a detector, which immediately causes much of its advantage to be lost.

But, since it is to be regarded as an amplifier only, its comparative failure in a Radio set can be very well ignored. It might be mentioned, however, that the Loftin-White system is so good that it can be brought up to date by installing the Loftin-White, more easily than by any other plan.

Very high voltages are employed in Loftin-White, so careful workmanship is essential in the power pack, and in the correct selection of most of the parts.

All our L-W amplifiers are built on steel chasses, and are very well finished.

For kitsets—See Kitset Section.

WELL-MAYDE LOFTIN-WHITES.

Our factory has designed a complete range of LOFTIN-WHITE AMPLIFIERS, and is ready at any time to add to the range, by constructing one to suit any requirements. Normally, a 224 A1 screened grid valve is used, followed by two 224 or 226 valves, while a still larger outfit, where the 224 is followed by a 50 watt transmitting valve has been supplied by us to special order.

W-M LOFTIN-WHITE SINGLE 245.

The smallest A.C. L-W we make, using one 224, one 245, and one 230 rectifier valve. Very small, compact, and thoroughly shielded.

Transformer designed to supply filament and "B" current for four extra 224 or 227 valves.

It possesses the wonderful clarity and faithful reproduction already referred to as a characteristic of all Loftin-White sets, is capable of power sufficient for a small dance hall, so will not fail to meet this requirement in any home.

It is fitted with field supply terminals for Jensen dynamic speaker. It can be used with cone or inductor speakers, or for these a speaker filter or transformer may be added.

Valves are included in the price, and in order to operate it as an electric gramophone, only a pick-up and motor are required.—See under "Kits."

A236 W-M L-W single 245 amplifier £12 10 0

A237 Jensen concert dynamic, with rectifier £17 6

The Jensen is fitted with Westinghouse rectifier.

W-M LOFTIN-WHITE DUAL 245.

Constructed on similar lines to the single 245, but far more powerful. Uses one 224, two 245 and one 230 rectifier valve. Field supply for Jensen Concert dynamic fitted with rectifier as above. Valves included. A238 W-M L-W 245 amplifier £18 0 0

LOFTIN-WHITE DUAL 250.

We have not received a single 250—it has only the same power as the dual 245 and costs more. The dual 250, however, is far and away more powerful; in fact, we can thoroughly recommend it for talkies theatres to an area 800 seats, large dance hall, and other public address systems etc. Valves included. One 224, two 250 and two 231. Speakers recommended are Jensen Concert, Jensen Auditorium, or, best of all, Macy Esplanade, with Macy dynamic unit. A224 W-M L-W dual 250, less valves £27 0 0
A224 W-M L-W dual 250, with valves £40 0 0
Valves only £13 19 6

LOFTIN-WHITE FOR TALKIES (double channel).

Although the Loftin-White Dual 250 is already designed and frequently used for talkies, it is customary to instal rather differently in the better installations. The general construction, output, etc. is exactly the same, but meters are fitted to give instant indications.

Two amplifiers, too, are frequently fitted side by side, connected by switches, so that if trouble does occur, the other amplifier can be immediately brought into use.

Such double channel systems are constructed to special order, the cost being £85 to £90 as a general rule. IF YOU WANT STILL MORE POWER, PLEASE BUILD A L-W FOR YOU, AT A VERY LOW PRICE.

W-M BATTERY AMPLIFIER.

The tonal results are really excellent, especially as regards the upper and lower notes usually missed by other amplifiers. The volume is quite good, and it makes a most satisfactory gramophone for home use, where current is not available. A241 L-W battery amplifier £8 10 0

Accessories: Six 45 volt "B" batteries, two 2 volt accumulators, two valves, inductor speaker (£22 11s. 6d.). Special price, £20.

POWER D.C. AMPLIFIERS.

Where A.C. is not available from power mains for amplifiers it can be generated by a ROTARY CONVENTER, which is driven from a large accumulator or from a dynamo. A LOFTIN-WHITE AMPLIFIER can then be used.

In other cases, however, a DIRECT CURRENT AMPLIFIER is required, and its "B" supply obtained in one of the following ways:

1.—D.C. MAINS, 220 VOLTS.

A special power pack is used, and a powerful amplifier can be simply made. It is suitable for dance halls, talkies, etc.

2.—MAGNETO "B" SUPPLY.

This is driven by an accumulator, 12 or 22 volt, or for a truly portable outfit, that is to be used in remote districts of small power, we regard it as easily the best system. Magneto type E is usual, but type F operates a very large amplifier.

3.—ACCUMULATOR "B."

About 250 or 300 volt "B" accumulator is used, charged after use by a suitable plant. A very satisfactory outfit, and unlikely to give any trouble, though rather bulky.

4.—D.Y. "B" BATTERIES.

While these CAN be used for power amplifiers, they cannot be recommended unless the circumstances are VERY EXCEPTIONAL. They simply will not stand the heavy strain.

D.C. AMPLIFIER.

Three stages, the last being push-pull. Only first class valves are used throughout, and the valves are specially chosen. The amplifier is assembled ready for use, but is meant to be incorporated in a cabinet, also housing other associated apparatus. Price includes valves. State which speaker will be used. A246 D.C. amplifier, with power pack £15 0 0
A247 D.C. mains £20 0 0

To complete a Public Address System, the following are required for A246:

- Two 220 volt accumulators, magneto type E, "C" battery, Jensen dynamic or exponential speaker, pick-up, gramophone, microphone and its battery and transformer.

POWERFUL ADDRESS SYSTEMS FOR HIRE.

"HULLO" PUBLIC ADDRESS SYSTEMS.

(See also Under Kits.)

Public functions to-day, especially where large numbers of people are involved, are scarcely complete without a PUBLIC ADDRESS SYSTEM. Not only in the advertising, announcing, events, calling of competitors, declaration of winners, and any other information to be given to large audiences, even when scattered over large areas, but music can also be provided with a minimum of expense and maximum of convenience.

The ideal type of Public Address System, generally speaking, must be easily portable, easily connected up and operated, simple and reliable, cheap to run, and, of course, both POWERFUL AND CLEAR.



The systems described here can be transported in an ordinary car, and cover all likely requirements, but if there are special circumstances, we will be only too glad to quote specially.

MICROPHONES.

Where these are used they must not be in a position where they can be detected by the loud speakers. Otherwise, of course, they will merely cause intense howling. Unless very special precautions are taken. Outdoors, a sedan car can be conveniently used for the mike. None of this trouble is experienced when playing records.

INDOOR SPEAKERS.

Exponential horns may also be used indoors with very fine results, although they are usually bulky. Jensen dynamic speakers will prove extremely satisfactory.

More than one can be used, in selected positions, thus giving even reproduction through the building.

OUTDOOR SPEAKERS.

Exponential horns are the best for general outdoor work, and, when connected with greater clarity, are excellent for music. Further, they will throw the sound in any given direction, and so cover a greater area than other speakers.

The ideal type of Public Address System, generally speaking, must be easily portable, easily connected up and operated, simple and reliable, cheap to run, and, of course, both POWERFUL AND CLEAR.

"HULLO" P/A SYSTEM No. 1—For A.C. Mains.

Consists of:

1. Cabinet (with handles), fitted with LOPTIN-WHITE DUAL 250 AMPLIFIER, valves, pick-up, electric gramophone motor, microphone, microphone transformer and connections for speaker.

2. Jensen Dynamic Concert speaker in strong cabinet, with 20 feet connection.

An accumulator, costing £3. 18s. upwards, or a rectifier unit if required extra.

A242 "HULLO" P/A System No. 1 . . . £77. 10 0

"HULLO" P/A SYSTEM No. 2.

Exactly as No. 1, but with one 49-inch aluminium horn, and Universal unit. No accumulator required. A243 "HULLO" P/A System No. 2 . . . £90. 0 0

DEAF APPARATUS.

This can be made to order. Radio valves will amplify speech, etc. to any extent required, and so overcome even very obstinate cases of deafness.

"HULLO" P/A SYSTEM No. 3—For D.C.

Consists of:

1. Cabinet (with handles), fitted with magneto "E" machine, D.C. amplifier to match, "C" battery, pick-up, gramophone motor. (Microphone and transformer, if desired, extra.)

2. Two separate six volt car type accumulators.

3. Jensen dynamic speaker in strong cabinet. This outfit suits admirably for country dance halls, where no electric supply is available. It will prove money maker for its owner.

A244 "HULLO" P/A System No. 3 . . . £84. 0 0

A245 "HULLO" P/A System No. 4 . . . £98. 0 0

No. 4 is same as No. 3, but a 49-inch aluminium speaker replaces the Jensen. Recommended for outdoor work.

TALKIE INSTALLATIONS.

In many of the smaller centres, the installation of a high-priced TALKIE PLANT is out of the question, on the score of the heavy expense involved.

Our firm has for some time past been manufacturing amplifiers suitable for talkies, and also supplying the necessary speakers, faders, etc.

We have now decided to manufacture also the sound head, so that in future we will be able to supply complete equipment to convert your silent machine to SOUND-ON FILM.

It is, of course, most convenient to operate TALKIES from the 230 volt A.C. power mains, but in cases where this is not available it is possible to supply plants which can be driven by any motor or by other means that are quite satisfactory and yet not expensive.

Unfortunately, at the present moment, we are not in a position to give full quotations, though these can be supplied on application. We are, of course, fully described in this list. We are endeavouring, however, to keep inside the £200 mark as far as possible.

Fortunately, at the present moment, we are not in a position to give full quotations, though these can be supplied on application. We are, of course, fully described in this list. We are endeavouring, however, to keep inside the £200 mark as far as possible.

Macy Exponential Speaker.

In designing an inexpensive machine, it is not our intention to sacrifice durability and reliability—we will not sacrifice our good reputation in any item we sell.

In addition, we will always be ready to supply any part of the equipment to those who wish to build their own.

BROADCASTING STATIONS.

We have already constructed our own station, IZJ, and Messrs. Lewis Eady's IZR, first on low power and later on much higher power.

We have no need here to comment on results—in this, as in every listener can very readily form his own conclusions.

Business firms, especially the smaller centres, where there are many no broadcasting stations, should consider the installation of broadcasting plants as a means to furthering their reputation in their own district. Nothing else offers quite the same opportunity of doing this.

We can supply a small 10 watt station at a very low price, but for consistent results, 50 watts is necessary, and a complete station of this power would cost considerably more than £200. IZR is a 50 watt station.

We can also quote for larger stations up to 250 watts. We can also quote for larger stations up to 250 watts, enabling very prompt service to be always available.

ELECTRO-MEDICAL APPARATUS.

INQUIRIES are invited from the medical profession for the above.

Our factory is so well equipped for manufacturing kindred apparatus that we can frequently quote for special machines of all kinds.

H-R UNRIVALLED EFFICIENCY.**KITSETS.**

The faculty implanted in every boy to "make something," or to improve something already existing, has been directly responsible for the enormous strides in scientific and mechanical inventions. The progress made in the last century is simply amazing, and to-day its rate is only maintained.

Your boy may some day emulate Edison, James Watt or Marconi, all of whom started life far from equipped for success, but are almost an equal boy of our time. They made good, and others will make good. The inventive genius displayed by so many boys should be encouraged in every way along practical lines, and only will it keep a boy from mischief and bad company, but it will train him so that when the time comes to leave school he will be able to secure employment. His early training will have developed his mind, even though he may not actually succeed.

In any case, we are so surrounded by machines and electrical apparatus that scientific knowledge and experience are very desirable for every man. How frequently a simple defect in a motor car can be remedied in five minutes by a man with some amateur experience, when his local garage man is held up for hours while he sends to the nearest garage for a mechanic at great expense, considering the actual job.

RADIO CIRCUITS.

No less than 29 per cent. of Radio sets marketed to-day employ one of the first five circuits, while the latest and experience has shown that the last is more suitable than all others.

The countless different (???) circuits come weekly in different Radio journals, and with very rare exceptions, an older and well-known circuit, differing mainly in name, and some fancy touch, which is merely as plain as writing.

If in an English magazine, it is nearly certain that the circuit will be illegal in New Zealand, and even if it is legal, it will probably be entirely unsuitable for the conditions of this country. It does happen, too, that some articles describe sets which are hopeless in actual practice.

We have, in addition, had to do with any originality in any of the circuits used in our own sets or kits. We have never taken those stand and claim that each invention is their own, and rather spent our time in making them as efficient as possible by careful attention to details such as accurate adjustment of parts, and a new idea comes along which an exhaustive test proves is worth adopting, it is adopted without further thought. You are always up to date, without waste of money, time or effort.

We simply cannot sell kitsets which are really good, so we have had to do with an effort to build up our kits, show our customers far to do so, and guarantee the same results as with the corresponding commercial sets which we sell. No unfulfilled promises, no speculation as to results, no worry that the design may not be correct!! Our kits are not offered for sale UNTIL they are proved.

Build—Build—and compare it with any other set you like, no matter what kind or price. You will be delighted with the result.

YOU WILL NEVER REGRET PURCHASING A HAMMARLUND-ROBERTS.

Radio provides one of the very best hobbies for a boy. He makes something that is very useful, and in the process of obtaining it an education that would hardly be possible otherwise.

SIMPLICITY.

ANYONE WHO CAN READ AND WHO HAS EVEN THE SLIGHTEST MECHANICAL ABILITY, CAN BUILD OUR KITSETS WITH PERIODIC SUCCESS. We supply a kit for every successful type of set which is within the scope of an amateur. If you are interested in a type not listed, you are welcome to talk about it—you may save yourself much time and expense by so doing.

CHOICE OF CIRCUIT.

The choice depends largely on price, which, of course, must be determined by the customer himself.

1. **REGENERATIVE** (Aee and 2. **REGENERATIVE** neutralized (Hammarlund-Escherts).
3. **SCREENED GRID (World S.G.).**
4. **AMPLIFIERS** (Loftin White).
5. **SPECIAL KITS.**

HAMMARLUND-ROBERTS KITSETS.**R****D****I****C****S****T****R****O****S****S****E****T****W****M****E****N****O****P****Q****R****S****T****U****V****W****X****Y****Z****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6****7****8****9****0****1****2****3****4****5****6**

WELL-MAYDE KITS-EASILY BUILT.

W-M "WORLD" 4 Valve.

SCREENED GRID, "ALL WAVE."

These sets are similar to most sets or kits made in England. You will, of course, note that ours is a FOUR-VALVE KIT, whereas the usual four valve sets have only three valves. There is no doubt that three valves are insufficient for N.Z. conditions.

The screened grid valves possess enormous amplifying possibilities, up to 500 times. The question, however, is whether 30 or 50 times is all that can at present be secured, owing to constructional difficulties.

The circuit used in a standard one—by which we mean not every manufacturer uses the same circuit, even though he may have some special name for his own. The special name does not make it work well; he must exercise great care in the design of components and in design.

Screened grid sets must be shielded. Again this does not necessarily mean that the finished product must look like a tin-sold's shop. It does mean that shield must be placed where they are needed. Extra sheet metal may even cause inefficiency.

It is more than necessary for the amateur to buy a screened grid kit complete, because the metal work involved is generally poor, and the capacity of home tools, even if the design itself needed no great care.

The WORLD KITS will, when assembled according to the simple instructions—even soldering can be dispensed with, though it is considered joining the silver's better—enable you to roam all over the world, searching for the many short wave stations on the air, using either phones or speakers.

On ordinary broadcasting, the WORLD will easily give excellent speaker reception on the New Zealand and Australian stations.

COLES.

These are used in pairs, for wave lengths as follows:—

Broadcasting	200-550 metres
Short wave	.. 15-50 metres
Short wave	.. 35-100 metres

CABINET.

The ordinary kitset is correctly screened, but if a complete metal cabinet is required, this can be supplied extra. This cabinet is made from heavy gauge aluminium, finished with duco, as used for cars.

WORLD KITSET.

K156 World kit	£6 6 0
Alumin cabinet, extra	2 0 0
Extra cover per pair	14 0

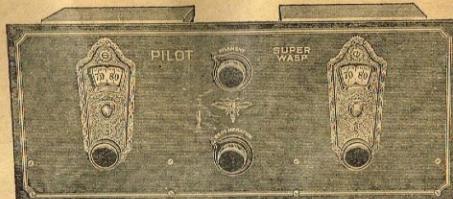
In ordering, state which pair of coils desired—only one pair is normally included.

It is advisable to use a meter costing £15s. extra with the above equipment, unless either the new Columbia Air Cell is used or an a/c unit.

SELECTED ACCESSORIES.

Aerial A133, two Columbia No. 6 batteries, three Columbia "B" batteries, 131 volt "A" battery, N. and K. speaker, one 232 S.G., two 236, one 231 power valves, total value £9 18s. 6d.

If taken with kit, £8 16s.



PILOT SUPER WASP

A kit that can be supplied either for battery or A.C. operation, and which has a full set of coils covering the broadcasting and short wave range.

The A.C. kit includes valves, but the battery kit does not. The assembled A.C. set includes cabinet, speaker and valves complete.

PILOT KIT, A.C.	£1 16 0
PILOT SET, assembled, A.C.	38 15 0
PILOT KIT, battery	.. 14 0

Valves used are—Three 227 and one 224 in the A.C. Kit, and three 201A and one 222 in the Battery Kit.

W-M MENIWAVE KITS

THREE VALVES.

It is worth noting that some of the oldest and most experienced short wave stations in Australia still use the MENIWAVE SETS exclusively. Their simple regenerative circuit, short and more reliable valves, are large factors in their popularity. There is, of course, a world-wide range.

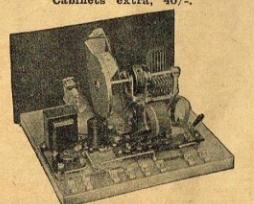
All apparatus in the MENIWAVE is carefully selected, as it is particularly essential that only the very best tuning condensers and coils are used. It is a long range to be obtained.

On the other hand, the Junior Meniwave kits will be found as efficient as is possible at a world-wide range.

ALL-WAVE and SHORT-WAVE kits are both the same price. The wave length range of the former is about 23,000 metres, and of the latter 15,000 metres. Each kit includes a set of coils.

K150 Meniwave Short Wave	£8 8 0
K151 Meniwave All Wave	8 8 0
K152 Junior Short Wave	6 6 0
K154 Junior All Wave	6 6 0

Cabinets extra, 40/-.



GENUINE HAMMARLUND S-W VALVE KIT ON APPLICATION.

W-M ACE KITS.

13 VALVES.

These are the smallest and simplest valve sets—see details under complete sets. The circuit used is regenerative, which is the most reliable with the fewest valves. They will not interfere with other sets if our instructions are followed.

The one valve set may be built and added to when desired, later. The panel allows for this extension, and no parts need be discarded.

The A.C. circuit is absolutely standard, and can be thoroughly understood by the Hammarlund-Roberts is too expensive.

The instructions are very carefully prepared, and, like our other kits, very easy indeed to follow, whether you know much about electricity or not. All difficulties are removed.

COMPLETE PARTS FOR W-M ACE 3.

- 1 Ace coil complete
- 2 Variable condensers and dials
- 3 Tuning condensers
- 3 Valve holders
- 1 Grid leak and condenser
- 1 Switch
- 1 Terminal strip
- 1 Bakelite
- 1 Panel, engraved and drilled
- 1 Rheostat
- 2 Transformers
- 1 Bakelite cable
- Instructions and diagrams.
- Lugs, screws, tinned wire, etc.

The ACE 2 omits one valve holder and one transformer, while the ACE 1 omits two valve holders and two transformers.

K150 ACE 2 kit	£13 9 6
K146 Ace 2 Kit	2 18 0
K148 Ace 1 Kit	6 0 0
Meter, extra	15 0

Meter is advisable where dry batteries are used, and can be supplied to give both "A" and "B" battery ratings, complete with two pushes, reducing, complete for 15s. extra.

SELECTED ACCESSORIES (A.C. 3).

Aerial A133, two Columbia "A" batteries, two 45 volt Columbia "B" batteries, one Columbia "C" battery, one N. and K. speaker, and three 236 valves, total value £7 17s. 6d.

For ACE 2, 236 valves, same as for ACE 3, but with one valve less.

For ACE 1 (15s.), omit one "B" battery, "C" battery and two valves.

SPECIAL OFFER.

For CASH WITH ORDER, the ACE 3 KIT will be supplied with the above accessories (total value £1 5s. ed.) for £9 18s., or with meter, £10 15s. 6d.

ELECTRIC GRAMOPHONES FOR RESULTS.

MENIWAVE ADAPTOR.

If you already have a larger set, you can use a MENIWAVE ADAPTOR in conjunction with it, for short waves. Thus no extra batteries are required, the change over being made in a few moments.

K152 Meniwave S-W adaptor	5 15 0
K155 Meniwave Jnt. adaptor	4 10 0

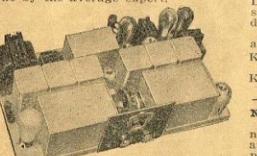
HAMMARLUND HI-Q.

This super quality Radio has already been fully described.

Kits are sold either for C. or battery operation. The precise sections are carefully matched and assembled at the factory, partly because this demands skill beyond that of the average expert, but chiefly because the coils and condensers are laboriously tested until a pair are found to correspond exactly. Extra parts are necessary even with components of Hammarlund quality, one realises why ordinary sets differ so much.

The one valve set will not permit of prolonged matching tests, and though certain individual sets may perform well, the set you buy will probably differ.

On the other hand, so accurate is the matching of coils and components in the HI-Q that one is definitely tested to a standard, and that an unusually high one. The remainder of the assembly is comparatively simple, and easily done by the average expert.



HI-Q A.C. kit

.. £40 0 0

HI-Q dynamic speaker

.. 9 0 0

Full set of valves, including

power supply regulator

£10 2 6

Complete outfit, as above

(15s 2/6)

.. 55 0 0

Complete outfit as above,

with pickup, volume control

and electric

gramophone motor, to

make radio gramophone

65 0 0

Special BEDROCK PRICE quoted to those who want "QUALITY" and who want to buy "CASH WITH ORDER" who are prepared to wait 8-10 weeks while we cable for direct shipment from the Hammarlund factory.

As above, but with high-class

ITEMS throughout.

K163 Gramo Kit No. 2

.. £5 19 6

be of a certain size—that is all. In fact, the speaker can be fitted into the wall or ceiling, and when so fitted is at its best for many purposes, such as public address, etc.

A microphone and its transformer can be attached, so that it can be used as a public address system. In this use, the three coils and speaker, microphone and pick-up can be used as far apart as is convenient. Prices do not include cabinet work.

ELEC-GRAMO KIT NO. 4.

Marconi has built a Single Loft-White amplifier, ready assembled, with valves, Jensen Concert dynamic speaker, with rectifier, high grade electric motor, pickup, volume control and tone arm. (£29 15s.)

K171 Elec-Gramo Kit No. 4	£2 10 0
---------------------------	---------

ELEC-GRAMO KIT NO. 5.

For home use, where great volume is required, small dance halls, large restaurants, hotels, etc.

As No. 4, but with Loft-White
245 amplifier and Jensen Concert
dynamic speaker. (£35 15s.)

K172 Elec-Gramo Kit No. 5	£3 12 0
---------------------------	---------

ELEC-GRAMO KIT NO. 6-7.

For public work, large dance halls, cinemas, public address systems, restaurants, etc. Extra Jensen speakers up to four or five total can be used as desired.

1 224 screen grid A.C.	£1 7 0
1 245 power	.. 17 6
1 280 rectifier	16 0

£1 0

Price, complete kit with valves, £11. Complete amplifier, assembled and tested, with valves, £12 10s.

L-W DUAL 250 AMPLIFIER.

Prices of Dual 245 and Dual 250 kits on application.

TRANSMITTERS.

The earthquake of early 1931 brought home to everyone in New Zealand the value of amateur Radio transmission. The ordinary telegraphic communication was immediately put out of action, and did not become normal again for many days. Yet within a few weeks two amateur stations within the damaged area had their sets connected up again and with batteries replacing the power supply, which had also ceased. They established communication with other parts of New Zealand, and maintained it continuously until telegraphic lines and equipment were restored.

Amateur transmission, very few stations, however, before a license is issued, an examination must be passed.

Every amateur will, of course, build his own transmitter, even if only to get practical experience. We are quoting, therefore, for parts to build, though if required, we can supply the complete transmitter ready assembled for installation.

The circuits recommended by us have been actually in use by some of the oldest amateur transmitters in Australia, and give the full benefit of their long association with Radio. Thus you can go right ahead, definitely assured of good results.

Details of the transmitter, which is given below. When ordered, a schematic diagram is also given, and as the wiring is very simple, anyone who can pass the Government test will experience no difficulty at all in building.

OUR KITSETS ARE EASILY BUILT AND VERY EFFICIENT

TRANSMITTER PARTS.

The range of these transmitters will vary with circumstances, even using a 201A valve and 30 volts B, many have worked Australia on similar outfitts.

POWER SUPPLY—5 Watt.

For those who want to work from the power mains, batteries will prove very convenient for the five watt outfit. The following would be required—
1. 5 watt valve 1 7 0
1 Valve socket 1 6 0
1 Rheostat 4 6
2 "Wye-Spaced" condensers 1 10 0
2 Helices, silver plated wire assembled complete 1 15 0
2 Ebonite tubes, to mount helices and 4 screws 3 0
3 Pee-wee clips 4 0
1 Mic condenser .0025 2 0
1 Mic condenser .004 2 0
1 Formica board, 5/16 (engraving extra if required) 11 0
1 Baseboard 2 0
10 Bellng. Lee terminals and terminal strip 7 6
1 10,000 resistor 5 0
1 R.F. choke 5 0
1 Telegraph key, heavy 1 4 0
2 Miniature fuse holders, with bulbs 4 0
2 Switches 5 0
1 Milliammeter (optional), Timing wire, spaghetti, lugs, etc. free. £9 5 0

For telephony (with, of course, much restricted range) a microphone and extra helix would be required, costing from 3s. extra, according to quality of microphone.

USED SETS, APPARATUS, MOTORS, TOOLS, ETC.

BATTERY SETS.

ALTONA GRAND, 5 Valve.

Highest quality, good for 20 years yet. With accessories—everything good. Cost £15 10 0

HAMMARLUND-ROBERTS, 4 Valve.

Al. highest quality, never wear out. Complete with accessories, every guaranteed £13 10 0

SILVER-SIMPLEX.

In excellent order, complete £8 10 0
AGE, 3 Valve.

GREEB, 5 Valve.

Less accessories 3 10 0
BEEMER-TULLY, 3 Valve.

This outfit, in lovely walnut case, complete with all accessories—A and B charger, National eliminator, Rola speaker. Cost well over £27 10 0

PRISSES SETS.

These sets used to cost over £30 less accessories. They cost £12 10 0 now, and the very finest equipment. The prices are ridiculous—from £12 10s. to £5, according to condition of case! Buy one, and then build your own set from the parts.

MONARCH, 3 Valve.

Also returned. Complete in console cabinet. Cost £48. £32

MONARCH CHASSIS, with Jensen speaker and valves. Cost £37 10 0 £22 15 0

REMKER, 6 Valve.

Small console, dynamic speaker; new. Cost £35. £22 10 0

ACE 3 ELECTRIC.

Our own make; returned from hire purchase. Same guarantee as with new set. Only £12

less accessories. They cost £12 10 0 now, and the very finest equipment.

The prices are ridiculous—from £12 10s. to £5, according to condition of case!

Buy one, and then build your own set from the parts.

BROWNING DRAKE, 4 Valve.

Sets only, less accessories £4 10 0

The above outfit would also suit a 10 watt valve, costing £2 5s. instead of 27s. 6d. Of course, for the 10 watt valve, extra power would be required.

many have worked Australia on similar outfitts.

The following parts will suit either for a 5 or a 10 watt valve. A power supply is also required, and alternatives for this are given separately.

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1 Valve socket 1 6 0
1 Rheostat 4 6

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2 Helices, silver plated wire assembled complete 1 15 0

2 Ebonite tubes, to mount helices and 4 screws 3 0

3 Pee-wee clips 4 0

1 Mic condenser .0025 2 0
1 Mic condenser .004 2 0

1 Formica board, 5/16 (engraving extra if required) 11 0

1 Baseboard 2 0

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TRY A "YOUNG" ACCUMULATOR.

YOUNG—NON-SULPHATING,
ENGLISH MADE.

Sulphating, shown by the whitening of accumulator plates, is the worst "disease" of accumulators. Hitherto, it would attack any ordinary accumulator if it were run down and left in the position. If it occurred only slightly, it might be removed by consecutive charging and discharging under close inspection. Once back sulphating took place, the accumulator was condemned.

When we heard of a new battery which would not sulphate, we merely laughed rather scornfully—as was perhaps natural to be expected by English shoppers who are nothing if not careful, assured us that the NEW YOUNG ACCUMULATORS would not sulphate. We were then news that the YOUNG accumulator was standard equipment on BENTLEY CARS, very high priced car, reported to be the fastest stock car, and to be the most reliable. Price £3000 or so. It did not seem likely such a car would adopt an inferior accumulator. Naturally, we were rather impressed.

Then, when we were informed that YOUNG had secured a large contract from the Cunard Steamship Company, followed by one from the French Government for the haul service on railways, we decided there might be something in it.

Samples were ordered, and duly arrived. We carefully charged up a sample 20 amp. Radio battery in glass case. It was run down at a couple of amps. in the ordinary way, and then connected to a 1000W MOTOR, COUPLED WITH 110G. COPPER PLATE FOR SIX DAYS. Not a sign of sulphating. The test was repeated with the same results. Not until then were we fully convinced.

A report from the National Physical Laboratory, whose tests are accepted throughout the world as the most accurate that can be obtained—no one would ever dream of doubting a N.P.L. test—showed that YOUNG accumulators would stand—almost without damage—against which would pass through the battery quickly out of action entirely.

The newly invented Wilderman porous rubber separator, which is so porous that cigarette smoke can be blown through it, is now used.

YOUNG RADIO ACCUMULATORS.

Made in two volts only. Celluloid case.

A224 10 amps. actual	15 0
A225 20 amps. actual	21 0
A226 30 amps. actual	27 0

RELIANCE ACCUMULATORS.

Reliance accumulators are locally made, from the purest materials, and are fully guaranteed. The following are the commonest used, but others can be supplied promptly when desired.



A217 20 amp. special 3 15 0
A221 22 amp. 5 0 0
A223 40 amp. actual 21 0
A224 60 amp. actual 27 0

It is impossible to judge an accumulator by its appearance, actual test by experience over at least four years being the only reliable guide. A test of two of these in cost proves expensive, but the economy lasts only six months—and a trouble-some six months—whereas a reliable one would have given good service for several years.

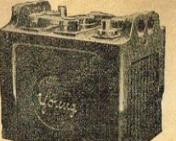
HOUSE LIGHTING.

Special price quoted for YOUNG ACCUMULATOR, also for engine and dynamo to make a complete installation.

CHARGING—See Charging Table.

YOUNG 6-VOLT ACCUMULATORS.

YOUNG are especially reliable for use, where accumulators usually have a very short life, particularly those which are put up at low prices. Make your next battery a YOUNG, whether for car or radio.



Volts	Amps.	Charged	Uncharged
A226	6	90	5 7 6
A227	6	105	6 5 0
A228	6	135	8 2 6
A229	12	75	8 6 5
A231	12	60	15 6
A232	12	75	9 0

You PAY LESS for YOUNG when you PAY MORE for it.

UNSPILLABLE ACCUMULATORS.

There is only one really unspillable accumulator—that which is jelly-like electrolyte. Young have developed this to a stage where even motor car accumulators can be used.

For portable Radio receivers, this is ideal, as no leakage takes place, regardless of the position of the portable.

YOUNG JELLY ACCUMULATORS.

Made in two volts only. Celluloid case.

A234 10 amps. actual	15 0
A235 20 amps. actual	21 0
A236 30 amps. actual	27 0

RELIANCE ACCUMULATORS.

Reliance accumulators are locally made, from the purest materials, and are fully guaranteed. The following are the commonest used, but others can be supplied promptly when desired.

CHARGERS.

WELL-MAYDE CHARGERS—A.C.

Fully guaranteed for one year.

These are manufactured in the U.S.A. under Patent License, incorporating the WESTINGHOUSE METAL RECTIFIER, which is British made. A full description of these famous rectifiers is given under RECTIFIERS, in this Catalogue.

Notice particularly that the Westinghouse rectifier, besides being far more durable than the Tungar or other bulb rectifier, actually wastes far less current when charging. Thus it is far cheaper to run.

WELL-MAYDE CHARGERS are extraordinarily convenient and simple. They can be permanently wired to your circuit, so that charging is done merely by turning on the switch. **None of the WIRES NEED EVER BE DISCONNECTED.**

Running costs are so low as to be negligible—you would not notice any difference in your electricity bill.

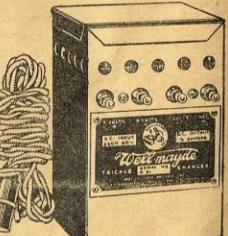
Besides paying for itself in a short time, your battery need not be run down, nor need it be taken away for a day or two at a time for recharging. The WELL-MAYDE is always ready for action, and, moreover, your battery lasts much longer if not carried about too much.

Let Your Charging Pay for Itself. Use our instalment system.

WELL-MAYDE—TYPE A.

Charges "A" batteries of 2, 4 or 6 volts, at 5 amp. supplies "A" current for a Jensen dynamic speaker or any other using up to 5 amps.

With a choke and condenser, furnishes "A" current for 4 volt valves, thus eliminating the "A" battery altogether.



For 110 volt supply, 10s. extra, except Type A, 5s.

A193 2 15 0

Easy terms, 10s. cash, and five monthly payments of 10s. each.

ACE CHARGER, 5 AMP.

It is made with the same care, and the same guarantee as the 2 amp. Ace Charger. "B" battery lamp is extra.

A190 Ace 5 amp. charger . . . 7 13 0

A186 Tungar bulb, 5 amp. . . . 2 7 6

A161 Lamp for "B" batteries . . . 2 3

WRITE FOR WESTINGHOUSE BOOKLET. Post free, 3d.

"A" ELIMINATORS—See page 30.

CHARGE YOUR BATTERIES WITH A "WELL-MAYDE."

CHARGERS—Continued.

WELL-MAYDE—TYPE A3.

Charges 6 volt batteries at 1 amp. Two and four volt batteries can be charged with extra resistance.

Supplied with a rectifier for Jensen Magnavox or other dynamic speakers taking up to 1 amp.

With choke and condensers, etc. makes a real "no 'A'" eliminator, enabling the "A" battery to be entirely dispensed with.

A206 3 10 0

WELL-MAYDE—TYPE A4.

Nine volt two amp. size, doing just what the A3 will do, except that it supplies 2 amps. instead of 1.

A207 5 0 0

WELL-MAYDE—TYPE B.

Charges "B" batteries 80-180 volts, at up to 50 millamps.

A205 4 4 0

"AB" CHARGERS.

In the combined "A" and "B" charger accumulators, both batteries can be charged at the same time, if desired. In every case, the "B" charger will charge 80 to 180 volts in series, the charging rate being up to about 50 millamps. This is the first charger to be offered in New Zealand that will charge such high voltages in series.

WELL-MAYDE—TYPE AB.

A208 6 v., .5 amp. "A" & "B" £5 15 0

WELL-MAYDE—TYPE A3B.

A209 6 v., 1 amp. "A" & "B" £6 6 0

WELL-MAYDE—TYPE A4B.

A210 6 v., 2 amp. "A" & "B" £7 15 0

All "AB" chargers charge both batteries simultaneously.

Guarantor—

WELL-MAYDE CHARGERS.

Any WELL-MAYDE CHARGER can be guaranteed for one year, even though any factory inspection proves to have become defective through ordinary fair usage within twelve months from date of sale by us, will be repaired or replaced free. This guarantee applies whether the charger is used 1 or 24 hours per day.

TUNGAR BULBS.

TUNGAR BULBS are sold entirely without guarantee, though we usually replace defective 2 amp. bulbs, used only in GENTLEMAN ACE or TUNAR CHARGERS, within six months from date of sale, charging 3s. per month for use of bulb up to time claim is made.

ACE CHARGER, 5 AMP.

It is made with the same care, and the same guarantee as the 2 amp. Ace Charger. "B" battery lamp is extra.

A190 Ace 5 amp. charger . . . 7 13 0

A186 Tungar bulb, 5 amp. . . . 2 7 6

A161 Lamp for "B" batteries . . . 2 3

Originally priced at 6s., the present price is absurdly low. Buy now as stocks are limited.

A229 Aerial outfit (best) 17 0

GARAGE CHARGERS.

ACE CHARGER, 2 AMP.

Charges six-volt "A" accumulator at 2 amps., and 30-volt "B" accumulator at 1 amp. Price includes the RECTIFIER BULB, all that is necessary for charging "A" accumulators. For charging "B" accumulators, a lamp is required costing 2s. extra.

1. Far greater durability, with practically no maintenance required.

2. No maintenance expense, for the two sets required for replacement—no lamps required.

3. Uses much less current, so that current bill, which steadily mounts up with other chargers, is greatly reduced.

4. Simpler construction.

5. No cut-outs, etc. required—if power goes off, charging ceases but resume immediately the Power Board remedies the defect.

6. Silent.

7. Less current waste means far cooler running.

On the larger outfit, a single battery can be charged at practically full power. No other charger offers this advantage—in most of them, a single battery shows actual loss.

WELL-MAYDE GARAGE CHARGERS.

Like the smaller home chargers, these are made in our own factory, using Westinghouse rectifiers. They are fully guaranteed. We know that cheap chargers can be purchased, but they are not cheaper to operate because:

1. They use more current, and even 20 amp. day and night for current means a saving of £10s. per year. Even one battery can be charged at almost full power.

2. Extra bulbs must be carried in stock, and are expensive, and this increases the first cost.

3. Annoyance and inconvenience is caused by breakdown, avoided in the Well-Mayde.

WELL-MAYDE CHARGERS will charge any other batteries from one up to 180 volts, as the numbers listed. The chargers are made to order.

Volts Amps Batteries (6 volt)

A235	12	3	1 to 2	10 10 0
A236	36	3	1 to 6	22 10 0
A237	36	5	1 to 6	30 10 0
A238	48	6	1 to 6	42 10 0

Other sizes or types built to order.

SPECIAL PRICE TO GARAGES.

BALKITE CHARGERS.

Balkite electrolytic chargers are well known everywhere. Never before has such a compact charger been offered at such an astounding price. Balkite will charge 2, 4 or 6 volt batteries at 5 amp. from your 230 or 240 volt a.c. system.

Originally priced at 6s., the present price is absurdly low. Buy now as stocks are limited.

A229 Aerial outfit (best) 17 0

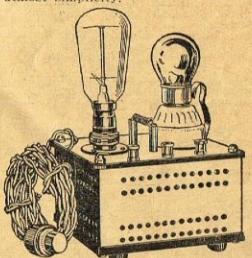
A cheeper outfit, but fulfilling insurance requirements, 100 foot 14-gauge, two large porcelain insulators, nine-inch lead-in tube, Homeguard arrester, earth clamp.

A138 9 0

Although this special does not satisfy the insurance requirements, it is quite efficient for Radio reception.

It is suitable for camping, temporary aerials, shacks, etc. 100 foot 16-gauge, two porcelain insulators, porcelain lead-in tube, earth clamp.

A137 4 0



For 110 volt mains, £s. extra.

A161 Ace Charger with bulb . . . 4 15 0

A128 Tungar Bulb, for Ace or

Tungar Chargers 1 0 0

AERIAL OUTFITS.

For convenience, the following aerial outfit are quoted complete. The earth wire in each instance is 100 feet long. Prepare to make the earth connection from the wire, as the should be cut off, and the remainder used for the aerial. Nickel-coated or earth wire need be insulated, if properly fitted. Enamel wire is better solely because it prevents corrosion.

AERIAL OUTLET N. 1.

Comprises the choice of aerial outlet, 100 foot 14-gauge wire, two Pyrex insulators, two nine-inch lead-in tubes, with wing nuts. Little Joe arrester, Clampite earth clamp.

A229 Aerial outfit (best) 17 0

AERIAL OUTLET N. 2.

A cheeper outfit, but fulfilling insurance requirements, 100 foot 14-gauge, two large porcelain insulators, nine-inch lead-in tube, Homeguard arrester, earth clamp.

A138 9 0

AERIAL OUTLET N. 3.

A cheeper outfit, but satisfying the insurance requirements, it is quite efficient for Radio reception.

It is suitable for camping, temporary

aerials, shacks, etc. 100 foot 16-gauge,

two porcelain insulators, porcelain lead-in tube, earth clamp.

A137 4 0

ALUMINIUM.

See index—Shields, Chassis.

ALUMINIUM is now much in demand for Radio purposes, being used for panels, chassis, shields and cabinets.

Aluminium is only kept and cut at our factory, hence a few hours' delay is necessary in filling orders, which have to be cut and fit in town. Turn your order in the morning, making sure to give correct sizes.

For panels, chassis and better grade shields 14g. is usual. Shields can, however, be made from any thickness.

For 14 gauge shields and cabinets, aluminium rods, 20g., are used to fit closely on the 14g. aluminium can be supplied (see A201). For lighter shields and cabinets, aluminium angle can be used for the joints, fastened to the panel with small screws and nuts.

ALUMINIUM SHEET (English).

Full sheet sizes are 6 x 3 feet or 12 sq. feet, and prices are for delivery ex our factory, packing extra.

A full sheet can be supplied cut to your own sizes at 3d. per foot extra—thus 6d. extra charged if cut in half, 12d. if cut in quarters, etc. in six pieces etc. Slight allowance necessary for wastage, especially for the thicker gauges, which are cut on a saw about 1/8 in. thick.

S.W.G.	Thickness	Sq. ft.	Full sheet
4	0.064	4/-	39/-
8	0.048	3/-	33/-
12	0.036	2/6	24/-
16	0.028	2/-	19/6

ALUMINIUM PANELS.

These can be supplied either enameled or ducoed. Write for prices. Special prices for quantities.

ALUMINIUM CORNER ROD.

This rod has grooves in it, to take 14g. aluminium sheet. The ends can be tapped for screws, which pass through the top and bottom panels, thus holding the whole assembly together.

A200 Corner rod ... per ft. 1 0

If cut accurately to length, drilled and tapped at both ends, complete with screws, per PIECE, extra 6d.

A201 Partition rod ... per ft. 6

ALUMINIUM ANGLE.

For making lighter aluminium shields, aluminium angle can be used at the corners, the panels being riveted or screwed on. We can supply suitable angle aluminium in lengths up to two feet.

3 x 3 inch ... per ft. 9d.

3 x 3 inch ... per ft. 6d.

POWER AMPLIFIERS.

SEE INDEX "AMPLIFIERS."

WE CAN SUPPLY OR MAKE AMPLIFIERS FOR ALL PURPOSES.

AMPLIFIERS.

MULTI-VALVE sets always contain an AMPLIFIER, but amplifiers are used as separate units for:

1. Working a loud speaker from a crystal set. (This can only be done by using valves and batteries.)

2. Working a loud speaker from a single valve set.

3. An electric gramophone consists merely of a turntable, pick-up and gramophone motor, mounted in a cabinet, working. The Loftin White amplifier is very suitable for this purpose.

ALL ARRESTERS LISTED HERE ARE APPROVED FOR USE THROUGHOUT NEW ZEALAND.

A properly erected aerial is actually a real protection against lightning strikes. The arrestor should be fitted outside, and wires should be kept as straight as possible.

LITTLE JOE.

A neat and effective brown porcelain arrester, complete with screws for attaching to wall. Approved in New Zealand.

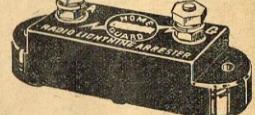
A176 ... 5 0



HOMEGUARD.

The cheapest reliable arrester procurable. Porcelain, with screws. Approved in New Zealand.

A177 ... 3 9



"B" SUPPLY.

The "B" or high tension current may be derived from several sources, as follows:

1. RAY. BATTERIES, used where other alternatives not available.

2. "B" ACCUMULATORS used where current is available at the house for charging, and capable of giving a very long service, owing to absolute uniformity and freedom from noise. Also used for public address systems.

3. "B" ELIMINATORS used where current from power lines (mains A.C.) is available at the house. (Every electric set contains a "B" eliminator, usually called power pack.)

4. BEE BATTERIES, used where 6 volt accumulators can be easily and cheaply charged. The best source of power for public address systems which have to be operated where there are no power lines.

BEE AMPLIFIER.

A two-stage transformer amplifier assembled ready for use, and fitted with transformers, valve holders, terminals, etc. Price is very low for article which is really reliable.

For fitting to your crystal set, batteries, speaker, etc.

A202 BEE Amplifier ... 1 10 0

Or with two 45 volt Columbia "B" batteries Columbia "C" battery, two valves, Fuller accumulator, and N. & K. special speaker, giving a full range to work with your crystal set. £7 15s.

	per ft.	2300	6
B153 Vert. (2308)	...	1	1 0
B154 Vert. (2308)	Super	1 2	6
B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
B153 Vert. (2308)	...	1	1 0
B154 Vert. (2308)	Super	1 2	6
B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
B153 Vert. (2308)	...	1	1 0
B154 Vert. (2308)	Super	1 2	6
B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
B153 Vert. (2308)	...	1	1 0
B154 Vert. (2308)	Super	1 2	6
B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
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B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
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	per ft.	2300	6
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B154 Vert. (2308)	Super	1 2	6
B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
B153 Vert. (2308)	...	1	1 0
B154 Vert. (2308)	Super	1 2	6
B148 4.5 volt C (2370)	...	3	9
B149 7.5 volt C (5540)	...	5	0

	per ft.	2300	6
B153 Vert. (2308)	...	1	1 0
B154 Vert. (2308)	Super		

MAGNETO "B" FOR REAL POWER—LOW EXPENSE.

MAGNETO "B"
SUPPLY.

In England these are known as Anode converters, but we have adopted the above name as more in keeping with the terms used in N.Z.

The MAGNETO "B" consists of a combined motor and generator, yet it requires no current and an absolute minimum of current, since it is usually driven by an accumulator. For economy a strong permanent field is used—*all* current generated can be used—*then* put to useful work.

The machine is enclosed in a small and neat case, with precision bearings, requiring only a few drops of oil every two or three months. No other attention is necessary.

If you can easily change your own 6 volt accumulator, or if you have a home lighting plant of 32, 110, 230 or any other voltage, your Radio can be operated very cheaply, and with full power from a magneto "B".

AMPLIFIERS, ELECTRIC GRAMOPHONES AND PUBLIC ADDRESS SYSTEMS.

For the above purposes, where the apparatus may not be always wanted in one place, the MAGNETO "B" is easily the finest current supply available. Using a 12 volt magneto "B" it only requires two 6 volt accumulators of the same size or upwards to supply all "A" and "B" current. "C" supply can also be obtained, though in many cases it is more advisable to use a dry "C" battery, and for such purposes is an inexpensive item.

Some ready means for re-charging the 6 volt batteries must, of course, be available.

For a class of work, two 30 amp. 6 volt batteries should operate type C at full power for about 20 to 25 hours.

Type B would operate about half this time, but it should be remembered that type E, operating on a suitable amplifier, is extremely powerful—sufficient to run quite a large talkie plant or to cover a large area of ground for a public address system.

The E type weigh only 31 lbs., and is only about eight inches high. It is thus very readily portable in a car.

We ourselves use an outfit like the above for a large amount of outdoor public address work, even where power supply current may be available. This will show that the magneto "B" outfit is NOT a substitute for a powerful A.C. outfit, but the equivalent.

In ordinary times, an outfit like the above could be hired out by its owner for dances, political meetings, sports meetings, football shows, and numerous other public events. The remuneration obtained is a very fair one. During the present year political meetings can be found throughout such events throughout the year, but they will not be obtainable at a moment's notice just when the election campaign starts.

For other details, concerning public address systems, electric gramophones, etc. see index.

MAGNETO "B" SUPPLY is offered in special metal boxes, complete with filter system for use with Radio or amplifier, or without filter.

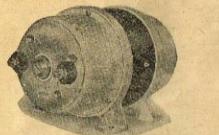
It can also be supplied without filter, but in such cases a filter must be added for satisfactory working. Very frequently it suits to incorporate the filter as part of the amplifier itself. A better filter is required for Radio purposes than for amplifier work only.

Where intermediate voltages are required, and they usually are, we can supply a variable resistance system for from 150 to 2000. It is necessary to tell us what valves are used, and whether the "C" supply is to be drawn from the magneto as well as the "B".

Finally, let us emphasise the reliability of this machine. It is made by magnetic experts, is thoroughly tested, and in the field where British is a clear leader.

STOCKS.

It is impossible on such a highly specialised apparatus to carry large stocks, but we always endeavour to have on hand machines with 12 volt accumulators, in types C, E, and F. Otherwise orders can be promptly filled.



In the list below, any input or output given can be obtained from the factory at list price, but we normally do not stock those in brackets.

TYPE B.
Input, 6 volts. Output, 150 volts, 15 millamps.
B225 With filter 13 10 0
B226 Less filter 7 15 0

TYPE C.
Input, 12 or 32 volts (50, 100 or 230 volts). Output, 300 volts, 50 millamps (or 400v., 40mA.; 500v., 30mA.).
B227 With filter 16 10 0

TYPE E.
Input, 12 or 32 volts (50, 100 or 230 volts). Output, 300 volts, 120 millamps (or 400v., 150mA.; 600v., 100mA.; 1000v., 50mA.).
B229 With filter 22 10 0
B230 Less filter 16 10 0

TYPE F.
Input 12 or 32 volts (50, 100 or 230 volts). Output, 400 volts, 250 millamps (or 400v., 160mA.; 1000v., 100mA.).
B232 With filter 33 0 0
B233 Less filter 22 10 0

**LET US SOLVE YOUR
POWER PROBLEMS—
RADIO AND AMPLIFIER.**

MAGNETO RESISTANCE SYSTEMS

For use with Radio sets, or with address systems and amplifiers, a resistance system is used with the magneto "B". These are quoted to suit individual jobs, the cost being usually about 15s. to 20s. per unit. In ordering, please advise us the valves used in the amplifier, and the "B" voltage.

M-L AIRPLANE GENERATORS.

M-L manufacture a small generator similar to their magneto "B", but giving 800 volts, 30 millamps, and 6 volts 2.6 amps. Had Kingsford Smith one of these when we last heard of his Australia circumnavigation which would have been easy. The M-L is essentially, of course, an emergency apparatus.

The price of this aeroplane generator is £50.

DYNAMOTOR.

A used generator, working on 27 volts input, and giving 400 volts 100 millamps, as used in U.S.A. Army. Price £3. Guaranteed good condition.

CHARGING "B"
ACCUMULATORS.

First Extra
charge, inc. acid 1 6 1 0
Recharging 1 6 1 0

Although we recharge "B" accumulators, we do not recommend them when they cannot be recharged at home, except in special cases.

COLUMBIA "C" BATTERIES.



B112 4½ volt, tapped a' 3 4 0
B231 9 volt, tapped every 1.5 4 6

COLUMBIA No. 6.
This battery has no rival for "A" batteries of Radio sets (where accumulators cannot be used), for telephones, bells, buzzers, etc., etc.

Thousands of these batteries are used annually by the New Zealand Government, having been selected after being tested.

B113 1½ volt 2 6
B173 5 wire 5d. 20 0
B176 6 wire 6d. 24 0
B213 7 wire 7d. 28 0
B216 9 wire 9d. 32 0

FLEXO CABLES.
A very high grade cable for those requiring the highest quality. These cables are specially treated and rendered acid proof. They are all five feet long, and have lugs fitted.

B188 5 wire 5 0
"A" battery clips extra, per pr 1 6

COLUMBIA AIR CELL—A WONDERFUL INVENTION.

COLUMBIA AIR-CELL.

A battery that would give an absolutely constant current for a very long period, has always been the desire of inventors. This dream has now been realised, for after an enormous amount of research and experimenting, the Columbia factory has evolved the AIR-CELL.

The battery consists of four cells for uniform supply on air. It has been developed mainly for RADIO, and goes hand in hand with the new 2½ volt valves now obtainable—the UX23.

The AIR-CELL is really a double battery in one case, which is similar to an "A" cell, and can accommodate four cells or a 7½ volt set for over 1000 hours, without any noticeable drop in voltage. The ordinary dry battery, of course, drops in voltage immediately, and this drop continues.

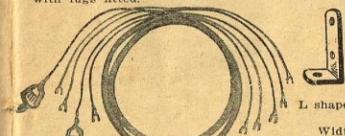
On a set like the Hammar-Roberts, which we believe, the best receiver for New Zealand conditions when no current is supplied to the house—one AIR-CELL should last the best part of two years. This at once removes the main objection to Radio sets with an AIR-CELL. Troubles due to the "A" battery simply vanish. We predict the AIR-CELL will oust the "A" accumulator to a very great extent.

B235 Columbia Air-cell 3 18 0

BATTERY CABLES

ACE.

Battery cables consist of wires of different diameters braided together to secure neatness, and to avoid troubles with straggling wires from battery to set. Can be supplied in lengths, or finished ready for use, with lugs fitted.



Cable, with Lugs and Clips.

ACE CABLES
(With Lugs, all 5ft. Long).

B175 5 wire 5d. 2 3
B178 6 wire 6d. 2 3
B213 7 wire 7d. 3 6
B216 9 wire 9d. 4 0
"A" battery clips extra, per pr 2 6

ACE CABLES (Out to Length).

Per ft. 50ft.
B173 5 wire 5d. 20 0
B176 6 wire 6d. 24 0
B215 7 wire 7d. 28 0
B216 9 wire 9d. 32 0

B188 has four holes.

B196 1½ in. 4d. 3 0

L SHAPE.

Width Length arms. ea. d.
B132 1½ in. 1½ in. 2d. 1 3
B134 3½ in. 3½ in. 3d. 2 3
B135 5½ in. 5½ in. 3d. 2 6
B177 1½ in. 1½ in. 4d. 3 6
B188 1½ in. 1½ in. 5d. 4 0

B196 has four holes.

B196 1½ in. 4d. 3 0

Z SHAPE.

Width Height d.
B132 1½ in. 1½ in. 2d. 2 6
B197 1½ in. 1½ in. 3d. 3 6
B198 1½ in. 2½ in. 5d. 4 0
B142 2½ in. 2½ in. 6d. 5 0

FLXO CABLES.

A very high grade cable for those requiring the highest quality. These cables are specially treated and rendered acid proof. They are all five feet long, and have lugs fitted.

B188 5 wire 5 0

"A" battery clips extra, per pr 1 6

B140 Straight 3in. x 1in. 5d. 4 0

MULTI-PLUG CABLES

Four or five wire cables fitted to valve bases. With these batteries can be connected or disconnected immediately and independently for changing from short to long wave sets. Save time and accidents.

The seven wire cable has special plug, and its price includes socket.



C113 4-way plug cable

C114 5-way plug cable

C509 7-way plug cable & socket

4 6

5 6

7 6

BOOKS AND PERIODICALS.

BOOKS.
Postage 2d. extra; per copy 1 6
Postage 2s. extra; per annum 16 0
Yearly subscriptions must be paid in advance. Q.S.T. same price as Radio News.

BRASS RODS, ETC.

BRASS RODS, ROUND.

5/32 or 3/16 in. diam. ft.

7/32, 1/4 3d.

5/16 3d.

B.A. 1, 2, 3 6d.

4, 5, 6, 7 4d.

5/16, 3/8 3d.

1/2 6d.

1/4 4d.

1/8 2d.

1/16 1d.

1/32 1d.

1/64 1d.

1/128 1d.

1/256 1d.

1/512 1d.

1/1024 1d.

1/2048 1d.

1/4096 1d.

1/8192 1d.

1/16384 1d.

1/32768 1d.

1/65536 1d.

1/131072 1d.

1/262144 1d.

1/524288 1d.

1/1048576 1d.

1/2097152 1d.

1/4194304 1d.

1/8388608 1d.

1/16777216 1d.

1/33554432 1d.

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1/268435456 1d.

1/536870912 1d.

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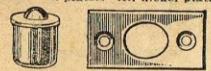
OUR CABINET FITTINGS GIVE "DISTINCTION."

CABINET FITTINGS.

BALL CATCHES.

These small catches are used on the doors of cabinets of all kinds. They are most convenient to operate, and the doors quite securely enough for all ordinary purposes.

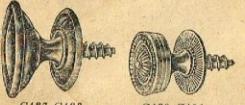
With lock plates. All nickel plated.



C483 1 in. diameter	per set	4
C484 5/16 in. diam.	per set	6
C485 1 in. diameter	per set	6
C486 1 in. diameter	per set	9

CABINET KNOBS.

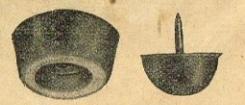
Used for small cabinets of Radio sets, gramophones and similar purposes. They are supplied either nickel plated (N.P.), or bronzed (B.), and with wood (W.S.) or metal screw and nut (M.S.).



C487 1 in. plain	62	ds.
C488 1 in. plain, N.P., W.S.	34	2
C489 1 in. fancy, N.P., W.S.	34	2
C490 1 in. fancy, N.P., W.S.	64	6
C491 1 in. fancy, B., M.S.	64	6

BUBBLE FEET.

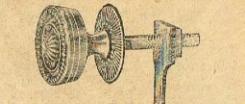
Deaden noise and prevent furniture scratches.



C151 Screw type, No. 3	64
C152 Screw type No. 4	94
C149 Pin type No. 1	64
C150 Pin type No. 2	94

CUPBOARD LOCKS.

These are supplied in two sizes, either nickel plated or antique finish.



C492 1 in. diam., plated	ea.	11	0
C493 1 in. diam., antique	ea.	11	0
C494 1 in. diam., plated	ea.	8	6
C495 1 in. diam., antique	ea.	8	6

DROP HANDLES.

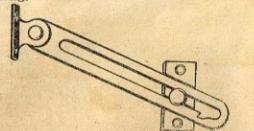
Small drop handles for small cabinet drawers, either plated or antique.

C562 Plated ... 9d.

C563 Antique 9d.

LID SUPPORTS.

Lid supports hold the lid up while adjusting valves, etc. Brass, either nickel or gold plated. Five inches long.



C410 Nickel plated	1	3
C411 Gold plated	1	6
C452 Folding pattern, N.P.	1	0

LID SUPPORTS—AUTOMATIC.

A heavy nickel plated lid support. Automatically locks to hold up, and then releases automatically when slightly raised again. Beautiful finish.

G131 8 inch ... 2 6

G132 6 inch ... 2 6

G133 5 inch ... 2 6

G134 4 inch ... 2 6

G135 3 inch ... 2 6

G136 2 inch ... 2 6

G137 1 1/2 in. plain, N.P., W.S.

G138 1 1/2 in. plain, N.P., W.S.

G139 1 1/2 in. fancy, N.P., W.S.

G140 1 1/2 in. fancy, N.P., W.S.

G141 1 1/2 in. fancy, B., M.S.

G142 1 1/2 in. fancy, B., M.S.

G143 1 1/2 in. fancy, B., M.S.

G144 1 1/2 in. fancy, B., M.S.

G145 1 1/2 in. fancy, B., M.S.

G146 1 1/2 in. fancy, B., M.S.

G147 1 1/2 in. fancy, B., M.S.

G148 1 1/2 in. fancy, B., M.S.

G149 1 1/2 in. fancy, B., M.S.

G150 1 1/2 in. fancy, B., M.S.

G151 1 1/2 in. fancy, B., M.S.

G152 1 1/2 in. fancy, B., M.S.

G153 1 1/2 in. fancy, B., M.S.

G154 1 1/2 in. fancy, B., M.S.

G155 1 1/2 in. fancy, B., M.S.

G156 1 1/2 in. fancy, B., M.S.

G157 1 1/2 in. fancy, B., M.S.

G158 1 1/2 in. fancy, B., M.S.

G159 1 1/2 in. fancy, B., M.S.

G160 1 1/2 in. fancy, B., M.S.

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G164 1 1/2 in. fancy, B., M.S.

G165 1 1/2 in. fancy, B., M.S.

G166 1 1/2 in. fancy, B., M.S.

G167 1 1/2 in. fancy, B., M.S.

G168 1 1/2 in. fancy, B., M.S.

G169 1 1/2 in. fancy, B., M.S.

G170 1 1/2 in. fancy, B., M.S.

G171 1 1/2 in. fancy, B., M.S.

G172 1 1/2 in. fancy, B., M.S.

G173 1 1/2 in. fancy, B., M.S.

G174 1 1/2 in. fancy, B., M.S.

G175 1 1/2 in. fancy, B., M.S.

G176 1 1/2 in. fancy, B., M.S.

G177 1 1/2 in. fancy, B., M.S.

G178 1 1/2 in. fancy, B., M.S.

G179 1 1/2 in. fancy, B., M.S.

G180 1 1/2 in. fancy, B., M.S.

G181 1 1/2 in. fancy, B., M.S.

G182 1 1/2 in. fancy, B., M.S.

G183 1 1/2 in. fancy, B., M.S.

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G186 1 1/2 in. fancy, B., M.S.

G187 1 1/2 in. fancy, B., M.S.

G188 1 1/2 in. fancy, B., M.S.

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G190 1 1/2 in. fancy, B., M.S.

G191 1 1/2 in. fancy, B., M.S.

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G196 1 1/2 in. fancy, B., M.S.

G197 1 1/2 in. fancy, B., M.S.

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G199 1 1/2 in. fancy, B., M.S.

G200 1 1/2 in. fancy, B., M.S.

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G205 1 1/2 in. fancy, B., M.S.

G206 1 1/2 in. fancy, B., M.S.

G207 1 1/2 in. fancy, B., M.S.

G208 1 1/2 in. fancy, B., M.S.

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G296 1 1/2 in. fancy, B., M.S.

G297 1 1/2 in. fancy, B., M.S.

G298 1 1/2 in. fancy, B., M.S.

G299 1 1/2 in. fancy, B., M.S.

G300 1 1/2 in. fancy, B., M.S.

G301 1 1/2 in. fancy, B., M.S.

G302 1 1/2 in. fancy, B., M.S.

G303 1 1/2 in. fancy, B., M.S.

G304 1 1/2 in. fancy, B., M.S.

G305 1 1/2 in. fancy, B., M.S.

G306 1 1/2 in. fancy, B., M.S.

G307 1 1/2 in. fancy, B., M.S.

G308 1 1/2 in. fancy, B., M.S.

G309 1 1/2 in. fancy, B., M.S.

G310 1 1/2 in. fancy, B., M.S.

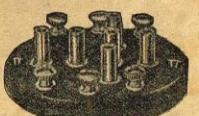
G311 1 1/2 in. fancy, B., M.S.

G312 1 1/2 in. fancy, B., M.S.

CHOKE COILS BUILT TO ORDER.

COIL BASE.

Six pin coil bases, moulded from bakelite, to fit the TUNEWELL FORMERS, or any standard English coil formers.



R.F. CHOKES.

HAMMARLUND R.F. CHOKES.

The Hammarlund chokes are enclosed in beautiful bakelite cases, instructional diagrams being included. They carry 5 millamps. Have a very low capacity, while the effective resistance is such as to eliminate resonance bands.

HAMMARLUND 85.

85 millihenries, capacity 3 mmfd., resistance 240 ohms.



HAMMARLUND 250.

250 millihenries, capacity 2 mmfd., resistance 240 ohms.

C344 Each 10 0

WELL-MAYDE R.F. CHOKES.

Carefully designed and accurately constructed to suit both regenerative and the grid leak. Very efficient. Complete with bakelite base, and plated clamps.



DE JUR R.F. CHOKE.

This is the neatest choke we have seen. It is small, minimising stray magnetic field, and is entirely protected from moisture by a mahogany mottled bakelite case. Bound to please.

C462 De Jur R.F. choke 6 3

HONEYCOMB COILS.

Honeycomb coils, in various sizes from 3s. to 1s. 6d., make excellent chokes, when lengths of WELL-MAYDE COIL, 1½ inch diameter, are also suitably spliced. These could be readily adjusted to exact requirements.

POLARISED R.F. CHOKES.

Used in high gain screened grid circuits. Thoroughly shielded, minimum external field, permitting close coupling and compactness. Undesirable feed back or instability avoided.

Great distributed capacity, and no natural resonance over the whole broadcast range

C557 W-M polarised choke 7 6

R.F. CHOKES FORMERS.

Moulded with grooves and slots. Easily mounted. Enables first class chokes to be readily made at low cost.



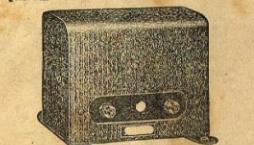
C570 Choke formers 1 6

CHOKE COILS.

Well-Mayde chokes are ruggedly built to stand continuous full loads. The finish is the same as in Well-Mayde transformers, and you should remember on this point when making that heading. W-M stands for quality. Note particularly the low resistance.

CHOKES built to order, on receipt of:

1. Millamp or amp. to be carried.
2. Inductance in henries.
3. Purpose for which choke is required.



WELL-MAYDE CHOKE A3.

A low resistance choke, for use with the type A3 charger, or A2 with the vacuum transformer and an electrolytic condenser, to make an "A" eliminator, with output of 6 volts D.C., maximum, for the valves. Could also be used with the type A3 amp. charger, giving 6 volts 3.5 amp. for the valves.

C567 W-M choke A3 1 10 0

WELL-MAYDE CHOKE A4.

Similar to the A3, for 2 amp. output. C550 W-M choke A4 40 0

WELL-MAYDE DUPLEX CHOKES.

Consists of two filter chokes, one used as no. 1, the other filter choke, being two separate chokes. Current 60 millamps. D.C. resistance per section 400 ohms.

C549 W-M duplex choke 40 0

30 HENRY, 50 MILLIAMP (H.T.4).

Suitable for small eliminators and power packs. Used in H.T.3 and H.T.4 eliminator kits. C548 W-M 30s. 50ma. choke 27 0

30 HENRY, 125 MILLIAMP (H.T.1).

General purpose choke of general design, designed for modern power packs. Used in H.T.1 eliminator kits. D.C. resistance 210 ohms. C568 W-M 30s. 125ma. choke 33 0

30 HENRY, 200 MILLIAMP.

Special attention to insulation in this choke makes it very suitable for transmitters and heavy duty speech amplifiers. D.C. resistance 155 ohms. C102 W-M 30s. 200ma. choke 65 0

30 HENRY, 500 MILLIAMP.

An extra large choke for broadcast transmitters, etc., where the voltage from choke to earth does not exceed 3000 volts. Very conservatively rated. D.C. resistance 100 ohms. C103 W-M 30s. 500ma. choke 18 10 0

CONDENSERS.

Hammarlund
PRODUCTS

Hammarlund condensers, although expensive, have always proved superior to all others.

Low-loss, removable shaft, right or left mounting, brass plates, soldered to accurately milled supports, and capable of a 1000 volt test, in the side mounting, with extra fixing screws if required, heavy cones, bearings, adjustable device.

Middle design, giving the advantages of all other special types—everlasting, for Hammarlund never wears out.

MIDDLE CONDENSERS.

C232 .0005, 22 plates .. 25 0
C233 .00035, 17 plates .. 24 0
C234 .00025, 11 plates .. 23 0
C152 Dual .00035 .. 1 2 6

BUTZ HAMMARLUND CONDENSERS.—If you do not, we will always wish you had.

HAMMARLUND SHORT WAVE.

This is a special condenser, with double spaced plates, securing the

very low minimum capacity of only 0.00015 microfarads, and a maximum being 100 mmfd. It is ideal for short wave sets and adaptors, especially where the lowest range possible is desired. The lowest range with ordinary type condensers.

WELL-MAYDE COILS J. K. L. M. are specially made to match this condenser.

C242 .. 1 5 0

APPARATUS SUPPLIED ON EASY TERMS.

ELECTROLYTIC
CONDENSERS.

The capacity in microfarads of a condenser depends on three things—the size of plates used, the closeness of the plates, and the material between the plates.

Of recent years, electrolytic condensers have been developed, in which the main object has been to separate the plates or the equivalent of the plates by a very thin film caused by electrolytic means. So very thin is this film that the capacity of the condenser is increased enormously.

In condenser like the SPRAGUE, should the heat become too great—an heat itself with a few hours' rest!

These condensers are reliable, is proved by their wholesale acceptance by the highest quality manufacturers in U.S.A. Their heat, however, yet occurs.

The SPRAGUE CONDENSER has a thin metal screw cap, which is riveted or screwed to the chassis. The condenser is then attached to the chassis in much the same way as a valve is put in its holder. The 8-mfd. is only 11in. diam. by 5in. high.

The peak load (working) of Sprague condensers is 400 watts. For higher voltages, condensers may be used in series. They can, for instance, be used on transmitters up to 4000 watts.

C568 8 mfd. 12 0
C567 Dual 8 mfd. 29 0
C568 Dual 8 and 16 mfd. 25 0
C569 12 mfd. 16 0

T.C.C. ELECTROLYTIC.

Electrolytic condensers to-day have stood the test of time. In a small space, amount of a few years ago, they have a capacity of thousands of microfarads.

These condensers are much chief for making "A" eliminators, and also for eliminating hum in A.C. dynamotors with low resistance fields.

Care must be taken to see that they are not used on a voltage over 12 maximum, and that they are connected right way round. Otherwise they will be ruined.

These condensers are recommended with every confidence.

The T.C.C. is oblong, the Magnafarad being small, round, in aluminum case.

C511 2000mf T.C.C. 1 0 0
C512 4000mf T.C.C. 1 15 0
C581 3000mf Magnafarad 1 5 0

CONVERTERS
(ROTARY).

FOR RADIO, NEON SIGNS, ETC.

Fortunately, only in a few places in New Zealand is direct current supplied. In these places, however, Radio, neon signs, etc., which some prefer to supply, by having a converter, which changes D.C. to A.C.

Of recent years, electrolytic condensers have been developed, in which the main object has been to separate the plates or the equivalent of the plates by a very thin film caused by electrolytic means. So very thin is this film that the capacity of the condenser is increased enormously.

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The KATO 157 watt converter, set in conjunction with a LOFTIN, WHITE DIAL 250 AMP. ammeter and five motor car accumulators, furnishes an extremely powerful outfit, which, while not so portable as magneto "B" outfit, can, nevertheless, be transported with little difficulty.

HERTZITE—RUSSELL'S.

Although there are very many "brands" of crystals on the market, most of them are merely galena, either natural or state or treated chemically to make it more sensitive.

HERTZITE is a treated galena, and takes its place as the best known crystal in the world.



C292 HERTZITE-BLUE 1 0

CRYSTAL DETECTORS.



A well made set of parts for making your own detector. Screws, metal cup, see note, if so. Nickel piano will get hot, and possibly burn out.

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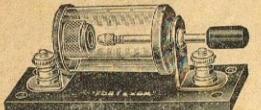
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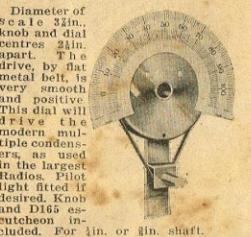
GOOD TUNING DEPENDS ON GOOD DIALS.

ACE DETECTORS.



It is supplied in three styles, all steel enclosed, as follows:
C146 MOUNTED, with crystal 3 0
C146 without crystal 2 6
C181 PARTS, on card 2 0

POSITIVE DIAL.



Diameter of scale 3 1/2 in., knob and dial case 2 1/2 in. The drive by metal belt is very smooth and positive. The metal belt drive fits the modern multiple condensers as used in the largest Radios. Pilot light fitted if desired. Knob size D165 escutcheon included. For 1 in. or 1 1/2 in. shaft.

D162 POSITIVE DIAL 10 9
D163 POSITIVE DIAL, illuminated 13 6

SIMPLEX DIAL.

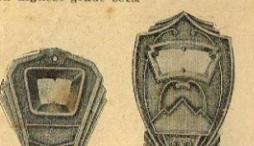
The kind used on midget sets. Diam. 3 1/4 in. It fits on the shaft of the condenser, and includes escutcheons D165 and knob.



D164 SIMPLEX DIAL 6 0

ESCUTCHEONS.

Beautiful bronze finished, as used on highest grade sets.



D165 D166
D165 ESCUTCHEON, flat dial 2 6
D166 ESCUTCHEON, flat dial 3 6
D167 ESCUTCHEON, drum dial 3 6

ACE VERNIER.

Artistically designed Vernier dials at a price well within the means of any set builder. It has a high ratio, which enables one tuning, and is made to read in either direction. The friction drive is sure. Black only. Scale 100-0-100.



MAYL. The dial is very artistic and may also suit splendidly. These readily adjusted to exact requirements.

PILOT ILLUMINATED DIAL.

Complete with small light.
D154 Pilot dial 14 3
D155 Pilot dial, less light 11 6

EMMCO VERNIER.

A standard bakelite dial, made in either black or mahogany. Scale whether wanted with dial marked 0 on left (anti) or on right (clockwise).

D127 Black bakelite; each 6 6
D128 Mahogany 6 6
D144 EMMCO VELMO DIAL 5 6
D145 EMMCO BABY VELMO 4 6

HAMMARLUND SINGLE DRUM.

An illuminated drum dial, turned by a single knob, arranged so that the latter can be placed in any position on the panel. The scale is translucent illuminated by a small electric light placed behind it. The bronze escutcheon plate, embossed and oxidised, gives an air of distinction to any Radio set. The drive by metal belt has absolutely no backlash, and simply cannot slip. Can be supplied with black or walnut knob. Escutcheon as with D163.



D147 Hammarlund single drum dial 19 6

DRUM DIALS.

Drum dials, although popular, have hitherto been rather expensive. The Remler was secured at a very low price, and is offered at a great saving. For 1 in. shaft.

It is complete with escutcheon plate, knob and pilot light.

D168 Remler drum dial 14 6

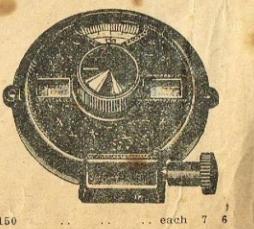
HIGH RATIO DIALS.

For SHORT WAVE SETS, it is highly desirable to have a dial with a high ratio, so the tuning can be done very exactly. Yet it is also desirable to be able to turn the knob to the approximate position quickly.

Both these features are secured in the dials offered.

PRECISE.

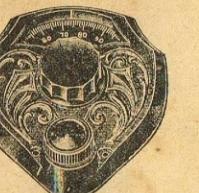
A small dial with worm gearing. Small knob can be instantly moved to leave the dial free to turn exactly as an ordinary dial. Ratio about 225:1.



D169 each 7 6

DUFLEX.

A large size dial, ratio about 160:1. Worm and bevel gear, instantly disconnected by tilting knob.



D151 each 9 0

K-K BAKELITE (ORDINARY).

The finest dials procurable. Beautifully moulded and accurately made.



D104 4 in. 3 0

D119 Black, moulded, 4 in. 1 2

D163 Black, 2 in. rheostat 1 0

Magnus, 3 inch 9d

Hercules, 2 1/2 inch 6d

Hercules, 2 inch rheostat 6d

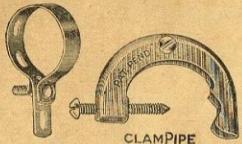
"WELL-MAYDE" ELIMINATORS FULLY GUARANTEED.

EARTH CLAMPS.

For connecting earth wires from the Radio set to the water pipe.

CLAMPIPE.

A sure and quick grip on your water pipe. Three points "dig into" the pipe to make clean contact.



C227 Clampine each 1 0
A27 Lighter clamp, also adjustable 4d.
C227 Light clamp, adjustable 4d.

E225 Earth pipes 3 6

EBONITE

FANELS.

EBONITE for panels has been entirely superseded by Exelon and Formica.

TUBE.

Inside diameter or bore is given, the wall being 1/16 in. thick in every case.

Box 5/16 3 1/2 1/2
Per ft. /10 1/2 1/2 1/2 1/2 1/2

BOD.

Diam 5/16 3 1/2 1/2 1/2
Per ft 5/16 3 1/2 1/2 1/2 1/2
Larger tubes and rods are frequently available.

RIBBED TUBE.



Ribbed tube is used for low loss coils. It is sold in six inch lengths only, the diameter given being the outside diameter over the ribs.

E129 3in. diam., 6in. long 3 0
E137 1in. diam., 6in. long 1 9

ELIMINATORS.

The "A", "B", and "C" batteries of a radio may be replaced by eliminators thus enabling the current to be drawn direct from the mains, without batteries at all.

Every A.C. (electric) Radio contains an "B" eliminator, though it is usually referred to as a power pack.

In an eliminator, transformer first gives a suitable A.C. current which then passes through a rectifier, to change it to direct current. Condensers and chokes then "smooth"

the uneven D.C. current, and resistors control the output voltages. Westinghouse are the best rectifiers, and can be had most easily. Their output voltage is comparatively high, they are permanent. Valves are more common, simply because they are less costly initially.

If your Radio is giving you trouble, and is giving good results, there is no need to discard it, for by the addition of suitable eliminators it will continue to give excellent service. This is, however, of course, if the eliminators chosen are really high grade.

In ordering an eliminator, be certain to tell us exactly what valves are being used in your set. The eliminator will then be matched to suit your particular set.

WELL-MAYDE ELIMINATORS.

We have already installed a large number of WELL-MAYDE ELIMINATORS, often with the famous Westinghouse rectifiers units, which are everlasting. Customers everywhere have expressed their huge delight with them. The sound is as smooth as to be indistinguishable from batteries as a general rule, but a very marked increase in "pep" is obtained.

In WELL-MAYDE ELIMINATORS there is nothing to wear out, so they last for years without renewals of any kind. Enormous savings results.

Special eliminators can be built to special requirements, will be gladly given on account of full particulars, which should state number of valves used, and the type of valve in each stage.

"A" ELIMINATORS.

WELL-MAYDE "HALF AMP."

Maximum output 6 volts 1 amp. Suitable for four or five 1 amp, or eight .96 amp. valves, including the new Radiotrons 221. Fitted with rheostat and voltmeter. Metal case. State voltage of valves to be used. E167 8 5 0

WELL-MAYDE "ONE AMP."

Maximum output 6 volts 1 amp. Suitable for working several valves, and also for supplying a dynamic speaker with smooth current, thus eliminating hum. Fitted with voltmeter and rheostat. Metal case.

State voltage of valves to be used. E168 9 15 0

WELL-MAYDE "TWO-AMP."

Maximum output 6 volts 2 amps. Very powerful. Details as for one amp. type. E169 12 10 0

"B" ELIMINATORS.

"B" ELIMINATORS are used to replace "B" batteries on Radios, where A.C. current is available. They cost practically nothing at all to current, and are made by WESTINGHOUSE RECTIFIERS. We will be very glad to obtain an "ABC" eliminator specially for you. Our advice on the matter is always freely available.

When purchasing, always get a powerful eliminator. More and more power is being asked for every day, and the bigger eliminators in a couple of years ago is comparatively weak to-day. This advice applies particularly where dynamic speakers, gramophone pick-ups, etc. are used. It is best to use a "B" eliminator.

Short Wave Radio will probably not operate on eliminators, but the difficulty is surmounted by using a small 221 Radiotron, and one 112A, or for any other set in which similar combination of valves can be used, such as Browning, Drake, and any five valve Neutrodyne.

Do not attempt to use the eliminator with valves whose total filament consumption is more than .5 amps.

"A" SUPPLY.

.6 volts .5 amps.

"B" SUPPLY.

150 m.f. 50 mils, tapped for detector, R.F. and first audio.

"C" SUPPLY.

.45 and 9 volts, or to suit.
Suitable for screened grid Radios, at slight extra charge.

In handsome metal cabinet. E174 Monarch "ABC" eliminator 17 10 0

WELL-MAYDE "PRINCE."

3-VALVE—Aee, N.Z. Radio, screened grid, etc.

4-VALVE — Hammarlund—Roberts, Browning-Drake, screened grid, etc.

5 VALVES OR MORE—Altona and similar—neutrodynes, etc.

The recommended power valve for the last stage is 112A.

Tappings are provided for detector, R.F., first audio, besides, of course, the final stage.

No bulbs to renew—long life without any maintenance expense.

In handsomely finished metal case. E165 9 0 0

WELL-MAYDE "SOVEREIGN."

Rectifier Output 180 watts, 100 m.f.

Suitable for powerful Radios and amplifiers, using two 171A valves or equivalent in the last stage, push pull. One hundred mils is ample current for all requirements.

Tappings for detector, R.F., first audio.

Handsomely finished metal case. A little higher price and well worth it. E166 13 0 0

ALTONA ELIMINATORS.

A sturdy "B" eliminator, using a 280 valve, same as in electric sets. Ample power—over 200 volts at 60 mils. Just the thing for high power work, yet the price is very low indeed for an eliminator. WELL-MAYDE manufacture. Bulb included.

E253 Altona eliminator 16 10 0

"ABC" ELIMINATORS.

IN ORDERING ELIMINATORS STATE:

- (1) Make of set.
- (2) Number and type of valves.

If you cannot use the combination of valves mentioned below, or valves of other types, or other combinations, etc., we will be very glad to obtain an "ABC" eliminator specially for you. Our advice on the matter is always freely available.

MONARCH "ABC" ELIMINATOR.

Designed normally for our Hammarlund-Roberts sets, using three 221 Radiotrons, and one 112A, for a total of 180 watts. Also for four 221 Radiotrons, and one 112A; or for any other set in which similar combination of valves can be used, such as Browning, Drake, and any five valve Neutrodyne.

As above, but supplying 6 volts at 1 amp, thus being suitable for up to 10.1 amp 6 volt valves.

Well-Mayde A3 transformer 1 10 0
Westinghouse A3 rectifier 2 0 0 0

Two 200 m.f. condensers 2 0 0 0
Well-Mayde A4 choke 1 10 0
Rheostat, baseboard, wire 4 6

Meter extra 6 12 6

BUY WELL-MAYDE—WESTINGHOUSE.

6 VOLT, 1 AMP., "A" KIT (E171).

As above, but supplying 6 volts at 1 amp, thus being suitable for up to 10.1 amp 6 volt valves.

Well-Mayde A3 transformer 1 10 0
Westinghouse A3 rectifier 2 0 0 0

Two 200 m.f. condensers 2 0 0 0
Well-Mayde A4 choke 1 10 0
Rheostat, baseboard, wire 4 6

Meter extra 6 12 6

6 VOLT, 2 AMP., "A" KIT (E172).

Well-Mayde A4 transformer 2 0 0 0
Westinghouse A4 rectifier 2 0 0 0

Two 200 m.f. condensers 2 0 0 0
Well-Mayde A4 choke 1 10 0
Rheostat, baseboard, etc. 7 0 0

Meter extra 18 15 0

6 VOLT, 4 AMP., "A" KIT (E173).

Well-Mayde A4 transformer 2 0 0 0
Westinghouse A4 rectifier 2 0 0 0

Two 200 m.f. condensers 2 0 0 0
Well-Mayde A4 choke 1 10 0
Rheostat, baseboard, etc. 7 0 0

Meter extra 18 15 0

METERS—Although not essential, it is advisable to fit them, as one can be supplied at 9/—, and the Crescent moving coil (recommended) at 39/—.

"B" ELIMINATOR KITS

E173 (E276).

Output 120 volts, 20 m.f.

Suitable for smaller Radios, but it would probably be better to choose the next larger size, which costs little more, but is far more powerful. In the case of Radios, up to three valves, this eliminator will give ample output.

Well-Mayde transformer 1 10 0
Rectifier HT2 1 10 0
Well-Mayde choke HT4 1 8 0
2 Hydra 4 m.f. 500 volt condensers 15 0
3 Hydra 2 m.f. 500 volt condensers 12 0
Well-Mayde resistance, mounted 13 6
Baseboard, wire, terminals, etc. 3 0

Meter extra 18 8 6

ELIMINATOR KITS.

Easily and quickly assembled and which frequently supplied. Westinghouse Booklet "All Metal Way" free with each kit containing Westinghouse unit.

Our kits are perfectly suited to Radios as used in New Zealand—repeated tests prove this.

FOR DETAILS, SEE CORRESPONDING COMPLETE ELIMINATOR.

"A" ELIMINATOR KITS.

Details of outputs are the same as for the corresponding WELL-MAYDE "B" ELIMINATOR KITS, and in order, please state if voltmeter is required, also what voltage valves are to be used, so that the correct rheostat can be obtained. The voltmeter is advisable, but in many cases the rheostats on the set itself will do, provided the meter is wired up to the filament terminals of the valve holders.

It is easy to adapt this to give "C" supply as well.

Well-Mayde transformer 1 10 0
Rectifier HT4 1 10 0
Well-Mayde choke HT4 1 7 0

3 Hydra 4 m.f. 500 volt condensers 1 2 6

2 Hydra 2 m.f. 500 volt condensers 1 2 0

Well-Mayde resistance, mounted 13 6
Baseboard, wire, terminals, etc. 3 0

Meter extra 17 16 0

Guaranteed

POWER PACKS.

Any size built to order.

6 VOLT, 1 AMP., "B" KIT (E178).

Output 180 volts, 100 m.f.

Very powerful, and suitable for two 171A valves in push pull in this case. These give ample undistorted volume for any house, or for a small hall.

Well-Mayde transformer 1 15 0
Rectifier HT1 4 10 0
Well-Mayde choke HT1 1 13 0

2 Hydra 4 m.f. 750 volt condensers 15 0
Well-Mayde resistance, mounted 12 0
Baseboard, wire, terminals, etc. 3 0

£10 1 6

280 VALVE KIT "B" AND "C"

Very powerful eliminator at very reasonable cost. Output 220 volts 60 mils, allowing for 180 volts "B" supply and 40 volts "C".

Details are as same as for E178, except that a special dynamic speaker and choke combination is used, costing 75¢, rectifier valve 280 and base costing 18¢, and extra resistance.

E237 280 "B" and "C" kit, with valve 16 18 6

"ABC" KITS.

Details of these are hardly necessary, as they combine the apparatus used in the "A" and "B" kits, with the addition of one or two extra rectifiers, giving for the "C" supply. Circuits can be supplied, which can be readily followed.

RAYTHEON B.H. VALVES.

Most eliminators use this type. It is a heavy duty tube, rectified output being up to 300 volts, 125 millamps.



B203 1 0 0

EXELON

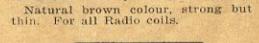
Exelon is a bakelite material, similar to celluloid, but much better insulator. It is very much superior to the usual bakelite sheets sold.

It is very highly polished, and can be supplied black or white finish. Any size panel can be cut, but 3d extra is added for panels below 2d.

Thickness 3/16 3/8
Sq. ft. 6/- 9/- 12/-

EXELON TUBE (Wall 1/16in. thick).

Natural brown colour, strong but thin. For all Radio coils.

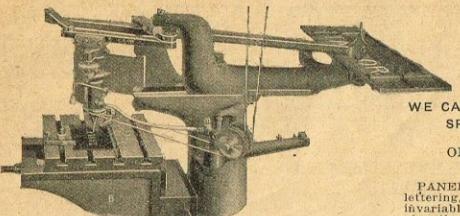


External diameter 1 1/2 1 1/4 1 1/2 2 1/2 2 1/4 2 1/2 3 1/2

1 1/2 2/— 2/3 2 1/2 2 1/2 2 1/2 3 1/2 4 1/2 4 1/2

See also COIL FORMS, C525.

FORMICA FOR BEAUTY AND INSULATION.



ENGRAVING MACHINE.

ERINOID.

Erinoid is a comparatively new material of peculiar interest to us in New Zealand, as it is a casein product. It is made in rods, in a large variety of beautiful colours.

It can be easily turned, cut, and polished. It is already used very widely in electrical work (small knobs, etc.). Unexcelled for special knobs.

Diam. $\frac{3}{8}$ to $\frac{5}{16}$ in. $\frac{1}{4}$ in. $\frac{1}{2}$ in. $\frac{3}{4}$ in. 1 in.
Pt. 4d 8d 16d 32d 1/9 2/6 3/9

Send your enquiries for ERINOID sheet, and larger rods.

FORMICA

A laminated Phenolic Condensation Product
Sheets Tubes Rods

FORMICA is a bakelite composition, which excels any other material for panels, both because of its high insulation properties and for its beauty. It is supplied in both walnut finish, the latter being especially handsome.

Formica is unaffected by weather, ordinary chemicals and high temperatures. It is very strong indeed, does not warp or shrink over time. It looks as fresh after years of use as when new. It is not difficult to cut, and can be very easily drilled.

It can be very easily engraved, either in the solid or in layers.

There are many other beautiful pattern panels on the market, but Formica is the acknowledged leader, chosen by the British Government for Post Office work, although the most expensive.

Any size panel up to 60 by 30 inches can be supplied. Add extra 3d. for cutting for panels below 28. value.

$\frac{1}{4}$ thick Formica is far stronger than 26/36 bakelite.

BLACK OR WALNUT.

Thickness 1/32 1/16 $\frac{1}{8}$ 2/16 Sq. ft. 4/- 8/- 12/- 16/-

Odd sizes of Formica for switches and other apparatus and for name plates, etc., generally be supplied at very low rates.

For small name plates, engraving can be done to order.



GEAR FORMICA.

Metallic gears are always more or less noisy. In places where noise must be reduced to a minimum, as in the timing gears of motor cars, our gear must be non-metallic.

The best motor cars made in U.S.A. use our made of FORMICA a special grade being made for this purpose.

MACHINERY USERS, when ordering non-metallic gears should specify FORMICA to ensure the most durable wear.

STOCKS ARE AVAILABLE in the following thicknesses— $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$.

Price is 12/6 per pound, and a piece 6 x 3 x 1 inch weighs approximately one pound.

MARBLE FORMICA.

In America, FORMICA is extensively used for panels, etc., used in the building trades. It can be supplied in MARBLE and other finishes, possessing the usual advantages of great strength and a durability even exceeding genuine marble. It is light and can be used in thinner sheets.

For the paneling of entrances it is unsurpassed.

In its many excellent wood finishes, it can be used for paneling rooms, and though expensive, it would never require renewing.

For Marble Bars, where the marble is usually eaten away by the gases in "soft drinks," formica is quite unaffected.

Particulars are available on application.

Formica is truly a wonderful material.

PUNCHING FORMICA.

Formica can also be supplied in a grade suitable for punching, in two thicknesses, 1/16in. at 4/9 per sq. ft. and 3/32in. at 2/6 per sq. ft.

GRID LEAKS.

(See under RESISTORS.)

ENGRAVING.

Our factory has installed a TAYLOR, TAYLOR AND HOESON ENGRAVING MACHINE, and can now cater for all requirements in MACHINE ENGRAVING.

WE CAN ENGRAVE—

SPECIAL NAMES, FIGURES, SIGNS,
TRADE MARKS, ETC.,
ON PRACTICALLY ALL MATERIALS.
FIRST CLASS WORK ONLY.

PANELS can be beautifully engraved in white or gold lettering, and amateurs who build their own sets should invariably take advantage of the service we offer, to give their panels that professional appearance which "makes" a Radio set.

SAFE-TEF FUSES.

Fuses are strongly advised for battery sets, since, if correctly installed, they will prevent damage to valves through short circuits or battery connections. Unfortunately, until now, it has not been possible to obtain suitable fuses, those offered being so hard to "blow" that they actually give no protection at all.

These fuses are similar to flashlight bulbs, but they will burn out promptly if correctly chosen for your set, should trouble occur. The saving is obvious, the fuse cost being a set of valves £2 or more. Let us know what valves you use, if you do not know which fuse to order.

STOCKS ARE AVAILABLE in the following thicknesses— $\frac{1}{8}$, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$, $\frac{1}{16}$, $\frac{1}{32}$.

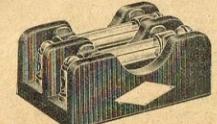
Price is 12/6 per pound, and a piece 6 x 3 x 1 inch weighs approximately one pound.

FUSE HOLDER.

Base mounting type with terminals. Fits torch bulbs or special bulb fuses.
F120 1 3

DUAL FUSE HOLDERS.

For straight type fuses, carrying heavier current than bulb fuses. One amp. fuses included.



F121 Single fuse holder 3 0
F122 Dual fuse holder 4 0

FUSES.

F123 Fuses for F121, 1, 1, 1,
2 or 3 amps.; state size 8

GOOD INSULATORS PREVENT ACCIDENTS.

HYDROMETERS

Hydrometers are used for measuring the specific gravity of liquids, chiefly the electrolyte in an accumulator.

The ordinary float clings to the side of the tube, however, so the hydrometers listed have little glass "popped" or "popped" float. This prevents sticking and ensures an accurate reading.

H162 "B" battery 3 0
H163 "B" float only 1 6
H160 "A" battery 3 6
H161 "A" float only 1 6

INSULATING COMPOUNDS.

As a protection from dampness, it is used over valve windings or small transformers with wax or bitumen, poured in while well melted. Some care must be taken in the choice of material, which must have a fairly high melting point and run freely when melted. It should stand any subsequent changes in climate without showing signs of setting.

NOTE—Care must be taken in melting these compounds, to see they are not burnt.

TRANSIT WAX.

A high-grade compound, which will not soften unless exposed to much higher temperature than most compounds.

Melting point 237 degrees C.
J164 Black 1b. 1 6

INSULATING MATERIAL.

BEADS.

In places where it is necessary to insulate short flexible wires exposed to great heat, insulating beads are used. They are threaded on the wire, just loosely enough to allow free movement.

INTA-LOCK beads have one end round, the other hollow, thus fitting onto another, to form the basis of the spine. They allow for a freedom of movement without exposure of the wire. ORDINARY BEADS are made with plain flat ends.

INTA-LOCK.

Length: To fit per oz per oz per oz per lb
J148 17 S.W.G. 42in. 1 0 12 0
J149 15 S.W.G. 22in. 1 0 12 0
J150 14 S.W.G. 9in. 1 0 10 0
J151 9 S.W.G. 9in. 1 0 10 0

ORDINARY.

To fit per oz per oz per oz per lb
J152 18 S.W.G. 45in. 6 6 6
J153 16 S.W.G. 28in. 6 6 6
J154 14 S.W.G. 16in. 6 6 6
J155 12 S.W.G. 8in. 6 6 5
J156 10 S.W.G. 9in. 6 6 5
J157 8 S.W.G. 6in. 6 6 5

SCREWED BUSHS.

J167 1 gas 3 hole. No cap 2
J168 Screwed cap for J167 2
J169 1 gas 3 hole. No cap 2
J170 Screwed cap for J169 2

PLAIN BUSHS.

Similar in shape to J167, but not screwed.
J171 Hole 2/16in. 1d.
J172 Hole 4in. 1d.

EMPIRE CLOTH.

Used for insulating cores of transformers and armatures, for separating electrical windings, and covering fine coils. 36in. wide.

J158 6/16in. thick sq. yd. 3 6

J159 16/1900in. thick sq. yd. 4 6

J160 16/1900in. thick sq. yd. 4 6

J161 Oiled silk, 3in. wide, per yd. 9

J162 Oiled silk, 3in. wide, per yd. 9

J163 Oiled silk, 3in. wide, per yd. 9

J164 Oiled silk, 3in. wide, per yd. 9

J165 Oiled silk, 3in. wide, per yd. 9

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GOOD INSULATION—LIFE OF ELECTRIC APPARATUS.

INSULATORS.



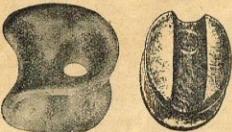
PYREX.

Pyrex glass insulators cost a little more, but they are less affected by moisture and dirt. Used in our best aerial outfits.

J115 Pyrex 1 9
J144 Ordinary glass 1 0

AERIAL SHELL AND EGG.

Made of best porcelain, these are the most popular insulators on the market. The shell has a longer resistance path than the egg type, and so is actually better in use. Sold in three sizes.



J105-125-104 J107-128-106

	ea.	dz.	gr.
J105 Small	2	2	24 0
J125 Medium	4	3 0	30 0
J104 Large	6	5 0	50 0
J107 Small egg	2	1 9	20 0
J128 Medium	4	3 0	30 0
J106 Large	6	5 0	50 0

BORBIN & BUTTON INSULATORS.
Small porcelain insulators, used for telephone wires, distance pieces, etc.



	Diam.	Height	Hole	ea.	dz.	gr.
J174	3 in.	9/16	3/16	1d.	10d.	
J175	1 in.	1 in.	1 in.	2d.	1d.	
In J156, groove is near top						
J151	3 in.	3/16 in.	1d.	8d.		
J152	3 in.	3/16 in.	1d.	8d.		
J153	2 in.	3 in.	1 in.	3d.	2/3	
J180	4 in.	1 in.	5/16 in.	2d.	1/3	

GHEATS.



For leading wires around walls, or along any woodwork.

J110 Set of 2 3d. 2 6 27 6

IRON (PERFORATED).

Perforated iron in various patterns for switchboards, transformers and other electrical apparatus, is now stocked.

Price on application.

LEAD-IN TUBES.

When fitting an aerial, it is best to bring the lead-in tube through the hole in the aerial. This makes the neatest job, and enables ordinary insulated wire to be connected from the lead-in tube to the aerial terminal. In some cases another lead-in tube is used for the earth connection.

Only good ebony is used for the lead-in tubes, and the nuts are plated.



J122-124 J113-109-112

SIN. TUBE, KNULED NUTS.

	ea.	dz.	gr.
J122	6 in.	9	8 6
J123	9 in. (usual size)	1	11 0
J124	12 in.	1	13 0

IN. TUBE, WING NUTS.

	ea.	dz.	gr.
J113	6 in.	1	0 11 6
J109	9 in. (usual size)	1	3 14 0
J122	12 in.	1	6 17 0

FLEXIBLE LEAD-IN.

Useful for temporary aerials, or where holes cannot be bored in the wall. They fit over a window or door.



J1536. J114.

J114 Silk, insulated; each 1 0
J1536 Mueller, rubber covered 1 0

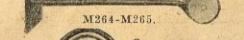
PORCELAIN LEAD-IN.

6 x 1 in. porcelain tube. Suitable either for aerial or earth lead.

J123 each 3

STAND-OFF INSULATORS.

6 x 1 in. porcelain tube. Suitable either for aerial or earth lead.



M264-M265.

WALL JACKS.

Wall jacks can be fitted in every room, connected by thin permanently concealed wires to the Radio. A speaker can then be operated in any room by plugging into the jack.

Even if you have a console set, an extra speaker can be used, either by itself, or in conjunction with the main speaker in another room.

WELL-MATED WALL JACKS.

These have a beautiful brown bakelite cover, and are fitted with a best grade plated jack. Two screws are supplied, requiring only very small holes to be bored in the wall.

J127 1 in. 2 0 24 0

J184 2 in. 3d. 2 24 0

J185 2 in. 3d. 2 26 0

J186 3 in. 4d. 3 0 33 0

J187 4 in. 4d. 4 6 48 0

J188 7 in. 8 6 96 0

J126-127 J129-130 K123-125

K127 Arrow 1 in., B. 10

K119 Arrow 1 1/2 in., B. 1 0

K120 Arrow, 1 1/2 in., W. 1 0

K129 Fleur-de-lis, B. 10

K130 Fleur-de-lis, W. 10

K123 Pointer, 2 in., B. 1 6

K132 Pointer, 3 in., W. 2 0

K120 Pointer, 3 in., B. 2 0

K125 Pointer, 3 in., W. 2 0

K131 Pointer, 3 in., W. 2 0

K132 Pointer, 3 in., W. 2 0

K126 Pointer, 3 in., W. 2 0

K133 Pointer, 3 in., W. 2 0

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CONE SPEAKERS.

WELL-MAYDE "SUPERB."

This speaker is locally assembled with a name known to all what our New Zealand customers require. Unit and chassis are the very best obtainable, while the cabinet work is of the finest. Top is flat, not curved.

Beautiful as a speaker may be, however, it is its reproductive qualities that it must be judged. The superiority of the Well-Mayde is so marked that we welcome any comparison with any other speaker in its own price class.

The Well-Mayde brings out the bass notes that other speakers (excluding dynamics) usually miss, but without the unpleasant overexaggeration which causes the higher notes to be lost. In fact, it reproduces with a delightful balance over a wide musical range.

Guaranteed, of course.



L286 W-M Superb 6 0 0

WELL-MAYDE "VERATONE."

A full-sized speaker, in cabinet similar to the Superb, but fitted with a popular priced full-sized unit. L287 W-M Veratone speaker 6

RADIOSA CONE.

These Radiosa were sold here until recently at about £9, and our stocks are all brand new and guaranteed in perfect condition. You can find the saving for yourself. You will find the Radiosa one of the very best reproducers of good music you have ever heard—if your money does not come back more than 10% to your expectations, return it to us, and we will refund every penny you have paid us for it.

L293 Radiosa cone 4 10 0

ORPHEAN CONE.

A British speaker, complete in cabinet. L325 Orphean cabinet speaker 2 18 0

"PLAQUE" SPEAKERS.

By mounting the speaker movement on plaque, the tonal results are scarcely impaired, and a hand-some speaker can be supplied at very low cost.

The plaque supplied with these speakers is of imported heavy walnut plywood, of pleasing design and beautifully finished.

It is offered with a choice of three speaker movements, each of which is listed elsewhere. Unless otherwise ordered, L314 is supplied.

ORMOND CONE UNIT.

A British unit, adjustable, which can be bought with its own cone and chassis. Will make an excellent speaker.

L313 With Little Beauty 40 0

L314 With Ormond unit 48 0

L315 With Blue Spot 66K unit 70 0

CONE SPEAKER UNITS.

By using one of these units, you can build a very efficient speaker at home, or if you wish, incorporate it in your console cabinet.

BLUE SPOT UNITS.

These famous units are in future being made in England. There is little need to comment on their efficiency — everyone already is acquainted with them. We might add only that they are practically trouble free.

BLUE SPOT UNIT 66R.

The large Blue Spot unit of large size and made to operate a cone about 14 inch diameter, as sold with the 66R chassis. A really powerful unit, covering very fully the whole musical scale.

66R can, of course, be used with any smaller sized Blue Spot chassis.

BLUE SPOT CHASSIS (No unit).

This consists of a cone ready mounted in a metal frame, to which the Blue Spot can be screwed in a minute or two. A very fine speaker is the result, which can be used as it is, mounted in a special cabinet, or in the Radio console cabinet.

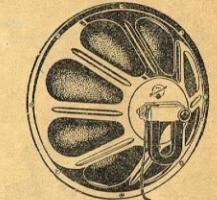
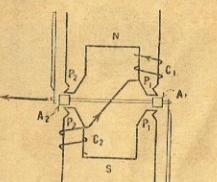
L297 14½in. 25 0
L298 12in. 20 0

Illustration shows unit and chassis.

INDUCTOR DYNAMIC.

HOW IT WORKS.

A double magnet system N. and S. is used with pointed poles P1 and P2. Iron pieces A1 and A2 are connected by a rod, the arrow end of which is connected to the speaker diaphragm. The rod is held at both ends by light springs.



Normally the two iron pieces A1, A2 are both pulled inwards by the magnets, so are in a state of equilibrium. Current from the set is fed round the coil, which should be wound in the inward pull of A1 and A2. The iron pieces therefore move to the left. Reversed current produces movement to the right.

Every Radio enthusiast has heard of the INDUCTOR DYNAMIC SPEAKER. The principle is quite new, and like the electric motor it permits of unrestricted movement of the armature, without possibility of touching the magnets. This makes blinding a thing of the past.

Since permanent magnets are used there is no need for any extra current as in the dynamic.

Even for small dance hall and restaurant speakers, indeed, proves quite satisfactory, especially when it is impossible to provide dynamics conveniently.

Inductors have already proved very popular in New Zealand, and with the present decreased cost, will prove more so.

JENSEN—EVEN SCALE PRODUCTION.

INDUCTOR DYNAMIC—Continued.

A baffle or suitable cabinet is required, just as for a dynamic. Suitable cabinets are priced in this Catalogue.

BRIEF SUMMARY OF INDUCTOR FEATURES.

1. Faithful reproduction, particularly on low notes.
2. Freedom from blasting.
3. Light weight.
4. No extra current required, since the magnets are permanent.
5. Speaker cannot cause any hum in itself.
6. Lower cost, since the unit itself requires no outside apparatus like batteries or rectifiers to operate it.

HOMELAND INDUCTOR DYNAMIC

Inductor speaker patents are held in America, and well-known manufacturers are being licensed to make them in different countries. Hitherto, New Zealand, or American inductors have been available, but the HOMELAND is made by the largest electrical manufacturers in England, and its quality is really outstanding. It is usual, therefore, for us to recommend thoroughly a British speaker of this nature, since it is common knowledge that practically all the dynamic speakers in New Zealand are of foreign origin.

The magnets in the HOMELAND are arranged rather differently from the illustration.



L316 HOMELAND INDUCTOR UNIT 5 0

L317 HOMELAND INDUCTOR SPEAKER, in cabinet, 8 8 0

L294 N. and K. inductor unit £6 0 0

L295 U.S.A. inductor unit 17 6

MOVING COIL SPEAKERS.

MOVING COIL or DYNAMIC SPEAKERS are now familiar to everyone who has heard a high power Radio, and it is almost superfluous to remark that they give a remarkable response to all musical and vocal notes from the lowest to the highest.

Partly for this reason and partly because their construction enables them to give enormous volume without blasting, they have become standard on most good sets.

Their main objections are two—two, and they are so small as to weak signals as some other speakers (though they are by no means insensitive), and they require extra current for their powerful electromagnets.

The latter objection makes dynamics impractical in places where there is no current supply, or where the insulation cannot easily be changed. In such cases, the inductor dynamic should be used.

CURRENT SUPPLY.

The magnet current supply for a dynamic can be obtained—

1. From a six volt accumulator. JENSEN SPEAKERS USE ONLY 4 AMPES, thus being the lowest consumption speaker yet made.
2. From a dynamo, or battery, if the ordinary speaker is carried away by the excess base, only to find it annoying after a short time.

This is just where the Jensen excels—it satisfies you, and KEEPS YOU SATISFIED.

JENSEN NU-CORE DYNAMIC SPEAKERS.

JENSEN DYNAMICS are now recognised as the best DYNAMIC, simple because the magnet core fitted to the original. The low notes are not too strong as in the usual dynamic. Unfortunately, many who first buy a Jensen speaker are put off by the fact that it is not as loud as the ordinary speaker, where other speakers would be too extravagant on current.

2. From the 32 volt lighting system. A special speaker is, of course, required for this.

From the direct current mains, in the rare cases where customers have direct current in their homes.

4. From the A.C. power supply. In this case, it is usual to attach a rectifier system to the coil speaker, the rectifier supplying the necessary current. In some cases, with this system, there may be some hum, but this is cured by adding an additional coil to the speaker.

Our Jensen A.C. speakers are fitted by us with the BRITISH WESTINGHOUSE RECTIFIERS, which ensures, of course, freedom from trouble with the rectifier.

If you already have a six volt dynamo, or suitable Well-Mayde Charger will immediately turn it into an A.C. speaker. For Jensen, use the same charger, for Magnatone, the 1 ampere charger.

From the power pack on an A.C. set. This is the method used in all A.C. Radios, but cannot be used otherwise unless the set itself is specially designed for it.

HOW IT WORKS.

Accurately fitting between the poles of the field magnet is a light coil, with a few turns of wire (or even one turn), connected indirectly through a transformer included with the speaker to the speaker terminals or to the set.

This coil moves in sympathy with the broadcast music or voice, yet with a very powerful vibration capable of producing great volume. The coil is free to move in the air space, not touching anything, hence the moving speaker will not blast. This freedom of movement is the secret of the success of the speaker.

The cone is in turn attached to a cone, whose edges are held in place by rubber or thin leather. It is, of course, the cone which actually imparts the vibrations to the air, and reproduces the music.

MOVING COIL BAFFLES.

Theatres, dance halls, restaurants, hotels, etc. demand special dynamics, and for this reason Jensen make a large AUDITORIUM UNIT, with full size 12 inch cones.

It is particularly suitable for THEATRES. Where used on a large auditorium, the current is supplied through a 230 rectifier valve. L231 Senior, A.C. 25 5 0
L232 Senior, 2500 ohms D.C. 22 5 0
L233 Junior, A.C. 19 0 0
L234 Junior, 2500 ohms D.C. 13 10 0

Price includes valve.

AUDITORIUM JENSEN.

Theatre, dance halls, restaurants, hotels, etc. demand special dynamics, and for this reason Jensen make a large AUDITORIUM UNIT, with full size 12 inch cones.

It is particularly suitable for THEATRES. Where used on a large auditorium, the current is supplied through a 230 rectifier valve. L231 Senior, A.C. 25 5 0
L232 Senior, 2500 ohms D.C. 22 5 0
L233 Junior, A.C. 19 0 0
L234 Junior, 2500 ohms D.C. 13 10 0

PUBLIC ADDRESS SYSTEMS FOR HIRE.

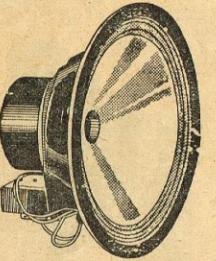
2000-2500 ohm speakers operate on 110 volts D.C., and 7500-8000 on 220 volts D.C.

CONCERT JENSEN.

Ten inch cone. This is the most popular speaker, and the one on which Jensen have chiefly rests.

L273 6 volt unit . . . £6 7 6
L273 220 volt unit . . . 6 7 6
L273 8000 ohms unit . . . 6 7 6
L273 D-80 Concert unit, A.C. 9 5 0

JENSEN MIDGET.



An entirely new departure, consisting of a dynamic, constructed on exactly the same lines as the Concert Jensen dynamics, but with a six-inch diameter.

MIDGETS can be supplied either in 15 ohms resistance for six volt accumulators, or 2500 or 8000 ohms for use with the power pack of your set. The former smaller, and with Westinghouse rectifier in our own factory, makes it available for us on 230 volts (or 110) A.C.

L335 Midget, 6 volt . . . 3 10 0
L335 Midget, 2500 ohms . . . 3 10 0
L400 Midget, 8000 ohms . . . 3 10 0
L337 Midget, A.C. . . . 4 10 0

MAGNAVOX SPEAKERS.

These speakers are supplied in two sizes, 7-inch and the new Concert 10 inch.

Six volt speakers take 7 amps. The magnetic field is used with the power pack, and 7500 ohms for D.C. 230 volt mains.

L223 Magnavox 7in., 6 volt . . . 2000 or 7500 ohms . . . 15 15 0
L225 Magnavox concert, A.C. 8 15 0
L276 Magnavox concert, 6 volt, 2000 or 7500 ohms . . . 6 10 0
L279 Magnavox concert A.C. . . . 9 10 0
L338 Magnavox Midget, 2500 ohms . . . 3 10 0

JENSEN DYNAMICS do not over-emphasise the **LOW** at the expense of the **HIGH** notes.

DYNAMIC HORN BAFFLES.

A comparatively short horn, fitting the Jensen and similar 16-inch dynamic speaker units of 15 ohms.

For "stadium" and outdoor work these are strongly advised if the ordinary type dynamic speaker is to be used. 32 x 29 x 29 inches.

L368 Dynamic horn baffles £8 0 0

"TALKIE" SPEAKERS.

TALKIES demand the best in speakers, for music and speech must both be clear and natural, and of power so great as to fill the largest theatres and cinemas.

They work well, and the LOP-TIN-WHITE AMPLIFIERS exceptionally good, but the best amplifiers cannot be satisfactory with any speaker less than the best.

MACY SPEAKERS and UNITS are well known in U.S.A., and there are already imported in New Zealand have definitely proved their merits. They equal in results the speakers used in the highest priced ALKES in America. New Zealanders are not so bold to mention names. And they are within the reach of the average purse of talkie proprietors, as they are supplied with a very large exponential horn, with a special dynamic unit attached. The ordinary dynamic, while it gives very fair results, is not considered good enough as a rule, even when used with baffles and horns.

MACY HORNS—EXPONENTIAL, CUELED.

Made in 10 and 6 foot sizes. The 10 foot reproduces from 50 to 8000 cycles. Bell is 45 x 45 inches. For theatres, dance halls, skating rinks, churches and hallways, seating capacity 500 UPWARDS.

The 6 foot size reproduces from 150 to 7200 cycles. Bell is 29 x 29 inches. It is designed for use in smaller halls, less than the 10 foot. In some places two are used instead of one large horn.

Prices for horns only—no units.

L300 Macy 6ft. horn . . . £25 0 0
L299 Macy 10ft. horn . . . 150 0 0

MACY DYNAMIC UNITS.

These speakers are supplied with 15 ohms resistance, taking 16 amps. Weight is 19lbs. Voice coils have impedance of 16 ohms. Reproduces 50 to 8000 cycles. Repro. rate down stand transformer ratio 25:1.

L301 Macy dynamic unit £25 0 0
L302 Transformer for Macy unit . . . 5 5 0
L303 Transformer for two units . . . 6 6 0

BALDWIN BALANCED ARMATURE (HORN).

Great volume, combined with a rich deep tone. Used for horn speakers, being particularly suitable for large exponential horns. There has been considerable demand for the balanced armature unit and this will fill the requirements of the most exacting. Screwed to fit American exponential horns.

L241 Balanced unit . . . 1 16 0

ORDINARY HORN UNITS.

Any of the power horn units are, of course, entirely suitable for small speakers.

PUBLIC ADDRESS SPEAKERS.

PUBLIC ADDRESS SYSTEMS are being used more and more. They enable one man to address audiences otherwise impossible to address crowds in two ways, public address control large shows and sports meetings, calling out the events, warning competitors, etc.—and in between times to supply the necessary music.

For open air use, the ordinary DYNAMIC SPEAKERS are not very satisfactory. Of course, the cost is no object, the TALKIE HORNS already mentioned serve admirably, but they present transport difficulties, in addition to their expense.

THESE HORNS ARE FULL EQUIPMENT. FULL DETAILS OF COMPLETE EQUIPMENT—SEE INDEX, "Public Address."

PUBLIC ADDRESS HORNS (EXPONENTIAL).

Made mainly for outdoor work, but where room permits can be successfully used indoors. The largest sizes are especially powerful, and will carry enormous distances. Can be made to fit Macy dynamic units.

The aluminium horns are very strong, and as they will stand rough usage, they are recommended where much travelling is to be done. The 7ft. horns are particularly powerful.

The fabric horns are equally effective, but not nearly so robust.

UNITS NOT INCLUDED IN PRICE.

These speakers are supplied in two sizes, 7-inch and the new Concert 10 inch.

Six volt speakers take 7 amps. The magnetic field is used with the power pack, and 7500 ohms for D.C. 230 volt mains.

L223 Magnavox 7in., 6 volt . . . 2000 or 7500 ohms . . . 15 15 0
L225 Magnavox concert, A.C. 8 15 0
L276 Magnavox concert, 6 volt, 2000 or 7500 ohms . . . 6 10 0

L279 Magnavox concert A.C. . . . 9 10 0
L338 Magnavox Midget, 2500 ohms . . . 3 10 0

SPARE DIAPHRAGMS STOCKED.

L307 Aluminium horn, 84in. 33 0 0
L369 Aluminium horn, 49in. 15 10 0
L365 Fabric horn, 6ft. . . . 22 0 0
L304 Fabric horn, 3ft. 6in. 13 10 0

POWER HORN UNITS.

These are fitted with standard thread to screw into the horns listed, but adaptors can be made for other sizes.

Good horn demands good units. Those we stock have been found by actual use, giving the best results—they are the type used by ourselves for our own outfitts.

WE ALSO MAKE DYNAMIC UNITS, which can be used on the largest horns with the greatest success.

L264 UNIVERSAL UNIT . . . 14 10 0

L304 MACY UNIT . . . 2 8 0

L318 BALDWIN UNIT . . . 1 19 0

WELL-MAYDE SPEAKERS FOR TONE.

SPEAKER CONE WASHERS.

Small coned washers, to fit speaker units to their cones. Chuck attachment.

L270 . . . 1 6



SPEAKER FILTERS.

With these speaker filter, the powerful, or fairly powerful Radio, even operating on over 100 volt battery, puts a much greater strain on the speaker windings. It also distorts the diaphragm of the speaker, tending to produce blasting.

TONATROL TONE CONTROL.

This fitting is attached to your set in a few moments, and then by turning the small knobs the tone can be obtained. If you wish for more bass, merely turn the knob to suit—if more treble, it is available.

It provides also the valuable feature that on some settings, not only is more pleasing tone obtained, but static are largely suppressed. A useful addition with an electric radio, or old or new type.

L234 Tonatrol, table type . . . 17 6

L340 Tonatrol, panel type . . . 16 6

SPEAKER COILS.

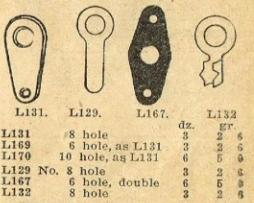
These are the speaker base only. If it is burnt out, and we ask you to quote for fitting it with new coils, and making it as good as new again.

LUGS (Solder).

These lugs are nickelled or tinmed to ensure easy soldering. They are used by every set builder.

(See also TERMINALS.)

TINNED.



...Enables use of full Volume from your set without Distortion. Connects instantly—Clears up tone—Protects speaker

L319 Orthophone . . . 1 4 0

WELL-MAYDE SPEAKER FILTER.

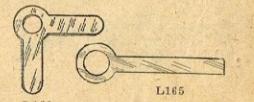
The Well-Mayde filter can be instantly connected in series with the speaker. It is well designed to avoid losses. Should last for ever.

L252 W.M. speaker filter . . . £1 10 0

DYNAPLUG.

Dynamic speakers are best connected to the chassis by a four-way cable, four-pin valve base plug and UX holder.

L166 . . .



L165 No. 8 hole . . . 6 5 0

L166 . . . 8 6 5 0

TUBE LUGS. PLATED.



L320-323 . . .

L320-L323 are made from thin seamless tubing, pressed flat at the hole or lug. The tubing is 1/8in. in L320 and L322, and just over 1/4in. in the others. Prices are very low for such a neat well plated lug.

L329 Small loop . . . 1 1/2 6 5

L321 Medium loop . . . 2 1/2 12 6

L322 Small fork . . . 2d. 1/3 12 6

L323 Medium fork . . . 2d. 1/3 12 6

L328 Phone tips . . . 2d. 1/6 15 6

CLOTEX Baffle.

A special non-resonant material largely used for speaker baffles. Available in 12x12 in. and 16x16 in. Hole cut £s. extra.

L324 Goldelex fabric . . . 1 0 7 6

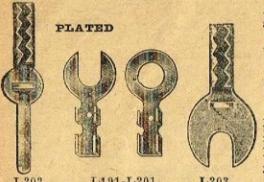
BROWN DIAPHRAGMS AND COILS.

Brown aluminium diaphragms, all kinds 5s, each, fitting extra. Brown coils all types. 8s. per set, fitting 2s.

DIAPHRAGMS—See Telephones.

ASK ABOUT ANY METER NOT LISTED.

LUGS—Continued.



L202 L191-L201 L203

dz. gr.

L191 Fork, 2in...5/32 hole	6	5	0
L192 Loop	6	5	0
L193 Fork, 3/16...	8	7	0
L194 Loop	8	7	0
L195 Fork, 1in., 3in...	10	9	0
L196 Loop	10	9	0

HEAVY COPPER (Plated).

L197 Fork, 1in., 3in...	8	7	0
L198 Loop	8	7	0
L199 Loop	8	7	0
L200 Fork, 1in., 5/16...	1	10	0
L201 Loop	1	10	0

PISTONS—FOR DRAWING.

Well nickel plated lugs, with saw tooth edges. Easily fitted on braided wire with ordinary pliers. Loop makes wire connection certain without soldering.

L202 Piston	6	5	6
L203 Forkterms	6	5	6

RADIO OR DRAWING PINS.

These pins are invaluable for attaching flexible or single wire to the wall for speakers, etc. Inserted immediately with fingers only, yet rigid fixing. Different colours



MASTS AND FITTINGS

In the past we have offered cheap Radio masts very reluctantly, simply because they did not seem substantial enough for long use.

The HOMELAND masts are made from much heavier piping, however, and so we offer them with the greatest confidence. They are complete, and easily erected.

HOMELAND MASTS.

Complete, ready to erect. Heavy and durable—no fear of these crashing in a gale after a couple of years.

Mast 20ft. ... Complete 24 0

Mast 33ft. ... Complete 38 0

Mast 34ft. ... Complete 37 6

Prices for one mast only.



MAST CLEATS

M164 Cleats
galvanised 6d

GALVANISED MASTS.

HEIGHTS given are approximate, depending on the lengths of pipes available.

NOTE: These masts are supplied complete, with costly cable for hauling aerial into place, as well as the usual fittings, such as base, strong galvanised stay, mast bands, pulley, and so on.

PRICES for single masts, not pairs.

M160 30ft. high, 2 sets guys	3	5	0
M161 40ft. high, 2 sets guys	4	5	0
M162 50ft. high, 3 sets guys	6	0	0

MAST BANDS—GALVANISED.

Made with three eyes.

M180 1in. hole	...	1	6
M181 2in. hole	...	1	6
M182 3in. hole	...	2	6
M183 4in. hole	...	2	6
M184 5in. hole	...	3	0

GUIDE WIRE—See under WIRE.

MAST CABLE

Made for hauling aerial into place may be rope, but this will probably rot in a year or two, and then it is necessary to lower the mast to replace it. The galvanised cable listed below is much stronger, will not rot, and will last many years.

It is formed of 48 very thin steel strands, enabling it to run freely over the smooth pulley.

Although rather expensive, its advantages must be obvious to anyone. Any length can be cut to order, as it is too valuable to sell in standard lengths, with resultant wastage.

W115 Steel cable, per 100ft. 12 0

PULLEYS.



M102 Pulleys, galvanised 10

STRAINERS—SOCKETS (Galv.).

STRAINERS are used to adjust the tension on guy wires, one being required for each wire. The illustration shows the usual galvanised strainer, but we can also supply aeroplane strainers machined from solid brass, through which guy wires, they make very strong strainers, either for Radio work or in aeroplane building.

M160 Strainer, galvanised	1	9	
M201 Strainer, small galv.	1	0	
M211 Aero 2in. ext. 15cwt.	2	6	
M132 Aero, 3in. ext. 45cwt.	4	0	

SOCKETS (Galvanised).

These are screwed to the outer wall, and hold a wood rod to which the lead down can be attached to keep it clear of the eaves, spouting, etc.

M104 For 3in. rod	...	2	6
M163 For 1in. rod	...	2	6

STAND-OFF INSULATORS.

See under INSULATORS.	3	0	
M264 20 inch	...	3	0
M265 30 inch	...	4	0

METERS (Electrical).

For accurate measurements, moving coil or other high-grade instruments are essential. For many purposes, however, where exactness is of no great consequence, moving iron meters will serve admirably.

We have in our LABORATORY an unusually complete selection of accurate meters, including MICROAMMETER, which measures millions of an amp. We are ready to quote for testing and calibrating your instruments. Cost will depend on the accuracy which is desired.

MOVING COIL METERS (D.C. only).

Where accuracy in electrical measurements is desired, or where voltmeters with small current consumption are necessary, MOVING COIL meters are the usual type.

Such meters must be carefully made, and until recently it has not been possible to sell them at attractive prices.

In CRESCENT MOVING COIL METERS, however, a high degree of accuracy is attained, together with a fine scale range, while the price is much lower than has previously been possible.

CRESCENT METERS (M.C.).

The body fits a 1in. hole in the panel, and is nickel plated and highly polished. Easy fitting clamps are included. The pointer has a knife edge for accurate reading. A precision instrument, comparing very favourably with the best known makes, costing far more.



FERRANTI METERS.

All high-grade moving coil instruments of unchallenged precision. Either flush or projecting.

M181 0-5	milliamps	...	30	0
M182 0-25	milliamps	...	30	0
M183 0-50	milliamps	...	30	0
M184 0-100	milliamps	...	30	0
M244 0-200	milliamps	...	30	0
M186 0-1.0 amps.	...	30	0	
M187 0-6 volts	...	30	0	
M189 0-7/150	volts (double range)	...	33	0

M202 0-5	milliamps	...	30	0
M203 0-25	milliamps	...	30	0
M204 0-50	milliamps	...	30	0
M205 0-100	milliamps	...	30	0
M206 0-200	milliamps	...	30	0
M207 0-1.0	amps.	...	30	0
M208 0-6	volts	...	30	0
M209 0-7/150	volts (double range)	...	33	0

WESTON METERS.

State your requirements—we will supply or procure.

WE CALIBRATE METERS.

MOVING IRON METERS.

For the majority of ordinary purposes, moving iron meters will prove perfectly satisfactory. They are not so accurate as moving coil meters, but frequently great accuracy of measurement is by no means essential.

MARVEL METERS (Moving Iron).

Moving iron meters, overall diameter of flange three inches, and of body two inches. Available in a large range.

Panel meters, of small size nickel plated, and very neat.

These can types read both charge and discharge.

M222 Volts	6, 10, 20, 120	...	12	6
M233 Amps	3, 6, 10, 20	...	12	6
M254 Milliamps	20, 50, 100, 150	...	12	6
M212 0-150	volts (double)	...	15	0
M215 0-12/24	volts (double)	...	15	0
M212 8-0-8	amps.	...	12	6
M213 20-0-20	amps.	...	12	6
M246 30-0-30	amps.	...	12	6
M258 0-1000 milliamperes	Scale without numbers. For making high range volt and ammeters	...	12	6

MIDGET METERS.

These tiny meters, only 14 inch diameter, will be found very useful for many purposes where fairly accurate readings are required. In spite of their small size, they are sufficiently accurate for most purposes, and may be had made in a large variety of ranges.

The three and four volt meters are very useful for dry battery sets using two volt valves.



M260 4, 6, 12, 20 volts ... 15 0

M261 40 or 250 volts ... 18 0

M262 1, 3, 5, 10 or 20 amps ... 15 0

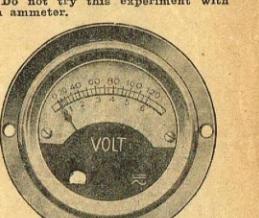
POCKET DUO-METER, A.C. or D.C.

M259 0-250 volts, pocket type 15 0

PANEL DUO-METERS, A.C. or D.C.

A plated panel meter, about 2½ inches diameter. These meters will read either D.C. or A.C. and will be very cheap, will enable everyone to purchase enough for their usual requirements. The 250 voltmeters, with a piece of flex and bayonet holder attached, can be used for pocket voltmeters in the house, which varies considerably as a rule. The adaptor is simply plugged into a lamp holder, instead of the lamp.

Do not try this experiment with an ammeter.



MICROPHONES.

Microphones are used in broadcast and amateur transmitting stations, for public address systems, and for public address, record, and player in a gramophone shop, advertising in talkie theatres, for deaf outfits, etc.

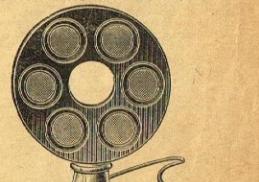
STUDIO MICROPHONE.

Two types, the grand type stretched duralumin diaphragm, with gold contact surfaces. Has a flat curve from 30 to 10,000 cycles, and is excellent for broadcast station use.

M266 Microphone, studio ... 22 0 0

MULTIPLE TYPE.

A very neat "mike," with separate carbon buttons, arranged in a small bakelite frame, for desk use. Clear reproduction, great sensitivity.

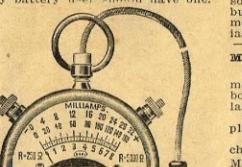


M217 Multiple Mike ... 5 5 0

M218 Transformer for above 2 0 0

POCKET METERS.

Useful for checking "B" batteries, "B" consumption, mains, current, etc. Every battery user should have one.



M248

M199 0-6/120 volts D.C. ... 9 0

M196 0-150 volts D.C. ... 10 6

M245 0-12/240 volts (double) ... 12 0

M259 0-250 volts A.C. or D.C. 15 0

TRIPLER METER.

A pocket meter, with three very useful scales, 33 millamps, 33 millivolts, and 330 millivolts, for finding the actual consumption of "B" batteries. This meter will be found of the greatest use to dealer and user alike, especially as it costs so little.

M248 Triplex meter, D.C. ... 15 0

THE UNIVERSAL METER.

A combination outfit, in which the meter itself measures 3½ inches in diameter, has a 60-line mirror scale, and dead-beat knife pointer. It is highly graduated, and the dead-beat scale makes the pointer stop immediately without swinging.

It measures VOLTS, AMPS, and RESISTANCE (in ohms), and for each reading there are attached to bottom of meter. Switches are provided for each millamp reading. For resistance measurements, a two-wire accumulator is used.

The 6 volt size is used particularly for checking telephone voltages in A.C. sets, and the 250 volt for checking power line voltage. Adaptors could be fitted to the voltmeters for these purposes.

A.C. VOLTMETERS.

M255 5, 10, 20, 50 volts ... 33 0

M256 130, 250 volts ... 36 0

A.C. AMMETERS.

M247 Universal meter ... 14 10 0

Reading scale.

2 millivolts, 6, 120, 300 volts.

6, 60, 600 millivolts, 6 amps.

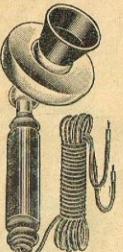
Thus a single instrument gives a wonderfully wide range of readings.

M247 Universal meter ... 14 10 0

COMPLETE ANNOUNCING SYSTEMS SUPPLIED.

HANDIMIKE.

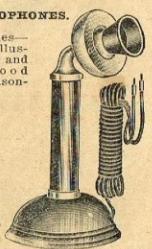
For public address work, announcing and similar purposes, a button, reciprocating type. Switch in handle, and complete with triple cord, plug and jack. Uses push-pull type of microphone transformer. A very fine "mike."



M208 Handimike £9 0 0
M266 Transformer 2 0

FROST MICROPHONES.

These styles—DESK (as illustrated), HAND and WALL. Good quality, at reasonable price.



DESK TYPE.

M204 Desk type £2 5 0
M203 Wall type £1 5 0
M205 Hand type £1 12 0

UNIVERSAL MICROPHONES (CONDENSER).

These expensive microphones are of the type universally used for broadcasting studios, and for making talkies, films, etc. Definite price quoted on application, being approximately £60.

NAME PLATES.

We can engrave any name on Formica, celluloid, xylonite to your special order. Send for quotations.

TAKE ADVANTAGE
OF OUR
EASY TERMS
On all Apparatus.

PHONE PLUGS.



BUFFALO.

WESTON has always been considered to be the plug obtainable, It has quick grip and grip so that it never fails, and grips so that it is impossible to pull the cords out. Yet by pressing the small projections, the cords fall out readily.

P106 Weston plug 3 6

BUFFALO.

This small plug is astonishingly popular. It is moulded, with plated barrel. The tips are instantaneously inserted or removed. The best value ever offered in plugs.

P132 1 0

H. AND H.

A full-size plug of really good quality, but medium price. Cord tips are held in place by a screw.

P156 H. and H. phone plug 2 6

PLUGS.

See also VALVE PINS and SOCKETS which are largely used as small plugs and sockets.

BANANA.

Banana plugs are so called from the resemblance of their contact springs to bananas. They slide very easily into the sockets, yet remain in place at least. They will be appreciated very much after other plugs, which are either difficult to insert or make bad contact. Red or black.

Sockets are brass, plated, fitted with two nuts.

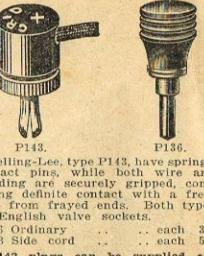


P131 Plug only 3d. 6
P132-Socket only 3d. 6

For short wave coils, a banana plug can be supplied without coloured top, but with a screw to fix it to a coil mounting base. These are used on MENIWAWE SHORT WAVES COILS and were specially made for us (P137).

P137 Banana coil plug 3d. 2 6

WANDER PLUGS (Red or Black).



P143.

P135.

Belling-Lee, type P143, have sprung contact pins, while both wire and braiding are securely gripped, combining direct contact with a freedom from frayed ends. Both types fit English valve sockets.

P136 Ordinary ... each 3d.
P143 Side cord ... each 5d.

P143 plugs can be supplied engraved HT—HT—HT—HT—2, HT—HT—HT—HT—2, GRID—1, GRID—2, GRID—3, SCREEN, without extra cost.

ARROW CONNECTORS (230v. 3a.).

The finest little plug and socket we have ever seen. Small, neat, strong, simple, reliable, efficient. For mains connections, speakers, bat-

teries, etc. The following series will be found eminently useful. They really consist of four parts: a metal pin, a metal sleeve, a metal fitting and a one-inch hole, two bakelite plugs, one with projecting, and the other

with internal contacts, but otherwise identical, and a bakelite cap. The plug can be inserted into the shell or cap, so that it is impossible always to have the projecting plug contacts immune from shock.

Order a sample—you may return it if you like—but you won't.

E217 Plug, internal contacts 1 6
E218 Plug, projecting contacts 1 6
E219 Cap, internal contacts 1 6

E220 Socket, projecting contacts, with ends flush with surface of shell 1 6

E221 Socket and plug, can be arranged any of above ways 3 0

E222 Pair of plugs (E217,

E218), making very fine cord connectors ... 3 0

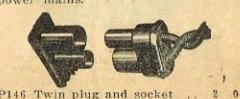
RADIAL DUPLEX PLUG.

Bakelite, with polarised plugs, allowing connection only one way. Very useful for speaker and battery connection, etc.

P174 Radio duplex plug ... 1 6

TWIN PLUG AND SOCKET.

Polarised connector, with metal parts completely insulated. For power mains.



P146 Twin plug and socket 2 6

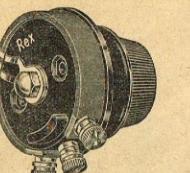
WESTINGHOUSE RECTIFIERS FOR PERMANENCY.

POTENTIOMETERS.

Potentiometers are really rheostats wound with fine wire, and having a high resistance with a terminal at both ends of the resistance as well as on the arm.

By using the central and one outside terminal, a potentiometer becomes a rheostat.

Rex potentiometers are made of bakelite, and are complete with knob.



P153 200, 400 or 600 ohms ... 4 6
P172 1000 ohms ... 6 0
P173 2000 ohms ... 7 6

SUPREME TESTING INSTRUMENTS
"SUPREME BY COMPARISON"

The modern RADIO receiver is more or less intricate, and should it fail, it is a waste of time and money to attempt to locate the trouble by hit and miss principle. Even the most skilled experts are considerably handicapped without a good RADIO TESTER.

There are, of course, many types of Radio testers, ranging from those performing one or two tests, to those which will, in turn, make every test possible right throughout the set and relentlessly tracing each and every fault. All these are done in a comparatively short time.

In addition, a tester like the SUPREME Diagnometer will tell if your valves are working exactly as they should, and will also match the condensers are properly adjusted—and other tests not possible with cheaper testers. It has been adopted by the largest concern in U.S.A. for servicing their sets.

You should make a point of ascertaining whether YOUR DEALER uses the SUPREME Diagnometer. If he does, you should let your defects remedied promptly and correctly. If he does not use the SUPREME, insist that he gets one—or try another dealer.

REMEMBER, IF YOUR DEALER DOES NOT USE HIS SUPREME, YOU MOST CERTAINLY WILL, as you will be charged for TIME HE WASTES with inefficient testing gear.

DIAGNOMETER METERS.

We can supply METERS and SPECIAL SWITCHES for making YOUR OWN RADIO TESTERS.

We do not propose here to attempt to describe ALL that a SUPREME

will do. The prices are given briefly here, and further literature will be gladly sent to any one interested.

OUR EXTREMELY EXPENSIVE, all equipped with SUPREME DIAGNOMETERS, which accompany them on all SERVICE JOBS. This accounts largely for the high prices, but is well maintained by our firm—every job undertaken is thoroughly tested. Quite frequently other faults than those for which we are called in do develop, and in this case, to prevent further damage and expense later on. Thus, correction in valve voltages might prolong the life of the valves very considerably, yet this defect would not be noticed, yet this defect would not be noticed.

SUPREME DIAGNOMETER.
230 Volt A.C.

The best tester ever made. Tells you everything you could want to know about the operation of every component in your set, including the valves. Such is its versatility, that trouble will be hit and miss principle.

Even the most skilled experts are considerably handicapped without a good RADIO TESTER.

There are, of course, many types of Radio testers, ranging from those performing one or two tests, to those which will, in turn, make every test possible right throughout the set and relentlessly tracing each and every fault. All these are done in a comparatively short time.

In addition, a tester like the SUPREME Diagnometer will tell if your valves are working exactly as they should, and will also match the condensers are properly adjusted—and other tests not possible with cheaper testers. It has been adopted by the largest concern in U.S.A. for servicing their sets.

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REMEMBER, IF YOUR DEALER DOES NOT USE HIS SUPREME, YOU MOST CERTAINLY WILL, as you will be charged for TIME HE WASTES with inefficient testing gear.

SUPREME TUBE CHECKER.
230 Volts A.C.

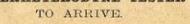
This is the cheapest tester of valves, giving a thorough analysis of every valve tested, and how ever, tests the remainder of the set. Especially valuable for matching valves.

M239 Supreme tube tester £4 0 0

SUPREME TUBE CHECKER.
230 Volts A.C.

This is the cheapest tester of valves, giving a thorough analysis of every valve tested, and how ever, tests the remainder of the set. Especially valuable for matching valves.

M241 Supreme tube checker £1 0 0

SUPREME TUBE CHECKER.
230 Volts A.C.

This is the cheapest tester of valves, giving a thorough analysis of every valve tested, and how ever, tests the remainder of the set. Especially valuable for matching valves.

M241 Supreme tube checker £1 0 0

ELECTRIFY YOUR
RADIO.

By fitting an "A" ELIMINATOR to your RADIO, together with a "B" ELIMINATOR, you will derive the working current from the mains, dispensing with batteries. In many ways, this is an improvement over the A.C. models on the market, especially on the score of expense in running, for the valves are fewer, much cheaper and have a much longer life.

WESTINGHOUSE
RECTIFIERS.

In our 1930 catalogue we expressed the opinion that WESTINGHOUSE RECTIFIERS would play a very important part in the electric Radios of the future. This prediction has been more than amply fulfilled.

The principle is known, but not explained. Electric current passes far more readily from copper oxide to pure copper, than vice versa.

A similar principle is also used in all special rectifiers, but in the latter, a chemical action goes on continuously, so that the rectifiers themselves quickly wear out. Westinghouse rectifiers are entirely everlasting.

Without rectifiers not only waste a large current than rectifier valves, but have a much longer life. They are better in every way.

No wonder, therefore, for rectifying valves, even though the latter cost much less initially.

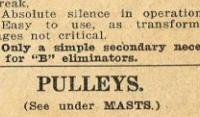
OUR EXTENSIVE EXPERIENCE WITH WESTINGHOUSE RECTIFIERS HAS PROVED CONCLUSIVELY THAT THEIR RELIABILITY IS TRULY MARVELLOUS. We hardly know of any other Radio apparatus that approaches it in reliability—and all readers know, we have sold the best Radio apparatus obtainable since 1920.



The next best to the Diagnometer, giving a thorough analysis of every valve tested, and how ever, tests the remainder of the set. Especially valuable for matching valves.

M239 Supreme tube tester £4 0 0

SUPREME TESTER, 230 Volt A.C.



This is the cheapest tester of valves, giving a thorough analysis of every valve tested, and how ever, tests the remainder of the set. Especially valuable for matching valves.

M241 Supreme tester £1 0 0

SUPREME TUBE CHECKER.
230 Volts A.C.

This is the cheapest tester of valves, giving a thorough analysis of every valve tested, and how ever, tests the remainder of the set. Especially valuable for matching valves.

M241 Supreme tube checker £1 0 0

PULLEYS.

(See under MASTS.)

WELL-MAYDE CHARGERS Under Westinghouse License.

WESTINGHOUSE USES.

1. Charging "A" accumulators.
2. Charging "B" accumulators.
3. "A" eliminators.
4. "B" eliminators.
5. "C" eliminators.
6. Dynamic speakers.

Several of the above features may be combined in one apparatus, and often used for the rectifying of constantly being devices. For instance, D.C. meters fitted with Westinghouse rectifiers are now regularly used for measuring A.C. currents. The rectifiers are used for running small D.C. motors, etc.

From the above, it can be seen that it is possible to electrify battery radios, as well as to manufacture radio sets, etc., completely with **WESTINGHOUSE RECTIFIERS**. Maximum efficiency will be assured.

See "A" and "B" eliminators and chargers.



All rectifiers are in cases, EXCEPT A3 and A4.

OUTPUT.

Mfrs. Volt. Amps.

No.	6	1	12	6
R248	6	1	12	6
R249	6	1	12	6
R259	A3	9	1	18
R260	A4	9	2	28

Volts. m.amps.

No.	6	12	6
R248	48	50	50
R251	H.T.3	29	18
R262	H.T.4	180	39
R250	H.T.1	200	100
R251	H.T.2	355	100
R254	H.T.5	175	10
R285	H.T.6	175	25
R286	H.T.7	200	28

INPUT VOLTAGES—See index for Transformers—A3 transformer suits A3 rectifiers, and so on.

NOTES.

1. The 6 and 9 volts rectifiers are for "A" chargers. "A" eliminators and dynamic speakers. For "A" eliminators, allow a third of the voltage for loss in the choke.

2. G.B.1 is for "C" eliminators.

3. H.T.'s are all for "B" or combination sets.

4. H.T.4 is used with a 125 volt transformer, through a peculiar circuit, the output being 130 volts.

5. H.T.1 and H.T.4 can be connected direct to 230 volt A.C. mains and 230 volt A.C. for charging under conditions explained in **WESTINGHOUSE BOOKLET**. Post free, 3d.

6. In "B" eliminators, allow about 10 per cent voltage drop in the chokes.

RECTIFIER CHOKES AND TRANSFORMERS.

There is a **WELL-MAYDE TRANSFORMER AND CHOKE** for each **WESTINGHOUSE RECTIFIER**.

The well-known WELL-MAYDE rectifiers and chokes are manufactured in America, and are fully tested, and are supplied in metal cases, beautifully crystal enamelled.

WRITE FOR WESTINGHOUSE BOOKLET. Post free, 3d. Contains fuller particulars, data, circuit diagrams, etc.

If you wish to discard batteries electrify your Radio with Westinghouse **Metal Rectifiers**.

Ask our advice.

RESISTORS.

Resistance is the "friction of electricity" and, as such, it is not necessarily something to be avoided. But just as friction is necessary to "Brake" a vehicle, and therefore to control it, so is resistance absolutely essential to the control of radio.

Some resistances are fixed, others variable. Resistance is measured in ohms, and in Radio the values may be from less than 1 ohm to 10 million ohms, according to the work it is called upon to do. This large variation accounts for the different names, i.e., usually a **resistor** is a variable resistance.

A **grid leak** is a fixed resistor from 1 to 10 megohms (million ohms), and so on.

This renders complete classification somewhat difficult, but information on this point is always available on enquiry.

RESISTORS—DE JUR.

These resistors are the result of much investigation to secure uniformity, combined with absolute freedom from temperature or moisture changes. The core is a special alloy, in the form of a coiled foil.

DE JUR—20 WATTS.
R220 500, 750, 1000, 1500, 2000,
2500, 3000 ohms .. 3 9

R219 3500, 5000, 7500, 10,000,
15,000 ohms .. 5 0

R220 20,000, 25,000 ohms .. 6 3

R221 50,000 ohms .. 7 6

R177 750, 1,500, 2,000, 2,250,
2,500, 3,000 each .. 6 0

R178 3,500, 6,000, 10,000, 15,000,
20,000 ohms .. 7 9

R180 5,000, each .. 10 6

R181 10,000, each .. 13 6

R182 15,000, each .. 15 0

R183 25,000, each .. 16 6

R184 50,000, each .. 19 6

R185 100,000, each .. 31 6

POWER RESISTORS.

POWER RESISTANCES are essential to all radio sets which derive current direct from the mains. Particularly are they a component of "B" ELIMINATORS for A.C. mains.

DE JUR.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

The heat generated is calibrated to ensure accuracy. Then after a final test, the whole resistance is covered with a vitreous enamel and baked at a high temperature to harden the enamel.



DE JUR—20 WATTS.

R218 500, 750, 1000, 1500, 2000,
2500, 3000 ohms .. 3 9

R219 3500, 5000, 7500, 10,000,
15,000 ohms .. 5 0

R220 20,000, 25,000 ohms .. 6 3

R221 50,000 ohms .. 7 6

R222 100,000 ohms .. 10 0

R223 200,000 ohms .. 12 0

R224 500,000 ohms .. 18 0

R225 1,000,000 ohms .. 20 0

WARD LEONARD.

Ward Leonard have been the most famous of resistor specialists in U.S.A. for very many years.

WARD LEONARD—507-70.

For Raytheon 350 millamp A. B. C. valve. Secures intermediate B voltages of 22, 45, 67, 90, 125 and 180. Total resistance is 40 ohms. Direct current of the rectifier under load should be about 220 volts.

R226 2, 6, 10, 15, 20, 30, 50 ohms 1 3

R227 10, 20, 30, 50, 100, 200 ohms 1 5

R228 400, 500, 600, 1000, 1500 ohms .. 1 9

R229 2000 ohms .. 2 6

R230 2, 6, 10, 15, 20, 30, 50 ohms 1 3

R231 10, 20, 30, 50, 100, 200 ohms 1 5

R232 400, 500, 600, 1000, 1500 ohms .. 1 9

R233 2000 ohms .. 2 6

R234 2, 6, 10, 15, 20, 30, 50 ohms 1 3

R235 10, 20, 30, 50, 100, 200 ohms 1 5

R236 400, 500, 600, 1000, 1500 ohms .. 1 9

R237 2000 ohms .. 2 6

WARD LEONARD—507-62.

For 400 m.a. ABC supply. Voltages are 45, 67, 90, 125, 180, 220, 250, 300, 350, 400, 450, 500, 600, 700, 800, 900, 1000, 1100, 1200, 1300, 1400, 1500, 1600, 1700, 1800, 1900, 2000, 2100, 2200, 2300, 2400, 2500, 2600, 2700, 2800, 2900, 3000, 3100, 3200, 3300, 3400, 3500, 3600, 3700, 3800, 3900, 4000, 4100, 4200, 4300, 4400, 4500, 4600, 4700, 4800, 4900, 5000, 5100, 5200, 5300, 5400, 5500, 5600, 5700, 5800, 5900, 6000, 6100, 6200, 6300, 6400, 6500, 6600, 6700, 6800, 6900, 7000, 7100, 7200, 7300, 7400, 7500, 7600, 7700, 7800, 7900, 8000, 8100, 8200, 8300, 8400, 8500, 8600, 8700, 8800, 8900, 9000, 9100, 9200, 9300, 9400, 9500, 9600, 9700, 9800, 9900, 10000 ohms. Resistances are 70, 4160, 54, 18, 18, 4000 on one arm, and 40, 80, 120, 600, 100, 100, 50 on other. Either arm alone, 22s. 6d. Price, 4s.

R167 Each .. 45 0

WARD LEONARD—507-24.

Type S are rated 44 watts in free air. Obtained in a wide range of values.

R172 Each .. 40 0

LET US MAKE IT FOR YOU.

WELL-MAYDE RESISTANCES.

WARD LEONARD 507-6, 200 Watts.

For intermediate voltages of 45, 67, 90, 135 and 200 in a current supply of one arm, and 400 in the other. Total resistance 41,000 ohms. Maximum current 70 millamps.

Resistances are 8,000, 7,000, and 6,000 on one arm, and 6,000, 7,000, 2,300, 2,000, 8,000 on the other. Either arm can be purchased separately at 22s. 6d. each.

R173 Each .. 40 0

WARD LEONARD 507-24 to 67.

Type S are rated 44 watts in free air. Obtained in a wide range of values.

R174 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

The heat generated is calibrated to ensure accuracy. Then after a final test, the whole resistance is covered with a vitreous enamel and baked at a high temperature to harden the enamel.

R175 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R176 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R177 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R178 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R179 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R180 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R181 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R182 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R183 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R184 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R185 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R186 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R187 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R188 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R189 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R190 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R191 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R192 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R193 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R194 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R195 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R196 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R197 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R198 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R199 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R200 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube, firmly connected to lugs which cannot work loose.

R201 Each .. 40 0

DE JUR 507-20 WATTS.

DE JUR VITREOUS ENAMELED RESISTORS are designed to satisfy fully the requirements of modern Radio apparatus. The resistor is wound on a coil of wire and is wound on a porcelain refractory tube

OUR EXPERT ADVICE FOR THE ASKING.

NICORDO.

Very fine nichrome wire, wound on a special cord-like core, the whole being less than 1/8 inch thick.

Nicordo can be cut to lengths, covered with spaghetti, and fitted with two lugs (say, L127 or L192). This gives an excellent wire wound resistance, which can be folded or coiled as desired.



Ohms per ft.	millamps per ft.
R200 10,000	10 mils 1/-
R301 25,000	10 mils 2/-
R302 50,000	10 mils 3/-
R303 100,000	10 mils 4/-

PORCELAIN RESISTANCE TUBES.

For winding resistances, such as the ACE Cross hole at each end for convenient mounting. Other tubes, including spiral grooved tubes also stocked. Tapping clips, 6d. ea.



R287 4in. x .4in. outside diam.	2 0
R288 6in. x .6in.	2 3
R289 8in. x .75in.	2 6
R290 1in. x 1.12in.	3 0

RHEOSTATS.

DE JURE SUPER.

A genuine midget bakelite rheostat, with very smooth action. Very high quality. 1/2 watt. Knob included. 2, 6, 10, 20, 30, 50 ohms.

R205 Each 4 6



DE JURE BUFFALO

A moulded bakelite rheostat, complete with bakelite knob. Suitable for all high grade receivers. 2, 5, 10, 20, 30, 50 ohms.

R206 Each 3 6

CONTINENTAL.

A moulded rheostat about 15 ohms, and suitable for the average set. Complete with knob, on which an arrow is moulded. The cheapest rheostat on the market.

R258 15 ohms 1 0

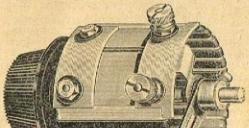
FROST HUM BALANCE.

A 20 ohm potentiometer, to centre tap filament in A.C. Radios, thus eliminating hum.

R263 6 0

POWERHEOS—50 watts.

These resistors are found for these rheostats, which are much larger than usual, and will carry very heavy currents. Controls accumulator charging, motors, etc.



AUTOMATIC FILAMENT RESISTORS.

Known as amperites when first marketed, these resistors automatically adjust the filament current, enabling the rheostate to be dispensed with.

LYNCH EQUALIZER.

The best quality obtainable, made by a firm specialising in resistors.



R234 Lynch equalizer, with mount, all sizes	5 0
R236 Amperites	4 6

VARIABLE RESISTORS

Resistor rheostats in the continuously variable type of resistor make it possible for these to be used in many places where previously it was inadvisable to do so, owing to lack of durability.

EMMCOSTADS.



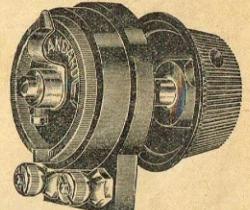
VOLUME CONTROL—TABLE TYPE

Similar to R203, mounted in a container, and fitted with long cords and knobs, so that the set can be controlled from some distance. Range 10-500,000 ohms.

R242 Table volume control 13 6

ROYALTY (POTENTIOMETER).

The resistance is in a wood or protected metal wire winding which by its peculiar method of fitting, merely acts as a set of stud studs, thus protecting the element from wear. In appearance, it is exactly like a rheostat, and can be used either rheostat or potentiometer fashion.



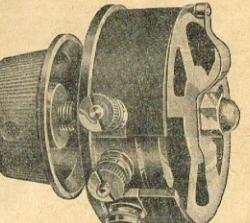
Note.—All ROYALTY RESISTANCES are fitted with THREE TERMINALS.

Lowest resistance is about 10 per cent of total. About 10 per cent margin in current (millamps) is advisable.

Range	Current	Ohms.	Millamps	s. d.
R198 F	2,000	23.0	6	6
R292 K	5,000	20.0	7	6
R199 G	10,000	16.5	7	6
R200 H	25,000	10.5	7	6
R254 I	50,000	7.5	7	6
R255 B	100,000	5.0	7	6
R201 J	200,000	4.0	7	6
R203 L	500,000	2.5	7	6
R196 D	700,000	2.0	7	6
R256 A	7 megs	.2	7	6

ROYAL GIANT.

A heavy duty high resistance potentiometer. Note special contact, both smooth and non-wearing. For talkie faders, volume controls, etc.



EMMCOSTADS.



EMMCOSTADS.

R238 No. 1	—	100 ohms	7	6
No. 1A	0—	2,000 ohms	7	6
No. 2	10,000—100,000 ohms	7	6	
No. 3	25,000—250,000 ohms	7	6	
No. 4	50,000—500,000 ohms	7	6	
No. 6	—	10 megs	7	6

GIGANTIC.

R239	Ohms.	millamps.		
R232	5,000	28	13	6
R229	10,000	20	13	6
R223	25,000	12	13	6
R294	50,000	9	13	6
R295	100,000	6	13	6

VOLUME CONTROL—TABLE TYPE

R238 No. 1	—	100 ohms	12	6
No. 2	0—	1,000 ohms	12	6
No. 3	200—100,000 ohms	12	6	

R242 Table volume control 13 6

SHAKEPROOF WASHERS ARE "SAFE."

SCREWS, NUTS,

Without question, our range of these is the largest in the country. In fact, it is equally beyond dispute that our range of RADIO APPARATUS is not only the largest, but EASILY SO.

U.S.A. SCREWS AND NUTS.

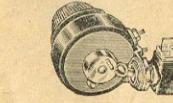
For ordinary purposes, U.S.A. screws are recommended, because a range of only four sizes will cover practically every requirement in Radio. In fact, the two sizes (6/32 and 8/32) would do almost so.

All U.S.A. screws and nuts are brass, nickel plated, and the nuts are guaranteed to fit the screws properly. The nuts are slotted, domed, chamfered, to meet many requirements. The first number in the U.S.A. sizes denotes the gauge thickness of the screw, and the approximate equivalent in inches is given alongside. The second number (32 or 36) denotes the threads per inch.

Either ROUND HEAD (R.H.) or COUNTERSUNK (C/S) screws can be supplied at the same price. Nuts are extra in every case.

FROST, WITH SWITCH.

A 2000 ohm variable resistance, fitted either with battery or A.C. switch. It switches the set on and then acts as a volume control.



SHAKEPROOF LOCK WASHERS.

Shakeproof washers, with twisted steel teeth, do not taper, but they have a large number of points. Try them on the number plates of your car, or any place subject to great vibration—you will be astonished.

U.S.A. screw sizes in brackets.



INTERNAL OR EXTERNAL TEETH, SAME PRICE.

Bolt thickness.

per dz. per gr.

1/10 (4/36) . . . 3d. 2/-

1/8 (6/32) . . . 3d. 2/-

5/32 (8/32) . . . 3d. 2/-

3/16 (10/32) . . . 3d. 2/-

1/4 (12/32) . . . 3d. 2/-

6/16 (14/32) . . . 3d. 2/-

1/2 (16/32) . . . 3d. 2/-

5/16 (18/32) . . . 3d. 2/-

3/8 (20/32) . . . 3d. 2/-

7/16 (22/32) . . . 3d. 2/-

1/2 (24/32) . . . 3d. 2/-

13/16 (26/32) . . . 3d. 2/-

15/16 (28/32) . . . 3d. 2/-

1 (30/32) . . . 3d. 2/-

1 1/16 (32/32) . . . 3d. 2/-

1 1/8 (34/32) . . . 3d. 2/-

1 1/4 (36/32) . . . 3d. 2/-

1 1/2 (38/32) . . . 3d. 2/-

1 1/8 (40/32) . . . 3d. 2/-

1 1/4 (42/32) . . . 3d. 2/-

1 1/2 (44/32) . . . 3d. 2/-

1 1/4 (46/32) . . . 3d. 2/-

1 1/2 (48/32) . . . 3d. 2/-

1 1/4 (50/32) . . . 3d. 2/-

1 1/2 (52/32) . . . 3d. 2/-

1 1/4 (54/32) . . . 3d. 2/-

1 1/2 (56/32) . . . 3d. 2/-

1 1/4 (58/32) . . . 3d. 2/-

1 1/2 (60/32) . . . 3d. 2/-

1 1/4 (62/32) . . . 3d. 2/-

1 1/2 (64/32) . . . 3d. 2/-

1 1/4 (66/32) . . . 3d. 2/-

1 1/2 (68/32) . . . 3d. 2/-

1 1/4 (70/32) . . . 3d. 2/-

1 1/2 (72/32) . . . 3d. 2/-

1 1/4 (74/32) . . . 3d. 2/-

1 1/2 (76/32) . . . 3d. 2/-

1 1/4 (78/32) . . . 3d. 2/-

1 1/2 (80/32) . . . 3d. 2/-

1 1/4 (82/32) . . . 3d. 2/-

1 1/2 (84/32) . . . 3d. 2/-

1 1/4 (86/32) . . . 3d. 2/-

1 1/2 (88/32) . . . 3d. 2/-

1 1/4 (90/32) . . . 3d. 2/-

1 1/2 (92/32) . . . 3d. 2/-

1 1/4 (94/32) . . . 3d. 2/-

1 1/2 (96/32) . . . 3d. 2/-

1 1/4 (98/32) . . . 3d. 2/-

1 1/2 (100/32) . . . 3d. 2/-

1 1/4 (102/32) . . . 3d. 2/-

1 1/2 (104/32) . . . 3d. 2/-

1 1/4 (106/32) . . . 3d. 2/-

1 1/2 (108/32) . . . 3d. 2/-

1 1/4 (110/32) . . . 3d. 2/-

1 1/2 (112/32) . . . 3d. 2/-

1 1/4 (114/32) . . . 3d. 2/-

1 1/2 (116/32) . . . 3d. 2/-

1 1/4 (118/32) . . . 3d. 2/-

1 1/2 (120/32) . . . 3d. 2/-

1 1/4 (122/32) . . . 3d. 2/-

1 1/2 (124/32) . . . 3d. 2/-

1 1/4 (126/32) . . . 3d. 2/-

1 1/2 (128/32) . . . 3d. 2/-

1 1/4 (130/32) . . . 3d. 2/-

1 1/2 (132/32) . . . 3d. 2/-

1 1/4 (134/32) . . . 3d. 2/-

1 1/2 (136/32) . . . 3d. 2/-

1 1/4 (138/32) . . . 3d. 2/-

1 1/2 (140/32) . . . 3d. 2/-

1 1/4 (142/32) . . . 3d. 2/-

1 1/2 (144/32) . . . 3d. 2/-

1 1/4 (146/32) . . . 3d. 2/-

1 1/2 (148/32) . . . 3d. 2/-

1 1/4 (150/32) . . . 3d. 2/-

1 1/2 (152/32) . . . 3d. 2/-

1 1/4 (154/32) . . . 3d. 2/-

1 1/2 (156/32) . . . 3d. 2/-

1 1/4 (158/32) . . . 3d. 2/-

1 1/2 (160/32) . . . 3d. 2/-

1 1/4 (162/32) . . . 3d. 2/-

1 1/2 (164/32) . . . 3d. 2/-

1 1/4 (166/32) . . . 3d. 2/-

1 1/2 (168/32) . . . 3d. 2/-

1 1/4 (170/32) . . . 3d. 2/-

1 1/2 (172/32) . . . 3d. 2/-

1 1/4 (174/32) . . . 3d. 2/-

1 1/2 (176/32) . . . 3d. 2/-

1 1/4 (178/32) . . . 3d. 2/-

1 1/2 (180/32) . . . 3d. 2/-

1 1/4 (182/32) . . . 3d. 2/-

1 1/2 (184/32) . . . 3d. 2/-

1 1/4 (186/32) . . . 3d. 2/-

1 1/2 (188/32) . . . 3d. 2/-

1 1/4 (190/32) . . . 3d. 2/-

1 1/2 (192/32) . . . 3d. 2/-

1 1/4 (194/32) . . . 3d. 2/-

1 1/2 (196/32) . . . 3d. 2/-

1 1/4 (198/32) . . . 3d. 2/-

1 1/2 (200/32) . . . 3d. 2/-

1 1/4 (202/32) . . . 3d. 2/-

1 1/2 (204/32) . . . 3d. 2/-

1 1/4 (206/32) . . . 3d. 2/-

WELL-MAYDE SHIELDS—NEAT AND EFFICIENT.

SHIELDS.

Most modern Radio sets are shielded by enclosing all or part of the apparatus in aluminium boxes. These are most effective when they are made of thick aluminium but, nevertheless, the lighter shields are very effective indeed.

Special sizes can always be made to order, but are more costly.

VALVE SHIELDS.

Hammarlund valve shields are spun from a single piece of heavy aluminium, specially treated at the top, and well ventilated. The bottom fits inside the case, with minimum effort.

A rubber grommet in the top insulates from the screen clips from the chassis. Other parts are not insulated, and frequently shorting takes place. There can be no shorting with the Hammarlund shield.

S213 Hammered shield, ea. 3 3
S222 Alum. shield, 5 x 3 ... 2 2
S223 Alum. shield, 5 x 2 2 ... 2 2
S224 Alum. shield, 4 x 2 2 ... 2 2
S225 Alum. shield, 4 x 2 ... 2 2

SHEILD—WELL-MAYDE 4 VALVE.

For S.G. valves. Silver finish, heavy metal, to screw to chassis. Single lid, well fitting, non shorting. S221 W.M. 4 valve shield ... 8 0

ACE SHIELD.

A rigid shield, designed for easy assembly and efficient working. Size 3 x 6 x 5in. S183 ... 9 0



SLIDERS.

Sliders are made to fit 1in. square brass rod. Rods can be purchased either in plain brass or ready drilled and plated.

S104 Plated, coloured knob ... 6d.
S102 Black, with spring plunger 4d.
S104 Plated, coloured knob ... 6d.
S102 Black, with spring plunger 4d.

SLIDER ROD—PLATED.

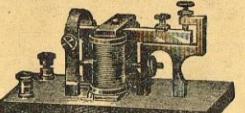
Plated and drilled, 1in. square. S177 Length 6in. ... ea. 8d.
Plain rod, see under BRASS.

SOLDER—RESIN-KOR.

A high-grade solder, made in England, and used locally by responsible authorities. Better than all others. S187 1lb. (approx. 35ft.) ... 4 6
S188 8ft. length ... 1 6
(See under Tools.)

SOUNDERS.

The heavy type are Government stock, not quite new, but in first class condition—if not, by all means return them. The lighter type is new.

S120 Heavy type ... 1 10 0
S121 Light type ... 1 2 6

SWITCHES.

RADIO POWER SWITCH.

For the new A.C. sets, switches will be entirely different from the older push pull type. Tumbler switches could be used, but are much too clumsy. This switch can be made to fit in the case, has a quick make and break, and is very suitable for A.C. sets, electric gramophones, etc. Price, engraved, "Well-Mayde" included. Plated or bronze finish.

RADIAL INSULATED SWITCH.

Similar movement to S181, but with rotary motion. Perfect insulation provided by knob. S189 with black knob ... 3 0
S220 with walnut knob ... 3 0

TROJAN SWITCHES.

Similar movement to S181, but with rotary motion. Perfect insulation provided by knob.

S181 One way ... 2 6
S182 Two way (no plate) ... 3 6

S206 Similar to S181 ... 3 6

S207 Plate pattern ... 2 9

S208 Plate pattern, double ... 4 6

S209 Similar to S187 ... 3 6

S210 Plate pattern ... 2 9

S211 Plate pattern, double ... 4 6

S212 Plate pattern ... 2 9

S213 Plate pattern ... 2 9

S214 Plate pattern ... 2 9

S215 Plate pattern ... 2 9

S216 Plate pattern ... 2 9

S217 Plate pattern ... 2 9

S218 Plate pattern ... 2 9

S219 Plate pattern ... 2 9

S220 Plate pattern ... 2 9

S221 Plate pattern ... 2 9

S222 Plate pattern ... 2 9

S223 Plate pattern ... 2 9

S224 Plate pattern ... 2 9

S225 Plate pattern ... 2 9

S226 Plate pattern ... 2 9

S227 Plate pattern ... 2 9

S228 Plate pattern, double ... 4 6

S229 Plate pattern ... 2 9

S230 Plate pattern ... 2 9

S231 Plate pattern ... 2 9

S232 Plate pattern ... 2 9

S233 Plate pattern ... 2 9

S234 Plate pattern ... 2 9

S235 Plate pattern ... 2 9

S236 Plate pattern ... 2 9

S237 Plate pattern ... 2 9

S238 Plate pattern ... 2 9

S239 Plate pattern ... 2 9

S240 Plate pattern ... 2 9

S241 Plate pattern ... 2 9

S242 Plate pattern ... 2 9

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S425 Plate pattern ... 2 9

S426 Plate pattern ... 2 9

S427 Plate pattern ... 2 9

S428 Plate pattern ... 2 9

S429 Plate pattern ... 2 9

S430 Plate pattern ... 2 9

S431 Plate pattern ... 2 9

S432 Plate pattern ... 2 9

S433 Plate pattern ... 2 9

BEE.

A really wonderful transformer combining its unique article. Fully shielded, ratio 5:1 or 3:1. Reducing the need for a durable, efficient and cheap condenser, we had this made to our special order.

At the price, one could hardly expect a guarantee, but out of hundreds sold, less than 1 per cent, have given trouble, so we are only too happy to give a full six months' guarantee with every "BEE" well made.

Try a "BEE" against some of the expensive transformers, and you will find that the "BEE" was not been sacrificed for durability. In many cases, its tone and volume surpass that of transformers costing twice as much.

Usual ratio is 3:1.



T336 5:1 ratio 9 0
T337 5:1 ratio 9 0

STAL TRANSFORMERS.

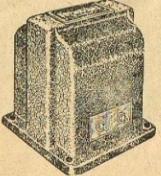
So great has been the success of the Bee transformer that we have now procured supplies of an exactly similar transformer, but much larger in size, and at a much lower price. A really good transformer at a reasonable price, try one of these. Guaranteed 1 year.

T343 Stal transformer 14 0

NICKIRON.

Transformers with cores of nickel-iron (Nickiron) alloy are much smaller in size than the special virtues of the alloy.

The STAL NICKIRON transformer is the cheapest of its kind offered to date. Its small size, high quality and low price make it especially valuable as a replacement transformer in limited spaces.



T342 Nickiron transformer 18 6

PILOT PUSH FULL.

T307 Giant input, No. 408 33 0
T208 Giant output, No. 409 33 0

TRANSFORMER WIRE.

Soft iron wire is used for the cores of induction coils, small transformers, etc.

W112 26, 28 or 30g.; per lb. 2 3

POWER TRANSFORMERS.

Transformers can be used on alternating current only. Those are connected to the mains, and either a higher or lower voltage obtained, according to the design. There are no shorting points, and if well made and insulated, a transformer should be practically everlasting. It must not be under or over voltage, nor must the secondary be shorted.

Unfortunately, transformers alone cannot be used for battery charging, though they are used in conjunction with batteries in most chargers.

We believe that our facilities are unique as far as New Zealand is concerned for the manufacture of transformers. We have a large installed capacity of winding machines, which wind the wire perfectly evenly, and place pieces of paper between the layers, but our small transformers have a very neat metal case, and insulate the whole with proper transformer wax where conditions make this advisable.

For battery charging, line enamelled, or duced, special plant being installed for both processes.

We claim that our transformers are better made, more carefully made, and better finished than any imported article. Further, they cost less, as a rule, than similar imported articles, and are guaranteed.

Let us solve your transformer problems—we know we can satisfy you.

QUOTATIONS.

In asking for a quotation for a transformer, we must have the following details:

1. Mains or input or primary voltage and cycles (nearly everywhere in New Zealand this is 230 volts 50 cycles).

2. VOLTAGE AND AMPERAGE OF EACH secondary winding.

3. Where tappings, if wanted, are to be placed.

4. The purpose for which it is required—for instance, if for a "B" eliminator, the kind of amplifier, values in each stage, etc. This enables us to check your figures to a great extent, but is not essential, provided you KNOW EXACTLY WHAT YOU WANT.

WE CANNOT QUOTE WITHOUT AT LEAST ALL THE INFORMATION in 1 and 2 above.

FERRANTI TRANSFORMERS.

Ferranti transformers are a well-known English production, famed for high quality, even though price is rather more than usual. From the large Ferranti range, the following have been selected, but any other Ferranti product will be supplied when ordered.

T294 Audio A.F. 5 2 0 0

T295 Audio A.F. 4 1 12 6

T296 Audio A.F. 3 1 12 6

T297 Push pull A.F. 3c 1 18 0

T298 Push pull A.F. 4c 2 5 0

T299 Push pull A.F. 5c 2 5 0

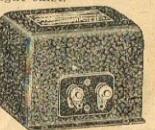
T300 Push pull output, C.P. 3c. 1/1 1 15 0

T301 Push pull output, O.P. 4c. 25/1 1 15 0

WELL-MAYDE TRANSFORMERS.

Manufactured in Auckland under expert supervision, and with the most modern winding machines, which not only give a much evener height per turn, and insert a layer of paper between the layers of wire. This precision winding ensures the greatest durability in the windings, especially when only the highest grade of wire is used.

STALLOY is used for the cores, because losses are lower, and heating consequently much less. After completion, careful tests are made which reveal the slightest defect, which might exist.



Sealing is done with best imported transformer compound.

Metal cases are finished with best DUCO, or crystalline enamel, and in neatness and finish are actually superior to the best imported articles.

ALL WELL-MAYDE TRANSFORMERS ARE GUARANTEED.

WE MAKE A SPECIALTY OF MAKING ANY SIZE TRANSFORMER TO ORDER, the following range representing a few only of the many kinds already manufactured.

WESTINGHOUSE RECTIFIERS.

Five transformers listed below are specially designed for WESTINGHOUSE RECTIFIERS of corresponding numbers.

WELL-MAYDE TRANSFORMER A3.

Delivers about 14 volts 1 amp., with which the A3 rectifier produces 5 watts 1 amp D.C. Lower D.C. voltage can be obtained by a resistance in the D.C. leads. Fitted with bayonet adapter, and 8ft. twin flex. T280 W-M transformer A3 1 10 0

WELL-MAYDE TRANSFORMER A4.

Details as A3, but output 2 amps. T313 W-M transformer A4 2 0 0

W.M. TRANSFORMER H.T.1.

230 volts 100 millamps output. Used with the H.T.1 rectifier, giving unfiltered output of 200 volts 100 millamps, which can be used either as a power source for battery charging "B" accumulators up to 180 volts. Could also be used for other eliminators.

T299 W-M transformer HT1 1 15 0

W.M. TRANSFORMER H.T.4.

Output 230 volts 50 millamps, and suitable for either HT3 or HT4 "B" eliminator rectifiers.

T327 W-M transformer HT4 1 10 0

W.M. TRANSFORMER "ABC."

Gives combined outputs as for A3 and HT4 transformers above.

T328 W-M transformer ABC 2 5 0

TRANSFORMER FOR MECCANO.

High grade transformer, suitable for driving the Meccano motor. Much cheaper than the imported article, but of the very highest quality.

T222 Transformer for Meccano 27 6

SPECIAL TRANSFORMERS MADE TO ORDER.

W-M TRANSFORMERS—Continued.
230/110 or 110/230 VOLTS.

Change 230 volts A.C. to 110, or vice versa. Enable standard American 110 volt Radios and other apparatus to be used in N.Z. 230 volts.

Large area of choice as to the size of transformer used, it is always safe to use one that is more powerful, but our advice is always available on the subject of full particulars of the purpose for which the transformer is required.

To compensate for variations of voltage, etc. these transformers are supplied with a tap on the secondary, giving 120, 110 and 100 volts under full load.

To obtain approximate output in amperes divide watts by 110.

All these transformers are entirely enclosed in Ducoed metal cases, sealed where necessary, with best transformer compound.

T309 50 watts	2	0	0
T310 100 watts	2	0	0
T311 150 watts	2	12	0
T312 250 watts	2	4	0
T344 500 watts	7	15	0

Larger sizes on application.

RECEIVER TRANSFORMERS.

Best quality material and manufacture, capable of continuous cool operation. Supplied in metal case, with two pin input plug and two terminals, or less case and terminals, but mounted on steel feet. Primary 230, 110 or 100 volts (other voltages if required). Outputs accurate—no burnt out valves.

RECEPTOR.

Volts	Amps	Valves
5	2.5	280
5	3.5	245
2.5	12.5	70 or 227
300-0-300 volts	100 millamps	
T345 W-M Receptor, in case	23 15 0	
T346 W-M Receptor, no case	3 0 0	

W-M LOFTWITE TRANSFORMER.

Suitable for Lofton White amplifiers using one 224 and one 24 valve, OR with A.C. receiver and A.W. amplifier combined, four 224 and one 24 valve.

Volts	Amps	Valves
5	2	280
5	1.5	245
2.5	12.5	70 or 227
300-0-300 volts	50 millamps	
T347 W-M Loftwite, in case	23 5 0	
T348 W-M Loftwite, no case	2 11 0	

W-M LOFTWITE TALKIE.

An oversize transformer, suitable for largest eliminators, and especially for the Wizard. Width is 11 in., with two 250瓦 in last stage. Suitable for powerful talkie equipment. Note two separate 7.5 volt filament windings.

Volts	Amps	Valves
7.5	2.5	2 231
7.5	1.25	1 250
7.5	1.25	1 250
2.5	4.25	4 227
750-600-0-750	50 millamps	
T349 Loftwite talkie, in case	6 0 0	
T350 Loftwite talkie, no case	5 0 0	

TRANSFORMER FOR MECCANO.

High grade transformer, suitable for driving the Meccano motor. Much cheaper than the imported article, but of the very highest quality. T222 Transformer for Meccano 27 6

W-M TRANSFORMER UX280.

For powerful eliminator using 230 rectifier valve. Correctly designed to give RECTIFIED FILTERED output of 220 volts 60 mls., and incorporating filter choke as well. Filament winding included.

T351 W-M transformer UX280 75 0

TRANSMITTING TRANSFORMERS.

We can make any type of transmitting transformer to order. These are made of best quality material, with many windings for high tension output, filament currents, etc. as may be desired. Each is guaranteed for twelve months when used for the purpose for which it was designed.

JEFFERSON TOY TRANSFORMERS.

Jefferson transformers are made for home experimental purposes, and for ringing bells, driving toy trains or other small motors, lamps, etc. They are quite as safe as electric irons, radiators, etc.

Every boy with A.C. current in his home will want one of these instructive toys.

The range given below is that of voltages obtainable with the switch. The switch is not shown, but it is to be noted that intermediate voltages are obtainable.

Watts	Range	Tap every	Price
T197 50	53-103	1 volt	1 1 0
T198 75	51-221	1 1 1	1 1 2 in.
T199 100	51-23	2 2 2	2 2 4 in.
T200 150	1 2-30	1 1/5 2 14	1 1/5 2 14

WIZARD BELL TRANSFORMERS.

Bell transformers are always used where A.C. current is available, as the former will operate bells far better than batteries can. Transformers are always "on the job" and need no attention to keep them running.

The Jefferson Wizard transformer will operate any ordinary type bell. It can also be used for numbers of experiments for lighting lamps, running small models. Completely shielded.

Holes can be punched in one end of each piece, cost being 20, dozen pieces, 1s. 6d. gross. Minimum charge 2s.

TRANSFORMER DATA.

The following tables are based on the use of Stalley cores. If ordinary or other material is used, the tables will not apply.

Where enamelled wire is used, the layers should be separated by a thin layer of paper or silk.

When heating to 100°C. it is best to have during winding should be done with AMBERLAC VAR-NISLE. This will dry in air, but the process will be assisted by placing the finished coil in a warm oven—not too hot.

ALL AMATEUR REQUIREMENTS CATERED FOR.

To ascertain the number of turns on any transformer winding, either primary or secondary, merely multiply the turns per volt (T.P.V.) of the core chosen, by voltage desired.

As primaries in New Zealand will almost invariably be for 230 volts, the primary turns will be the turns per volt multiplied by 230. Thus for a 100 watt transformer, the primary turns will be 920. The turns for any secondary voltage are obtained by the same way.

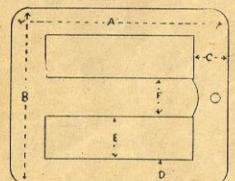
The core sizes given in inches are for ordinary step down transformers. Step up transformers may require a rather larger core.

The prices quoted are for cores, cut accurately to size, ready for assembling.

Any other sizes can be supplied to order.

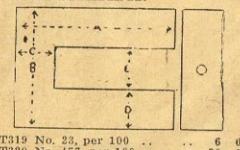
TRANSFORMER STAMPINGS.

See data below.



T216 No. 39 per 100 12 0
T217 No. 1 per 100 15 0
T221 Cases for No. 39 per set 2 0
T218 Cases for No. 1 per set 1 6

CHOKE STAMPINGS.



T319 No. 23, per 100 6 0
T320 No. 477, per 100 20 0

STAMPINGS—DATA.

A		T316		T317		T319		T320	
A	3 1/8	3 11/16	2 5/16	3 5/16					
B	2 9/16	3 1/4	1 3/4	2 15/16					
C	1 2/1	1/2	9/16	15/16					
D	9/16	3/2	9/16	1/16					
E	5/8	11/16	5/8	1					
F	9/16	13/16	1/16	1/16					
Thick	1/50	1/50	1/50	1/75					

TUBES.

See also EBONITE, EXELON.

CARDBOARD (Six Inch Lengths).

Spiral wound cardboard tubes, accurately made, and perfectly round.

	ea.	dz.
T235 2in.	4d.	3 9
T236 2 1/2in.	4d.	4 9
T237 3in.	4d.	5 9

RIBBED TUBING (See Ebonite).

TRANSFORMER DATA.

List No.	T322	T323	T324	T325	T326
WATTS	5-25	25-50	50-90	90-150	150-250
Core section, in.	11 x 3	11 x 3	11 x 3	11 x 3	11 x 3
Pieces, each size	160	192	192	256	320
Size (large)	3 x 3	3 1/2 x 3	4 x 1	4 1/2 x 1	5 1/2 x 1
Size (small)	1 1/2 x 3	1 1/2 x 3	2 x 1	2 1/2 x 1	2 1/2 x 1
Turns per volt	9	10	10	10	10
Primary wire, SWG	5lb/32	4lb/28	1lb/24	1lb/22	3lb/20
Price, core only	6/6	9/6	9/6	24/-	
Primary coil, only	7/6	10/6	15/6	18/6	24/-
Metal, case, only	7/6	9/6	12/6	15/6	20/-
1. Line used may be D.C.C. or D.S.G.					
2. Price of core includes requisite number of stally pieces, accurately cut, sizes being given above in inches. Holes are not punched, clamps being included. Price will be quoted when wanted.					
3. Primary coil for attack on 230 volts (or any other) is quoted, ready wound, and taped ready to place in case.					
4. Metal cases are smoothly finished and duced. When used, transformer compound is finally melted in.					

VALVES.

U.S.A. styles, 4 pin (U.K.) 5 pin (U.K.) are by far the most common in New Zealand. English bases, 4 or 5 pin, are used practically only in English sets.

BATTERY VALVES.

NO SPECIAL ADVICE is necessary to those battery Radio users who have "A" charger and "B" eliminator, or "A" and "B" accumulator. But to those who have to send accumulators away, and who also have to buy dry "B" batteries regularly, the choice of valves, and indeed the set itself, is vitally important.

If the "A" battery is easily obtained, perhaps in your own milkings shed, 201A valves are a good choice—they are cheap, very long lived, very efficient, and very reliable. They are "B" valves. Some low consumption valves (now only in "A" battery, it be noted) use so much more "B" battery that they actually cost far more to run.

Wire accumulators cannot readily be charged, we strongly advise you to read about the 230 valve.

THE 201A VALVE.

AS A AMERICAN BATTERY RADIOS are still very common in New Zealand and practically all of them were designed for 201A valves, we recommend these valves always. Wherever possible there are very special reasons.

The 201A valve uses more "A" battery current than most other valves to-day, but against this is used only a small amount of power. The extra cost of "A" is therefore generally MORE than offset by the saving in "B" battery consumption valves as advertised are almost always very low in "A" only.

Further, the 201A valve is very uniform in quality, and is far more durable, according to long experience, than any other valve.

Do not replace your 201A valve except with another 201A.

201A 6 volt, .25 amp. 9 0

POWER VALVES.

Ample volume with pure tone can be obtained only by the use of power valves, requiring high "B" and "C" voltage. These valves are capable of handling the increased output.

A power valve installed in your present set instead of an ordinary valve MAY NOT GIVE MORE VOLUME. It will probably give much less. But it WILL give much better tone, batteries being altered to suit.

PENTODE.

Pentode valves have three grids, but they are not generally of much advantage in New Zealand.

SCREENED GRID VALVES.

Screened grid valves have advantages and disadvantages. At present, for battery sets, we regard the ordinary valves as being, in general, better for New Zealand conditions.

CURRENT PRICES ALWAYS CHARGED FOR VALVES.

VALVES! ANY TYPE ON THE N.Z. MARKET NOT LISTED GLADLY PROCURED.

The FILAMENT of every VALVE is tested before despatch or sale, and no claims for valves returned with defective filaments CAN BE ENTERTAINED.

VALVES!

UNDER NO CIRCUMSTANCES are valves sent out on trial or approval. We cannot offer subsequent customers second hand valves. We supply only RELIABLE BRANDS, BRAND NEW.

ALL VALVES SUPPLIED AT STANDARD RULING PRICES AND GUARANTEES.

VALVES!

A BATTERY

Type.	Purpose.	Kind	Volt	Amps	Rheo.	Det.	S.G.	Volts	U.S.A. VALVES—U.K. BASE ONLY.		C Batt.	Amplfn.	Impedance	Price
UX-199	DAR	Dry	4.5	.06	30	22-45		90	4.5	6.6	15,600	17	8	
UX-120	P	Dry	4.5	.12	30	20-50		150	22.5	3.3	6,300	19	0	
UX-201	DARF	Acc.	6.	.06	30	90-180		45-105	9.5	9.	9,400	20	0	
UX-201A	DAR	Acc.	6.	.25	6	22-45		95-135	4.5-9	8.	11,000	17	0	
UX-112A	DP	Acc./A.C.	6.	.35	6	45		90-157	4.5-10.5	8.	5,600	18	0	
UX-171A	P	Acc./A.C.	6.	.20	6	45		90-157	4.5-10.5	8.	5,600	18	0	
UX-221	DARF	Dry	3.	.06	30	45		90-180	16.5-40.5	3.	2,500	18	0	
UX221	A	Dry	3.	.15	30			135	4.5	8.8	12,500	18	0	
UX222	S.G.	Dry	3.	.06	30			135	2.0	3.5	4,000	18	0	
UX222	(S.G.)	Acc.	3.3	.15	15	45		135	1.5	440	800,000	26	0	
									15	300.	850,000	35	6	

PHILIPS VALVES—U.K. OR ENGLISH BASE.

B406	DA	Acc.	4.	.1	36	20-45		45-150	6.	4,200	13	6	
B405	P	Acc.	4.	.10	20			150	5.	2,500	15	0	
B409	P	Acc.	4.	.15	20			150	9.	4,500	15	0	
B410	AP	Acc.	4.	.15	30	20-45		50-150	15-24	3.	2,100	15	0
A415	D	Acc.	4.	.08	30	20-45		50-150	15-24	7.	7,200	13	6
A409	DAR	Acc.	4.	.06	30	10-45		60-120	1.5-9	9.	7,500	13	6
B605	DA	Acc.	6.	.1	30	20-45		60-150	1.5-9	9.	6,000	13	6
A410	DEP	Acc.	6.	.06	30	50-150		50-150	4.5-18	5.	2,800	13	6
D643	P	Acc.	6.	.06	30	20-45		50-150	27	3.3	35,000	13	6
A615	D	Acc.	6.	.06	30	50-150		50-150	15	7,500	13	6	
A442	(S.G.)	Acc.	4.	.06	20	50-150		25-75	15	6,250	13	6	
									25	0			

OSRAM OR MARCONI (both are identical) U.K. or English Base.

PM1HF	DR	Acc.	2.	.1	6	35-100		50-125	1-9	18.	22,500	13	6
PM1LF	DAR	Acc.	2.	.1	6	30-100		50-125	2-5	11.	12,000	13	6
PM2	AP	Acc.	2.	.15	6			75-125	4-12	7.5	4,400	13	6
PM3	DAR	Dry	4.	.08	30	30-100		50-125	2-5	15.	7,500	13	6
PM4	A	Acc.	4.	.1	6			75-125	4-12	7.5	7,500	13	6
PM4D	D	Acc.	4.	.1	6			75-125	4-12	7.5	7,500	13	6
PM5X	DR	Acc.	6.	.06	30	30-100		50-125	2-6	8.	13,000	13	6
PM6	AP	Acc.	6.	.1	10			75-125	2-6	8.	13,000	13	6
PM6D	D	Acc.	6.	.1	10	30-100		50-125	2-6	8.	14,700	13	6
PM112	(S.G.)	Acc.	2.	.15	6			75-125	3-9	18.	9,000	13	6
PM114	(S.G.)	Acc.	4.	.075	30			125	1-2	8.	8,550	13	6
PM16	(S.G.)	Acc.	6.	.1	10			125	1-2	200.	230,000	25	0
									25	0			

ALWAYS STATE ENGLISH OR U.S.A. BASE otherwise, where possible, the U.S.A. base is supplied. WHEN CHOICE OF VALVE IS DOUBTFUL, ASK OUR ADVICE.

The following explains the second column abbreviations: D: detector; R: Radio amplifier; A: audio amplifier; C: resistance coupled amplifier; S.G.: screened grid; Pen: Pentode; P: super power amplifier.

The third column in the valve table gives the voltage of the battery to be used—usually rather higher than the actual voltage of the valve. Where three volts is mentioned, the new Air Cell, 2.5 volts, will suit perfectly, without even a rheostat.

In the "R" battery column, for screen grid valves, the screen voltage is given in the detector column.

USUAL GUARANTEES ON ALL VALVES.

A.C. VALVES.

Not much need be said here about A.C. valves, chiefly because ELECTRIC RADIOS are designed for one particular type of valve, chosen by the manufacturers, and it is necessary to replace always with the same type of valve.

U.S.A. TYPE VALVES.

ALL U.S.A. MANUFACTURERS adopt the same numbering (or on so similar as to be easily recognised) for the same type of valve. Therefore, valves similarly numbered are always interchangeable.

See valve table for Radiotron bat- teries, etc., and apply also to other U.S.A. makes. We supply Radiotron and other well-known U.S.A. valves. Philips, Mullard and Osram equivalents given.

Type	Volts	Mils.	Price
UX280	F, 200	125	15 6
UX281	H, 650	125	50 0
	Raytheon, F 300V.	125 m/a	30 0

OSRAM.

BATTERY VALVES (See Table).

First figure gives valve voltage.

DEH210 13/6	HL210 13/6	P625 29/-
DEH410 13/6	HL410 13/6	P625 29/-
DEH610 13/6	HL610 13/6	PX4 28/6
DEH525 25/-	PT235 25/-	PX4 28/6
PT425 25/-	PT625 25/-	PX4 28/6

A.C. AND RECTIFIERS.

L585	1.85	35/-	MS4 32/6
L586	1.85	35/-	ML4 17/6
MH14 30/-	ML4 17/6	MS4 30/-	
L585	1.85	35/-	MS4 30/-
MHL4 27/6	U9	25/-	QUL50/-

MULLARD.

BATTERY VALVES (See Table).		
PM11A 13/6	PM252 15/-	PM2DX 13/6
PM23A 13/6	PM254 15/-	PM5B 13/6
PM26E 15/-	PM24A 30/-	

A.C. VALVES.

AC4 30/-	35VA 30/-	164V 30/-
164V 27/6	SAV 40/-	SAV 40/-
PM21 27/6	DU2 27/6	DU10 17/6

PHILIPS.

In Philips valve names, the letters denote filament current (A is .06 or .08 amps.—B is .1 amp.—C is .25 or .3 amp.). The first figure is the filament voltage, and the last two figures the anode voltage. For example, A100 13/6 is a 13 volt filament, .06 amp. valve.

A100	13/6	A101 20/-	A209 13/6
B203	13/6	B205 13/6	
B242	25/-	C245 25/-	A409 13/6
A414 17/6	A415 13/6	A416 13/6	A408 13/6
A435 13/6	A436 13/6	A437 13/6	A405 13/6
B409 13/6	B443 25/-	B408 13/6	A406 13/6
A415 13/6	A39 13/6	A405 13/6	A407 13/6
A642 25/-	B609 13/6	C603 13/6	

PHILIPS A.C. VALVES.

C442 39/-	C643 30/-	D404 28/6
D443 20/-	E406 35/-	E408 30/-
E409 27/6	E415 27/6	
E424 27/6	E433 30/-	D442 28/6
E443 40/-	E442S 32/6	

RECTIFIERS.

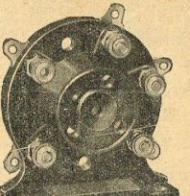
For electric sets, eliminators and radio parts. F denotes fuel wave, H half-wave.

Type	Volts	Mils.	Price
UX280	F, 200	125	15 6
UX281	H, 650	125	50 0

ENGLISH.

In two types, ordinary for base mounting, and Universal for base or panel mounting.

NOTE.—This holder fits four-pin English valves also.



V163 Ordinary 5-pin Eng. holder 1 9

V164 Universal 5-pin Eng holder 1 9

VALVE HOLDERS.

The UX or American valve holder is the standard in New Zealand, over 90 per cent. of sets being so fitted.

The valves are used in the majority of U.S.A. receivers to-day, fitted, of course, to the metal chassis, in which a 1/16 in. hole is punched. Two screws or rivets hold them seated in place, and a very rigid holder results.

The contacts are brass, but the springs are of steel, specially rust-proofed. The spring steel provides perfect contact valves. Sure-grip holders do not cause cracking.

The holders can be engraved with the number of the valve at slight extra cost.

Special quantity quotations.

Sub-panels with holders already riveted in also quoted.



V140. V101.

V140 English, flush assembly: each 1 9

V101 English: each 1 9

V101 English, flange type 6

VALVE LEGS AND SOCKETS.

These fittings are especially designed for coil mounting, especially for receiving coils. (Banana plugs—under Plugs—are usually better for this purpose). Legs and sockets are of best brass, well plated



V165 4-pin UX holder 1 9

V166 5-pin UX holder 1 9

V167 Four-pin English 1 9

V168 Five-pin English 1 9

V169 UX spring 1 9

V170 UX spring 1 9

V171 UX spring 1 9

V172 UX spring 1 9

V173 UX spring 1 9

V174 UX spring 1 9

V175 UX spring 1 9

V176 UX spring 1 9

V177 UX spring 1 9

V178 UX spring 1 9

V179 UX spring 1 9

V180 UX spring 1 9

V181 UX spring 1 9

V182 UX spring 1 9

V183 UX spring 1 9

V184 UX spring 1 9

V185 UX spring 1 9

V186 UX spring 1 9

V187 UX spring 1 9

V188 UX spring 1 9

V189 UX spring 1 9

V190 UX spring 1 9

V191 UX spring 1 9

V192 UX spring 1 9

V193 UX spring 1 9

V194 UX spring 1 9

V195 Ordinary type 2d. 1 9 18 0

V196 Valve legs 2d. 1 9 18 0

V197 Valve legs 2d. 1 9 18 0

V198 Valve legs 2d. 1 9 18 0

V199 Valve legs 2d. 1 9 18 0

V200 Valve legs 2d. 1 9 18 0

V201 Valve legs 2d. 1 9 18 0

V202 Valve legs 2d. 1 9 18 0

V203 Valve legs 2d. 1 9 18 0

V204 Valve legs 2d. 1 9 18 0

V205 Valve legs 2d. 1 9 18 0

V206 Valve legs 2d. 1 9 18 0

V207 Valve legs 2d. 1 9 18 0

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V209 Valve legs 2d. 1 9 18 0

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V292 Valve legs 2d. 1 9 18 0

V293 Valve legs 2d. 1 9 18 0

V294 Valve legs 2d. 1 9 18 0

V295 Valve legs 2d. 1 9 18 0

V296 Valve legs 2d. 1 9 18 0

V297 Valve legs 2d. 1 9 18 0

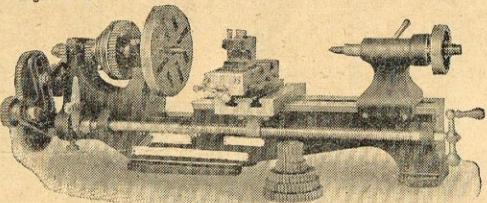
V298 Valve legs 2d. 1 9 18 0

V299 Valve legs 2d. 1 9 18 0

EASY TERMS ON LARGER TOOLS.

The following tools have been selected not only for their quality, but also for their suitability for engineers, carpenters, farmers, and especially, amateurs.

Each tool is listed separately since it is always preferable for the amateur to follow the engineer and to choose each tool in his kit individually.



"ALTONA" BACK-GEARED LATHE, 3in.

This remarkable new British lathe is thoroughly well designed, and built with a sturdy precision that enables it to do with accuracy any job within its scope.

The illustration shows the heavy vice bed, carefully machined. The headstock has adjustable bronze bearings, $\frac{1}{8}$ inch hollow mandrel, ball thrust, and three speed pulley for round belt. The back gear ratio is 6:1, and the mandrel nose screwers $\frac{1}{8}$ inch Whitworth.

The tailstock has square barrel thread, operated by a hand wheel, with locking screw. It has a $\frac{1}{8}$ inch hole through its spindle. It is locked to the bed by a lever.

The slide rest has vice slides, adjustable, and can be swivelled for taper turning. T slots provided on carriage and top slide.

The screw cutting gear is fitted with timber reverse, the lead screw being 8 threads per inch, enabling practically all threads to be cut with the 10 machined change wheels included.

The lathe can be easily driven by $\frac{1}{4}$ h.p. motor.

Price includes faceplate and centres, as illustrated.

SCREW CUTTING TABLE.

Threads	8	9	10	11	12	14	16	18	20	22	24	25	27	28	30	32	36	40	48	60
First stud	40	40	40	40	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20	20
Second stud	Any cog that connects directly																			
Lead screw	40	45	50	55	20	35	40	45	50	55	60	50	45	40	50	50	45	50	60	60
The third stud is used for self-tightening feed of 118.8, the cogs being in turn 20-45, 25-55, 20-60.																				

LATHE TOOLS.

Agrippa lathe tools are drop forged, and we know of none other so good. Small high speed cutters are used, and these can be ground to suit any particular work.

AGRIPPA TURNING TOOLS.

These are made straight, right or left—state which in ordering. The



X311.

ENGLISH PATTERN suits all lathes, but especially English lathes with high slide rests. One cutter with each tool.



X312.

X311 ENGLISH PATTERN 16 6
X312 ORDINARY PATTERN 16 6
X313 Extra cutters 9

AGRIPPA BORING TOOLS.

These also use high speed steel cutters, with which one is included.



X314 BORING TOOL 30 0
X315 Extra cutters 9

AGRIPPA CUTTING OFF TOOLS.

Designed for cutting through bars. The cutter is as thin as possible, to avoid waste.



X316 CUTTING OFF TOOL 17 6
X317 Extra cutters 4 0

EXPANSION BITS.

Two cutters, $\frac{1}{8}$ to $\frac{1}{4}$, and $\frac{1}{4}$ to $\frac{1}{2}$.



X223 7 6

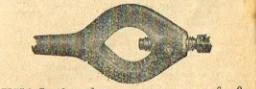
SMALL LATHE.

Small lathe tools have just arrived of a fine centre lathe similar to the Altona, but with some of the latter's refinements, whose price will be about £110. 10s.; screw cutting. Also of a 24-inch centre lathe, not screw cutting, at about £4.

LARGE LATHE QUOTED ON INDENT.

LATHE DOGS.

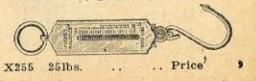
High class tools which grip securely and last for years.



X354 Lathe dog 6 0

BALANCES—Spring Pocket.

Brass face, galvanised hook.

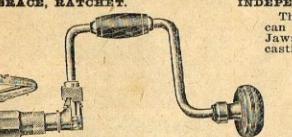


X255 25lbs. Price 1 0

EASY TERMS ON LARGER TOOLS.

EVERY HOME REQUIRES A KIT OF TOOLS.

BRACE, HATCHET.



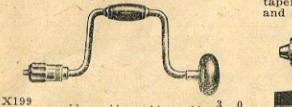
X269 Beautifully plated brace with solid forged steel jaws, and ball-bearing head. Suitable for the tool kit of any tradesman.

For use where a complete revolution is not possible.

X260 Price 9 6

BRACE.

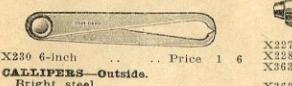
With adjustable chuck. Sweep 3 inches. Octagon sleeve.



X199 3 0

CALIPERS—Inside.

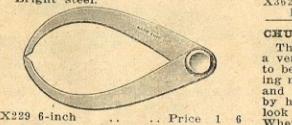
Bright steel.



X230 6-inch Price 1 6

CALIPERS—Outside.

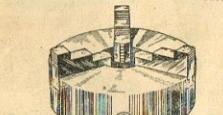
Bright steel.



X229 6-inch Price 1 6

CHUCKS.

CHUCKS—GUSHMAN PATTERN.



X268 0-5/16in. drills 1 16 0

These jaw chucks, supplied with two sets of jaws and key. Self-centering.

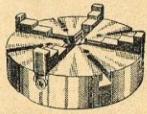
Back plate castings are included, in the rough, since chucks must always be fitted to the lathe on which they are used. We believe we are the only firm who include these castings in the price of the chuck.

X258 3in. diam. 2 0 0
X259 5/16in. diam. 2 10 0
X260 5in. diam. 3 0 0
X261 6in. diam. 3 15 0

Extra keys in stock. Back plate castings included.

INDEPENDENT.

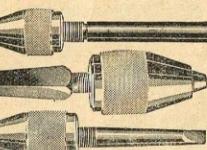
The jaws, of which there are four, can be moved one at a time only. Jaws are reversible. Back plate casting included.



X270 4in. diam. 3 10 0
X271 6in. diam. 4 10 0
X271 8in. diam. 5 10 0

DRILL CHUCKS—Three Jaws.

These chucks will hold round drills from $\frac{1}{8}$ in. down to the smallest size. The ordinary drill, while the No. 1 Morse taper shank will fit lathe heads, and some smaller drilling machines.



X327 Parallel shank, 6in. 6 0
X228 No. 1 Morse shank 6 6
X363 Square shank 7 6

X326 6in. round shank, chuck holds wood bits 3 9

CHUCKS—DRILL.

This chuck will save its cost in a very short time, where drills have to be frequently changed. The locking mechanism runs on ball-bearings, and so a firm grip can be obtained by slight pressure alone—no need to look for the key at each change. When the drill is adjusted, the harder the pressure the tighter the grip. Yet the chuck will readily unscrew when desired.



X326 0-5/16in. drills 1 16 0

These jaw chucks, supplied with two sets of jaws and key. Self-centering.

Back plate

castings

are included

in the rough

since chucks

must

always

be fitted

to the lathe

on which

they are

used

so that

they

will

not

get

damaged

in use.

Back plate

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in use.

Back plate

castings

are included

in the rough

since chucks

must

GIVE YOUR BOY A SET OF TOOLS.

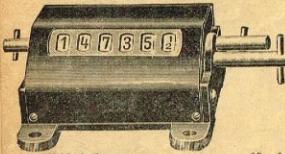
REVERSE.

Similar to Progress, but counts forwards and backwards. Fine for wire winding machines to speeds of 2000 revs.

X321 4 figure 42 0

GIANT.

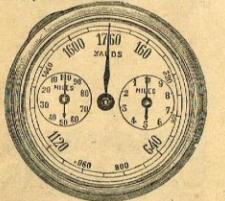
A robust, heavy duty counter, counting forwards and backwards, and at speeds to 5000 revs. per minute. Just the counter for factory machines of all kinds.



X322 6 figure 65 0

PEDOMETER.

A little instrument, like a watch, which tells you how far you walk. You will be astonished at the distance you actually do walk each day, even if you do not leave the house.



X323 Pedometer 27 0

COUNTERSINK.

Cuts metal, formica, ebonite, etc. Short round shanks small enough to fit hand drill.

X165 2 0

COUNTERSINKS.

Rose head, for metal or hard wood.

X224 Price 5

CRAMPS—Malleable Iron.

Black; swivel screw end.

X240 4 inch 2 0

X241 6 inch 3 0

CRESCENT TOOLS.

We are listing the CRESCENT TOOLS all together, thus upsetting somewhat the alphabetical order of the catalog. This is because CRESCENT make a very complete range of pliers, cutters, etc. of really first class quality, and the full range stocked with this authorizes all together. Crescent tools are fine tools, we cannot too strongly emphasize this. As authorised CRESCENT DEALERS we are empowered to replace or refund any CRESCENT TOOL that does not give satisfaction—the CUSTOMER to be the JUDGE. Crescent Company also control S. and H. Co., so that the latter trade mark is also used for Crescent tools.

BEARING SCRAPER.

For finishing bearings of cars, etc. This tool is something better than the usual, as it is designed for easy grinding.

CHISELS—WOOD.

Made of steel throughout, no wooden handle to break. Invaluable for electricians, farmers, carpenters.

X325 Chisel, wood, 3 in. 4 3

X326 Chisel, wood, 1 in. 4 9

X327 Chisel, wood, 13 in. 5 6

STAR DRILLS.

Best quality, for stone, brick or concrete. Fast cutting.

X324 Star drill, 3 in. 2 3

X325 Star drill, 1 in. 2 3

X326 Star drill, 13 in. 3 0

X327 Star drill, 3 in. 3 0

X328 Star drill, 1 in. 4 6

HACKSAW.

A heavy saw, adjustable 8 to 12 in. and 33 in. depth of cut, being 1 in. more than usual. One blade included.

X302 Hacksaw, 8-12 inch 7 9

HACKSAW BLADES.

Tungsten alloy steel, properly hardened and very durable. Length is eight inches, and blades are supplied in 18, 24, or 32 teeth per inch.

X303 Tungsten hacksaw blades en. 4d.; dz. 3 9

CENTRE PUNCHES.

A quality job for real mechanics.

X309 Centre punch, 5/16 in. 1 3

NAIL PULLERS—ECLIPSE.

Do not waste your time with inferior grade nail pullers—in business, time is money. Cheap low grade pullers simply cannot work well over a long period.

NAIL PULLERS—GIANT.

A very robust puller, with box chisel and strap cutter.

X310 Giant puller 15 0

NAIL PULLERS—ECLIPSE.

Forged steel jaws that do not break or chip.

X309 Eclipse puller 8 6

ACCUMULATOR PLIERS.

For battery service stations and motorist's kits. Bent nose pliers that shifts the most stubborn nuts.

X278 6 in. accumulator pliers, plated 6 0

X289 AS X278, lighter, for nuts, etc. 4 0

THIN NOSE PLIERS.

Thin blades, for bearing adjustment, etc. Slip joint, plated.

X282 Thin nose pliers, 5 in. 3 0

X283 Thin nose pliers, 6 in. 3 3

X280 AS X283, with cutters 4 6

CEE TEE CO. PLIERS.

Heavy duty pliers, for hard all round work.

X285 Cee Tee Co. pliers, 5 in. 9

X287 Cee Tee Co. pliers, 6 in. 2 9

X288 Cee Tee Co. pliers, 8 in. 9 0

MOTOR CAR PLIERS.

Should be in every motor kit. Heavy pattern, forged steel, with slip joint and wire cutter. Plated.

X284 Motor pliers, 5 in. 2 9

X285 Motor pliers, 6 in. 3 0

UNIVERSAL PLIERS.

Pliers, pipe tongs, side and double wire cutters, reamer and screwdriver.

X295 Universal pliers, 6 in. 4 6

SATISFIED CUSTOMERS—OUR BEST ADVERTISEMENT.

CROID.

A liquid glue of unrivaled tenacity. Used for sticking and repairing all kinds of material, and always ready for instant use from the collapsible tube.

Per tube 4d. and 5d.

CUTTER—
CIRCULAR.

Adjustable, cutting all size holes from 1/8 in. to 1 in. For mowers. This tool is practically essential for



this work. This tool, now much more costly, is very much improved.

X108 14 6

GIMLET BITS.

Cobra twist; screw point. Tough tool steel.

X220 6in. 6d X231 With handle 6d

X221 3/16 in. 6d X232 With handle 6d

X222 3/8 in. 6d X233 With handle 6d

TWIST DRILLS.

Everyone who uses tools of any kind appreciates a good twist drill. These drills will bore through wood, iron and other metals and materials, and there is no substitute for them if not handy when wanted.

X274 7 inch, cut 13 in. 6 0

X275 12 inch, cut 3 in. 9 0



X291 End cutting nippers, 6 in. 6 0

For cutting wires round cases, aerial wire, wire netting, etc. Cheap, but very powerful.

X297 Wire cutters, 5 1/2 in. 2 3

ADJUSTABLE WRENCH.

Forged from special wrench steel, hardened and tempered.

X292 Staple puller, 10 in. 9 9

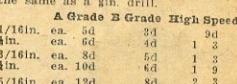
X298 Crescent wrench, 6 in. to 15/16 in. 4 9

X299 Crescent wrench, 8 in. to 15/16 in. 6 0

AUTO WRENCH.

Made from the finest forged steel, to give lasting service. This spanner will not ruin your nuts—or your temper.

X301 Auto wrench, 9 in. to 3 in. 5 0



GRADE B Grade C Grade D

1/16 in. ea. 3d 3d 3d

1/8 in. ea. 4d 4d 4d

3/16 in. ea. 5d 5d 5d

1/4 in. ea. 6d 6d 6d

5/16 in. ea. 8d 8d 8d

3/8 in. ea. 10d 10d 10d

7/16 in. ea. 12d 12d 12d

1/2 in. ea. 18d 18d 18d

5/8 in. ea. 24d 24d 24d

3/4 in. ea. 33d 33d 33d

1 in. ea. 40d 40d 40d

1 1/8 in. ea. 50d 50d 50d

1 1/4 in. ea. 60d 60d 60d

1 1/2 in. ea. 70d 70d 70d

1 3/4 in. ea. 80d 80d 80d

2 in. ea. 90d 90d 90d

2 1/2 in. ea. 110d 110d 110d

3 in. ea. 130d 130d 130d

3 1/2 in. ea. 150d 150d 150d

4 in. ea. 170d 170d 170d

4 1/2 in. ea. 190d 190d 190d

5 in. ea. 210d 210d 210d

5 1/2 in. ea. 230d 230d 230d

6 in. ea. 250d 250d 250d

6 1/2 in. ea. 270d 270d 270d

7 in. ea. 290d 290d 290d

7 1/2 in. ea. 310d 310d 310d

8 in. ea. 330d 330d 330d

8 1/2 in. ea. 350d 350d 350d

9 in. ea. 370d 370d 370d

9 1/2 in. ea. 390d 390d 390d

10 in. ea. 410d 410d 410d

10 1/2 in. ea. 430d 430d 430d

11 in. ea. 450d 450d 450d

11 1/2 in. ea. 470d 470d 470d

12 in. ea. 490d 490d 490d

12 1/2 in. ea. 510d 510d 510d

13 in. ea. 530d 530d 530d

13 1/2 in. ea. 550d 550d 550d

14 in. ea. 570d 570d 570d

14 1/2 in. ea. 590d 590d 590d

15 in. ea. 610d 610d 610d

15 1/2 in. ea. 630d 630d 630d

16 in. ea. 650d 650d 650d

16 1/2 in. ea. 670d 670d 670d

17 in. ea. 690d 690d 690d

17 1/2 in. ea. 710d 710d 710d

18 in. ea. 730d 730d 730d

18 1/2 in. ea. 750d 750d 750d

19 in. ea. 770d 770d 770d

19 1/2 in. ea. 790d 790d 790d

20 in. ea. 810d 810d 810d

20 1/2 in. ea. 830d 830d 830d

21 in. ea. 850d 850d 850d

21 1/2 in. ea. 870d 870d 870d

22 in. ea. 890d 890d 890d

22 1/2 in. ea. 910d 910d 910d

23 in. ea. 930d 930d 930d

23 1/2 in. ea. 950d 950d 950d

24 in. ea. 970d 970d 970d

24 1/2 in. ea. 990d 990d 990d

25 in. ea. 1010d 1010d 1010d

25 1/2 in. ea. 1030d 1030d 1030d

26 in. ea. 1050d 1050d 1050d

26 1/2 in. ea. 1070d 1070d 1070d

27 in. ea. 1090d 1090d 1090d

27 1/2 in. ea. 1110d 1110d 1110d

28 in. ea. 1130d 1130d 1130d

28 1/2 in. ea. 1150d 1150d 1150d

29 in. ea. 1170d 1170d 1170d

29 1/2 in. ea. 1190d 1190d 1190d

30 in. ea. 1210d 1210d 1210d

30 1/2 in. ea. 1230d 1230d 1230d

31 in. ea. 1250d 1250d 1250d

31 1/2 in. ea. 1270d 1270d 1270d

32 in. ea. 1290d 1290d 1290d

32 1/2 in. ea. 1310d 1310d 1310d

33 in. ea. 1330d 1330d 1330d

33 1/2 in. ea. 1350d 1350d 1350d

34 in. ea. 1370d 1370d 1370d

34 1/2 in. ea. 1390d 1390d 1390d

35 in. ea. 1410d 1410d 1410d

35 1/2 in. ea. 1430d 1430d 1430d

36 in. ea. 1450d 1450d 1450d

36 1/2 in. ea. 1470d 1470d 1470d

37 in. ea. 1490d 1490d 1490d

37 1/2 in. ea. 1510d 1510d 1510d

38 in. ea. 1530d 1530d 1530d

38 1/2 in. ea. 1550d 1550d 1550d

39 in. ea. 1570d 1570d 1570d

39 1/2 in. ea. 1590d 1590d 1590d

40 in. ea. 1610d 1610d 1610d

40 1/2 in. ea. 1630d 1630d 1630d

41 in. ea. 1650d 1650d 1650d

41 1/2 in. ea. 1670d 1670d 1670d

42 in. ea. 1690d 1690d 1690d

42 1/2 in. ea. 1710d 1710d 1710d

43 in. ea. 1730d 1730d 1730d

43 1/2 in. ea. 1750d 1750d 1750d

44 in. ea. 1770d 1770d 1770d

44 1/2 in. ea. 1790d 1790d 1790d

45 in. ea. 1810d 1810d 1810d

45 1/2 in. ea. 1830d 1830d 1830d

46 in. ea. 1850d 1850d 1850d

46 1/2 in. ea. 1870d 1870d 1870d

47 in. ea. 1890d 1890d 1890d

47 1/2 in. ea. 1910d 1910d 1910d

48 in. ea. 1930d 1930d 1930d

48 1/2 in. ea. 1950d 1950d 1950d

49 in. ea. 1970d 1970d 1970d

49 1/2 in. ea. 1990d 1990d 1990d

50 in. ea. 2010d 2010d 2010d

50 1/2 in. ea. 2030d 2030d 2030d

51 in. ea. 2050d 2050d 2050d

51 1/2 in. ea. 2070d 2070d 2070d

52 in. ea. 2090d 2090d 2090d

52 1/2 in. ea. 2110d 2110d 2110d

OUR CUSTOMERS BECOME OUR FRIENDS.

ADJUSTABLE SPANNER.

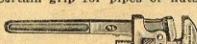
C.T. pattern. Very handy for car work and many odd jobs.



X189 6 inch	2 6
X190 8 inch	3 0

STILLSON PATTERN WRENCHES.

Certain grip for pipes or nuts.



X192 14 inch	5 3
--------------	-----

ADJUSTABLE SPANNER.

Wood handle. For heavy work on the farm.



X191 8 inch	2 9
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SQUARES—Carpenter's.

All metal; polished blades, graduated in 1/8th; both sides; nickelated. Fitted 45 degree mitre also.



X214 10-inch	4 6
--------------	-----

SQUARES—Engineer's.

All metal; forged steel; polished. Graduated 1/16th. and 1/8in.

X215 3 inch	2 0
X216 6 inch	2 6

X217 6 inch	3 0
-------------	-----

RESIN-KOR SOLDER.

Bronze based. Highest grade, and used by Government for telephone exchange work, etc.

1lb. (approx. 35ft.)	4 6
8ft. length	1 6

KESTER RESIN CORE SOLDER.	
5lb. 1lb. reels (28ft. approx.)	5 6

5lb. 1lb. reels (28ft. approx.)	5 6
---------------------------------	-----

PEERLESS FLUX.

A clean, non-corrosive flux.



S107 Per tin	1 0
--------------	-----

WELL MADE.

A new flux, which enables soldering to be done easily and with certainty. Although cheaper than others, it is excelled by none.

S174 Per tin	9
--------------	---

SOLDERING IRONS.



For Radio work a light soldering iron is almost necessary. For heavier work, the larger irons listed will be found entirely satisfactory.

X141 Midsize	1 0
X145 Small	3 0

X144 Heavy	3 0
------------	-----

JUSTRITS SOLDERING IRONS.

The convenience of the electric iron is so thoroughly appreciated, especially for Radio, and small repairs, that it is sadly missed in places where there is no current.

The iron is fitted with petal lights only, and in three minutes is ready for soldering. It burns about an hour on one filling. Obtainable with ordinary or fine screwdriver point. All Radio mechanics must have one of these.



X327 Justrits, ordinary point	21 0
X328 Justrits, screwdriver pt.	21 0

Extra points, either style

1 8

ELECTRIC SOLDERING IRONS.

See ELECTRIC FITTINGS.

STOCKS AND DIES.

For ordinary apparatus we recommend the U.S.A. sizes—2/56, 3/48, 4/36, 5/32, 8/32, and 10/32 as covering all the work that is likely to be required. In fact, for Radio use, 4/36, 6/32, and 8/32 cover practically all requirements.

The above standards we carry a full range of screws, nuts, wing nuts, cap nuts, knurled nuts, washers, lock washers, and also threaded rod. This gives your work a wonderful scope.

STOCKS.

Made to fit either English or U.S.A. dies, 1/16in. diameter, this being a standard for smaller threads.



X149 English pattern	3 6
X148 U.S.A. pattern	6 0

DIES (13/16 Rnd.).



Made to fit above stocks, quality only.

X150 U.S.A., 2/56, 3/48, 4/36, 5/32, 8/32, 10/32; each	4 0
--	-----

X151 English Whitworth, 1/16, 1/8, 5/32, 3/16, 1/4; each	2 3
--	-----

X152 English, B.A., 9 to 10	2 3
-----------------------------	-----

ENGINEERS' STOCKS AND DIES.

Whitworth thread, with taper and plug taps to each size.



X225 1/8, 1/4, 1/2, 1	Price 12 0
-----------------------	------------

X226 1/4, 3/8, 1/2, 1	18 0
-----------------------	------

TAPS.



X153 U.S.A. 2/56, 3/48, 4/36, 6/32, 8/32, 10/32; each	1 8
---	-----

X154 English, Whitworth, 1/16 to 1/4; each	1 3
--	-----

X155 English, B.A., 9 to 16	1 3
-----------------------------	-----

TAP WRENCH.



This wrench is made for holding tines and broken taps. U.S.A. made.

X156	5 6
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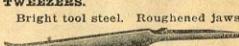
TIN SNIPS.



All steel. Half bright blades.

X212 8 inch	2 6
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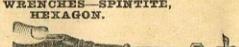
TWEEZERS.



Bright tool steel. Roughened jaws.

X256	6
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WRENCHES—SPINTITE, HEXAGON.



Enables nuts awkwardly situated to be thoroughly tightened with the greatest ease, and without damage. Save enormous amount of time on all nuts.

X162 Hexagon, set of 3	6 0
------------------------	-----

WRENCHES—SPINTITE, ROUND.



Made to fit round milled nuts.

X163 Round, set of 3	6 0
----------------------	-----

MAKE ELECTRICITY WORK FOR YOU.

ADAPTORS—LIGHT AND POWER.

Fitted with a switch, enabling the enabling the Radio, vacuum cleaner, or another light to be left on.

Both are made of bakelite, but the Powerlite has the more convenient switch as it is very readily operated by one hand.



E135 Bakelite adaptor	9
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E215	6 0
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E112	6 9
------	-----

TRIPOINT.

Consists of E190 plug and adapter, a length of twin flex and a beautifully finished bakelite moulding, fitted with three sockets to suit E190 or E121. Two screw holes enable it to be secured to the wall or table. Its insulation is perfect, it has no metal parts exposed, and it enables, say, a reading lamp, Radio and fan to be operated simultaneously.



E111 Brass	each 4 6
------------	----------

E226	each 4 6
------	----------

E226, double adapter, fitted with hanging cord and a four way special bakelite cord switch, enabling either lamp, or both, to be lighted. A very useful device.

E259	7 6
------	-----

ADAPTOR—DOUBLE EDISON.

This is made of porcelain fitting only the Edison screw lamp holders.

E131	2 0
------	-----

ADAPTOR, TRIPLE.

Special triple adapter bakelite fitting the plug that usually accompanies American apparatus. Enables three wires to be used instead of only one. Fits E132 or E180.

E179 Triple adaptor	2 0
---------------------	-----

E190 or E191 Plug	each 1 0
-------------------	----------

ADAPTOR and PLUGS—EDISON.

The above new adaptor fits American (Edison) lamp holders (also our E228 adaptor), standard plugs then the plug to the adaptor.

The GRIPTOR BAKELITE PLUG, the most convenient grip, saves the grip of the cord. The rubber plug will not scratch furniture when used in your best rooms.

E192	4 0
------	-----

E227 GRIPTOR PLUG

E227	1 3
------	-----

E199 Plug only, bakelite	1 0
--------------------------	-----

E191 Plug only, rubber	1 0
------------------------	-----

E192 Screw part only	6
----------------------	---

E228	ea. 3 0
------	---------

E229	ea. 3 0
------	---------

E146 Gong, 2 3in.	4 0
-------------------	-----

E147 Gong, 3in.	5 0
-----------------	-----

FLASHADAPTOR.

A triple adaptor, for Christmas trees, signs, etc. The two sides outlets have a flasher in them, causing the lights to flash on and off.



E231 FLASHADAPTOR	5 0
-------------------	-----

LECLANCHE BATTERIES.

The universal favourite for ringing bells, working telephones and other jobs where intermittent current is required. Uses sal ammoniac, 2oz. to the pint of water. The jar being filled two-thirds.



E213 Complete	3 6
---------------	-----

E224 Zinc rod only	1 9
--------------------	-----

E221 Glass jar only	1 6
---------------------	-----

E223 Sal ammoniac	1b. 6
-------------------	-------

BELLS AND BUZZERS.

These electric bells will be found quite reliable. They are easily installed requiring only two or three No. 6 dry batteries to operate them, and a bell push.

Where a quieter signal is desired, buzzers are installed, these being similar to the bells, but without the gong.

Where alternating current is available, buzzers may be operated from the mains through a transformer costing only a few shillings. This eliminates all battery troubles, and guarantees the most efficient working.

IRON BELLS.

Schwarz iron bells are not affected by weather changes. The gongs are musical and the hammers are nearly concealed from view. Long service is assured.



ASK US ABOUT ANYTHING ELECTRICAL.

BELLS—Continued.



E148 Tea going, 2½in. 6 0

WOOD BELLS.

G.E.C. magnet, wood base, 2½in. gong.



E161 Ordinary quality 5 0

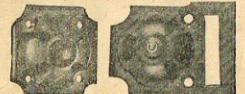
BUZZERS.

E149 Buzzer similar to E146 3 9

BELL PUSHES.

BAKELITE BELL PUSH.

A very neat bakelite switch, in two patterns. The thinner plate pattern can be fitted with an engraved slip of Formica or Iverine at slight extra price.

E222 Bakelite push, ordinary 6
E223 Bakelite push, nameplate 6E150 Bakelite, push, round 6
P169 Wood push 1 0
Cheap but quite effective.

BRASS PUSHES.

Nickelled or bronzed finish. A very handsome bell push that carries dignity with it.

P170 Brass push, round, concave 6
P171 Brass push, oblong 6

MOTORORN PUSHES.

Heavy, rugged pushes for motor and motor cycle horns and similar purposes. Very fine action.

P156 Senior 4 6

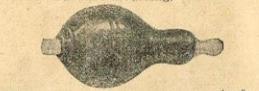
P157 Medium type 3 0

P158 Junior 2 6

P159 Junior type, with handle bar clamp 4 0

PEAR PUSHES.

Used where the bell wires hang from the ceiling, or where the push must be moved about, as in a sick room. Bakelite moulding.



E160 1 9

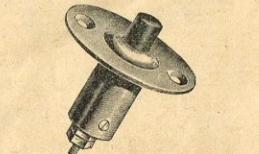
Rosette to match 1 0

MIDGET PUSHES.

A full range of pushes, with small, well-constructed and very neat barrel movements. For bells, meters, radio sets, combination meters, etc. State whether for thin metal plates or panels to 1½in.

Buttons black, white, red or green. The complete push includes a nickel plated plate.

COMPLETE MIDGET PUSHES.



E135 Each 2 0

CUT-OUTS.

For charging accumulators on cars, or from milking machines or other engines. When speed drops or engine stops this automatically switches off the accumulator, preventing damage to it. Suitable for all cars, etc.



E268 Cut-out 5 6

FUSES.

As used in all American cars. Best quality. Always keep a few by you.

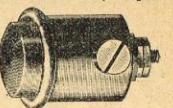
10, 15, 20 or 30 amps.—state which.

E194 Fuse 6d.



RADIO FUSES—See RADIO Section.

PUSH MOVEMENTS (less plates)



P167

P168 Midget for thin plates 1 6

P161 Midget, for thick panels 1 6

P166 MEDIUM type 1 6

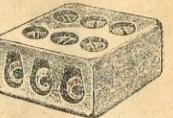
P167 LARGE type 2 0

P168 HIGH TENSION PUSH

Midget for voltage up to 250, but suitable also for ordinary bell work 2 6

CONNECTORS—PORCELAIN.

Brass connectors, held in porcelain



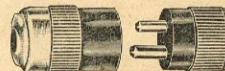
C142 One way 2d. 1 9

C143 Two way 3d. 2 6

C245 Three way 4d. 3 6

CONNECTORS.

Small two pin connectors, for loud speaker extensions, etc. Polarized.

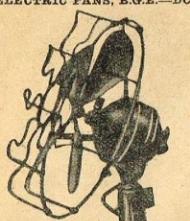


E136 Each 2 0

ELECTRIC FANS, B.G.E.—DC or AC.

HOT WATER JUGS.

These porcelain jugs, fitted with rapid boiling elements, have proved very successful indeed. They are perfectly safe, since the lids cannot be opened while the current is on. Every bit of heat goes into the water. For alternating current only. Elements are definitely guaranteed, and are readily renewable in any case.



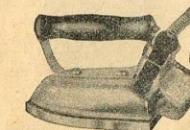
E269 Electric fan, 12in. £3 3 3

E210 Electric fan, oscillating 4 13 6

ELECTRIC IRONS—230 or 32 volt.

The EAGLE IRON is set with a double amount of wire, in a well-finished, nickel plated iron, complete with best connector, asbestos covered cord, and plug.

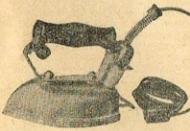
The heating element—the life of the iron—is wound on best iron, with nichrome wire, and it will last for years. Spare elements stocked.



E185 Eagle iron 27 0

MAGNET' IRON.

Balanced weight, comfortable grip. 64lbs. Element guaranteed for three years. With connector and cord.



E207 Magnet iron 1 5 0

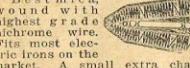
IRON ELEMENTS—230 Volts.

Best mica, with a high grade of nichrome wire. Fits most electric irons on the market. A small extra charge is made for fitting to your iron.

E195 5lb. size 7 6

E196 6lb. size 7 6

E197 32 volt or 110 volt 8 6



ELECTRICITY FOR HEATING.

LAMPS—OSRAM

Electric lighting now extends to all quarters of the globe. It is safe to say that OSRAM lamps are known wherever electric current is available. British made, of uniform excellence.

METAL FILAMENT.

Very durable, giving approximately one candle power per watt.

L178 20 watt 2 5

L179 40 watt 2 3

L180 60 watt 2 3

L181 100 watt 2 3

L182 150 watt 5 6

L183 200 watt 7 6

L184 240 watt 10 0

L220 300 watt 14 0

L221 500 watt 20 0

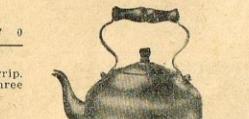
L222 1000 watt 40 0

L223 "Control," 2 pts. approx. 33 0

E224 "Thermal," 5 pts. 42 0

MAGNET ELECTRIC KETTLES.

A beautifully nickel plated kettle, made in two sizes. Fitted with safety fuse, preventing damage to element if kettle boils dry. Guaranteed.



E212 Magnet kettle, 2 pints 2 5 0

E223 Magnet kettle, 3 pints 3 0 0

CARBON LAMPS, 230 volt.

Used in places where several lamps may be required. They are not efficient for lighting. As resistances for charging from D.C. mains they are invaluable.

L234 50 c.p. lamp 2 9

L235 32 c.p. lamp 2 9

OSGLIM LAMPS.

Useful for night lights, where little illumination is required, but far more useful to the experimenter, since they are a form of source for radio, microphones, lamps, flashlight bulbs, condensers, coils, circuits, an OSGLIM is simply invaluable. Made to fit ordinary bayonet holder. Current lighting is practically negligible.

The actual light is in the form of a letter or number, any of which can usually be supplied. 230 volts.

L216 OSGLIM LAMP 4 3

DECORATION LAMPS.

For Christmas trees, shop windows, birthday parties, etc.

The lamps themselves resemble birds, flowers or fruit, and form a very attractive display. They are sold in sets of 16, with cord and adaptor, ready to connect to your ordinary 230 volt supply.

E222 Decoration lamps, set £2 5 0

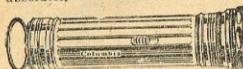
TORCHES.



COLUMBIA BATTERY and EDISON-MAZDA BULB is included with each torch. We do not use cheap batteries and bulbs in order to make a few pence more in profit.

FOCUSING.

Fitted with special bulbs and reflectors, these torches can be instantly adjusted to throw a concentrated beam of light on any object within their range. Thus for observing things at a distance, they are absolutely invaluable.

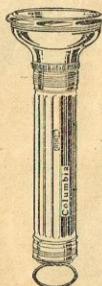


TWO CELL, SMALL REFLECTOR. Range 300 feet.

Length 6 1/2in. Battery Z112. Bulb Z112 (1271) Black ... 11 9
Z124 (1273) Nickel ... 13 0

TWO CELL, SMALL REFLECTOR. Range 400 Feet.

Length 8 1/2in. Battery Z113. Bulb Z117 (1272) Black ... 17 3
Z124 (1273) Nickel ... 18 6



THREE CELL, LARGE REFLECTOR. Range 800 Feet.

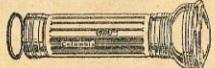
Length 10in. Battery Z113. Bulb Z117 (1242) Black ... 21 0
Z128 (1244) Nickel ... 23 0

FIVE CELL, LARGE REFLECTOR. Range 1500 Feet.

This is made in nickel only, and is the most powerful obtainable. It uses five unit cells (Z136) and a special focusing bulb (Z141). Z130 (1245) Nickel ... 30 0



SEARCHLIGHTS.



TWO CELL, SMALL.

Length 5 1/2in. Battery Z111. Bulb Z115 ...
Z118 (1268) Black ... 8 3
Z119 (1261) Nickel ... 9 0

Z125 Small unit cell (4935) ... 8
Z111 Small two cell (4791) ... 1 4
Z136 Large unit cell (4950) ... 8
Z112 Large two cell (4790) ... 1 4
Z120 Large three cell (4792) ... 2 6
Z121 (1234) Nickel ... 11 6
Z134 Flat three cell (4705) ... 1 9

TWO CELL, LARGE.

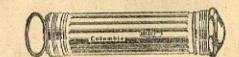
Length 6 1/2in. Battery Z112. Bulb Z115 ...
Z120 (1219) Black ... 12 3
Z123 (1233) Nickel ... 13 6

THREE CELL, LARGE.

Length 8 1/2in. Battery Z113. Bulb Z116 ...
Z124 (1271) Black ... 11 9
Z125 (1273) Nickel ... 13 0

ORDINARY PATTERN.

This has a reflector the same size as the torch, and is the most convenient for carrying.



TWO CELL SMALL.

Length 5 1/2in. Battery Z111. Bulb Z115 ...
Z120 (1202) Black ... 6 9
Z101 (1230) Nickel ... 7 9

TWO CELL, LARGE.

Length 6 1/2in. Battery Z112. Bulb Z115 ...
Z120 (1204) Black ... 8 0
Z103 (1231) Nickel ... 9 0

THREE CELL, LARGE.

Length 8 1/2in. Battery Z113. Bulb Z115 ...
Z105 (1212) Black ... 9 9
Z106 (1232) Nickel ... 11 0

SUNBEAM NICKELLED TORCHES.

A good nickelled flashlight, similar in shape to the Columbia and taking the standard batteries. The switch is arranged for flashing, or it can be locked for continuous light. The SUNBEAM TORCH must not be judged by its price. It is a really good torch which cannot fail to give satisfaction. All complete with Columbia batteries, and Edison Mazda bulbs.

The SUNBEAM TORCH must not be judged by its price. It is a really good torch which cannot fail to give satisfaction. All complete with Columbia batteries, and Edison Mazda bulbs.



Z137 TWO CELL SMALL ... 6 0
Z138 TWO CELL, LARGE ... 7 6
Z139 TWO CELL FOCUSING ... 10 6
Z140 TWO CELL FOCUSING, large reflector ... 12 6

TORCH BATTERIES.

Only COLUMBIA are stocked, since they have proved the most reliable, and therefore the cheapest in use.



Z135 Small unit cell (4935) ... 8
Z111 Small two cell (4791) ... 1 4
Z136 Large unit cell (4950) ... 8
Z112 Large two cell (4790) ... 1 4
Z120 Large three cell (4792) ... 2 6
Z134 Flat three cell (4705) ... 1 9

TORCH BULBS.



EDISON-MAZDA metal filament bulbs are best for all torches. They give maximum amount of light, with a minimum amount of current. Cheap bulbs run your batteries down very quickly.

ORDINARY.

Z115 Two cell, 2.5 volt ... 1 6
Z116 Three cell, 3.8 volt ... 1 0

FOCUSING.

Z114 Two cell, 2.5 volt focus ... 1 3
Z117 Three cell, 3.8 volt focus ... 1 3
Z141 Five cell, 6.2 volt focus ... 1 3

BURGESS SNAPLITE.

A tiny flashlight, the illustration showing the snaplite. Simply snap the top open, and it lights—snap it shut, and the light is off.

BURGESS SNAPLITE.

A tiny flashlight, the illustration showing the snaplite. Simply snap the top open, and it lights—snap it shut, and the light is off. The BURGESS TORCH must not be judged by its price. It is a really good torch which cannot fail to give satisfaction. All complete with Columbia batteries, and Edison Mazda bulbs.

The BURGESS TORCH must not be judged by its price. It is a really good torch which cannot fail to give satisfaction. All complete with Columbia batteries, and Edison Mazda bulbs.



Z142 Snaplite, complete ... 2 6
Z143 Battery refill ... 2 6

ELECTRIC GRAMPHONES ARE BEST.

GRAMO. FITTINGS.

The Radio valve has entirely revolutionised the GRAMOPHONE INDUSTRY, both in the actual making of records, and in their reproduction.

Formerly, when records were being made, it was necessary to take great care in the arrangement in front of the large recording horns. No method existed of actually increasing musical sounds.

To-day, the artists are able to have plenty of room for each if necessary could use a separate microphone. The "output" from each artist can be modified, and whole performances mixed to give a particular predominance. Radio valves finally increase the volume, so a really deep groove is cut on the record.

In reproducing, Radio valves can enable volume to be increased as much as wanted. The old complicated horns have disappeared.

True to the electric gramophone of to-day is a marvellous instrument.

Your Radio can be used as an electric gramophone—see under Pick-ups for further details.

Little cost is involved, and very good results are easily obtained.

GRAMO MOTORS.

All gramophone motors are supplied complete with turntable, and, where necessary, with governors and speed controls.

The electric motors can usually be made to suit different voltages, by adjustment, but please state your voltage in ordering.

B.T.H. ELECTRIC—A.C. or D.C.

Made by one of the oldest and largest firms in England, communication type, made chiefly for D.C., but working equally well on A.C. A reliable motor.

All are complete with turntable, brake, speed indicator, winding handle, escutcheon plate, screws, etc.

The springs are contained in a

separate unit, which can be detached in a few seconds, without dismantling the motor or any part of the motor.

This makes the fitting of new springs a much easier job.

GARRARD SUPER.

Without question the finest motor made to-day. All working parts are solidly and completely enclosed in a metal frame, not only preventing accidental damage, but also preventing every trace of dust. To ensure perfect lubrication, a patent oil pump is fitted, so that every part is efficiently oiled, with the minimum of attention.

Turntable, 12in. plinth.

It will play three 12-inch records,

having run long, strong springs.

A central plug is incorporated,

with starter and speed indicator

already fitted in place. No difficulty

is involved in fitting to cabinet.

PAILLARD ELECTRIC.

A beautifully made motor by a famous Swiss firm. Induction type, with a single speed, included automatic stop. Two sizes, each of which

can be supplied with or without

plated mounting plate.

GARRARD 230 Volts, A.C.

On Garrard motors, the gears are accurately cut, to ensure smooth and, where necessary, with governors and speed controls.

The electric motors are usually

made to suit different voltages,

by adjustment, but please state your

voltage in ordering.

GARRARD 11—TWO SPRING.

Plays three 12 inch records.

GARRARD 12—TWO SPRING.

Plays three 12 inch records.

GARRARD 11—SINGLE SPRING.

Plays two 12 inch records.

GARRARD 12—SINGLE SPRING.

Plays two 12 inch records.

GARRARD 11—THREE SPRING.

Plays two 12 inch records.

GARRARD 12—THREE SPRING.

Plays two 12 inch records.

GARRARD 11—FOUR SPRING.

Plays two 12 inch records.

GARRARD 12—FOUR SPRING.

Plays two 12 inch records.

GARRARD 11—FIVE SPRING.

Plays two 12 inch records.

GARRARD 12—FIVE SPRING.

Plays two 12 inch records.

GARRARD 11—SIX SPRING.

Plays two 12 inch records.

GARRARD 12—SIX SPRING.

Plays two 12 inch records.

GARRARD 11—SEVEN SPRING.

Plays two 12 inch records.

GARRARD 12—SEVEN SPRING.

Plays two 12 inch records.

GARRARD 11—EIGHT SPRING.

Plays two 12 inch records.

GARRARD 12—EIGHT SPRING.

Plays two 12 inch records.

GARRARD 11—NINE SPRING.

Plays two 12 inch records.

GARRARD 12—NINE SPRING.

Plays two 12 inch records.

GARRARD 11—TEN SPRING.

Plays two 12 inch records.

GARRARD 12—TEN SPRING.

Plays two 12 inch records.

GARRARD 11—TWELVE SPRING.

Plays two 12 inch records.

GARRARD 12—TWELVE SPRING.

Plays two 12 inch records.

GARRARD 11—FOURTEEN SPRING.

Plays two 12 inch records.

GARRARD 12—FOURTEEN SPRING.

Plays two 12 inch records.

GARRARD 11—SIXTEEN SPRING.

Plays two 12 inch records.

GARRARD 12—SIXTEEN SPRING.

Plays two 12 inch records.

GARRARD 11—EIGHTEEN SPRING.

Plays two 12 inch records.

GARRARD 12—EIGHTEEN SPRING.

Plays two 12 inch records.

GARRARD 11—TWENTY SPRING.

Plays two 12 inch records.

GARRARD 12—TWENTY SPRING.

Plays two 12 inch records.

GARRARD 11—TWENTY-THREE SPRING.

Plays two 12 inch records.

GARRARD 12—TWENTY-THREE SPRING.

Plays two 12 inch records.

GARRARD 11—TWENTY-SIX SPRING.

Plays two 12 inch records.

GARRARD 12—TWENTY-SIX SPRING.

Plays two 12 inch records.

GARRARD 11—TWENTY-NINE SPRING.

Plays two 12 inch records.

GARRARD 12—TWENTY-NINE SPRING.

Plays two 12 inch records.

GARRARD 11—THIRTY-ONE SPRING.

Plays two 12 inch records.

GARRARD 12—THIRTY-ONE SPRING.

Plays two 12 inch records.

GARRARD 11—THIRTY-THREE SPRING.

Plays two 12 inch records.

GARRARD 12—THIRTY-THREE SPRING.

Plays two 12 inch records.

GARRARD 11—THIRTY-FIVE SPRING.

Plays two 12 inch records.

GARRARD 12—THIRTY-FIVE SPRING.

Plays two 12 inch records.

GARRARD 11—THIRTY-EIGHT SPRING.

Plays two 12 inch records.

GARRARD 12—THIRTY-EIGHT SPRING.

Plays two 12 inch records.

GARRARD 11—FORTY SPRING.

Plays two 12 inch records.

GARRARD 12—FORTY SPRING.

Plays two 12 inch records.

GARRARD 11—FORTY-TWO SPRING.

Plays two 12 inch records.

GARRARD 12—FORTY-TWO SPRING.

Plays two 12 inch records.

GARRARD 11—FORTY-FOUR SPRING.

Plays two 12 inch records.

GARRARD 12—FORTY-FOUR SPRING.

Plays two 12 inch records.

GARRARD 11—FORTY-SIX SPRING.

Plays two 12 inch records.

GARRARD 12—FORTY-SIX SPRING.

Plays two 12 inch records.

GARRARD 11—FORTY-EIGHT SPRING.

Plays two 12 inch records.

GARRARD 12—FORTY-EIGHT SPRING.

Plays two 12 inch records.

GARRARD 11—FORTY-NINE SPRING.

Plays two 12 inch records.

GARRARD 12—FORTY-NINE SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-ONE SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-ONE SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-TWO SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-TWO SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-THREE SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-THREE SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-FOUR SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-FOUR SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-FIVE SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-FIVE SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-SIX SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-SIX SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-SEVEN SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-SEVEN SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-EIGHT SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-EIGHT SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-NINE SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-NINE SPRING.

Plays two 12 inch records.

GARRARD 11—FIFTY-TWO SPRING.

Plays two 12 inch records.

GARRARD 12—FIFTY-TWO SPRING.

Plays two 12 inch records.

USE ONLY A GOOD PICK-UP.

AUTOMATIC RECORD PLAYERS.

These machines enable a number of records to be played in succession, without any attention. Full details available later, price being about £25. for apparatus, including electric gramo, motor.

HOME RECORDING.

Special records and needles are now being made which enable a good Radio to be used for record making at home. Details will probably be available by the time this catalogue reaches you, and your enquiries will be welcomed.

GRAMO. PICK-UPS.

Electrical gramophone pick-ups are usually made with a needle much as an ordinary reproducer. Instead, however, of creating sound waves, they generate electric alternations, which may then be easily amplified in an amplifier, and finally turned again into sound waves by a good speaker.

Pick-ups are similar to-day that all the best gramophones use them. You can use one with your Radio, or with one of the amplifiers described in this list. See under Amplifiers, on page 51, for details.

Pick-ups are usually fitted with volume controls, enabling any volume from a mere whisper to full band strength to be obtained at will.

B.T.H.

British—and a marvellously good pick-up, simply because it makes music so exactly like the original. Volume control, perhaps not so great as with some other pick-ups, is quite sufficient for theatre work, and large numbers are used for this purpose.

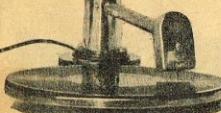
Owing to the peculiar needle movement record wear is reduced to an absolute minimum, and this is furthered by the balanced tone arm, gold finished, and the offset end, making the needle track accurately. Separate volume controls are fitted. Head swings inwards, enabling heads to be readily changed.



G150 R.T.H. pick-up ... £4 7 6
G155 Less volume control 4 0 0
G156 B.T.H. head only ... 2 0 0

HYDRO PICK-UPS.

An automatic pick-up, embodying many years of experience. Gives really fine results. Complete with tone arm and volume control. Actually improved with use. No scratch filter required. Higher priced than usual, but worth the extra.



G195 Hydro pick-up ... £8 10 0

PRESTO PICK-UPS.

Special theatre pick-ups with long arms. Tone is a revelation. Those who want the best for home use are recommended to try the Presto.

The arm is long enough for 16 inch records, and the Presto is, of course, designed for talkie, theatre and cabaret use.

VOLUME control included. G177 Presto theatre pick-up £10 10 0

WEBSTER.

A well-known U.S.A. pick-up.

Model 2A has tone arm, incorporating a volume control, while Model 2B is without tone arm, but with separate volume control.

G168 Webster Model 2A ... £4 15 0
G169 Webster Model 2B ... 3 15 0

PHILIPS PICK-UP.

G174 With tone arm, and volume control ... £5 5 0

GRAMOPHONE REPAIRS, MAIN-SPRINGS, ETC. quoted on application.
See CABINET FITTINGS FOR OTHER ACCESSORIES.

VOLUME CONTROLS.

These are connected between the pick-up and the Radio or amplifier, giving full control over the volume, a simple affair, and a full range power possible—merely by turning a knob.

For illustrations, see ROYALTY and ROYAL GIANT RESISTANCES. The usual size is 500,000 ohms.

ROYALTY VOLUME CONTROL.

This is type L Royalty, resistance being 500,000 ohms.

R262 Royalty volume control 7 6
R243 Table type 13 6

REPRODUCERS.

We now have a very large sample range of TONE ARMS and REPRODUCERS.

You can improve your machine wonderfully with a modern tone arm and reproducer.

NOVATONE TONE ARM.

This is something very special, and will make a vast improvement in any gramophone fitted with the older style tone arm. Its novel construction enables it to act like the exponential horn, so well known and successful in Radio.

Arrange for a trial—you will not be asked to keep it, unless you are quite sure that you want it.

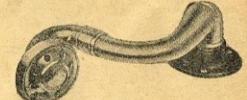
English made—ball bearing—nickel plated.



G164 Novatone tone arm ... £1 16 0

DURO REPRODUCERS AND TONE ARMS.

Duro reproducers are very popular in U.S.A., and are fitted to many expensive and well-advertised machines. Strongly constructed, with due care to the production of really fine tonal results, and smoothly nickel plated.



G125.

DURO QUALITONE, MATCHED.

A reproducer that is generally sold with its own matched tone arm, thus assuring the best results. It will give better results than your present reproducer, however, even on your own tone arm. A trial will be gladly arranged.

G123 Reproducer and tone arm ... £2 8 0
G126 Reproducer only ... 1 5 0
G127 Tone arm only ... 1 5 0

SIMPLEX.

Develops a remarkably clear and melodious tone. Can be supplied either alone or with tone arm. Very suitable for portable machines. Beautifully nickel plated.

G128 Reproducer and tone arm ... 1 4 0
G129 Reproducer only ... 12 9
G130 Tone arm only ... 12 9

TONE ARMS—Brass Plated.

Similar in shape to G125, but made in three grades—No. 1 plain bearing—No. 2 with a low ball bearing—No. 3 is extra heavy, ball bearing, for best machines.

G181 Tone arm No. 1 ... 9 9
G182 Tone arm No. 2 ... 12 9
G183 Tone arm No. 3 ... 21 9

NOVAVOX REPRODUCER.

The best low-priced reproducer. Sturdy construction, excellent finish, and splendid tone. Marvelous value. G184 Novavox reproducer ... 7 6

GRAMOTROPE.

This converts your Radio into an electric gramophone, so that you can either enjoy Radio concerts, or play your favourite records at will.

It consists of a cabinet fitted with a suitable gramophone motor and pick-up, which is connected to your Radio by a speaker cord.

In actual use, this will be found far more convenient than the combination Radio-gramophone, for with the latter you must constantly leave your Radio to attend to it. You merely place the Gramotrope alongside you, with your selected records, and run through them in absolute comfort. You can even play the from the next room.

Results, of course, are exactly equal—the Gramotrope is NOT a substitute.

FREE TO YOU!

EACH WEEK FOR ONE MONTH.

SEND to us a copy of the letter below and we will post direct to your home a copy of the "Radio Record and Home Journal."

YOU may judge how useful and pleasant Radio can be, directed by knowledge drawn from this truly modern journal.

YOU will see how everyone in the home will demand their turn to read and study the pages, packed with interest and news.

AND vie with each other to be first to instruct those who do not know the joy of Radio.

"RADIO RECORD AND HOME JOURNAL."

SOLD BY ALL BOOKSELLERS.

3d. WEEKLY.

Contains Full Main Station Programmes.

Address to "Radio Record,"
Box 1032, Wellington.

As I am not a regular reader of the "Radio Record and Home Journal," I would like to have your journal in my home for one month. There are* persons in my home.

Signature.....

*State how many.

THIS FREE OFFER ENDS SEPTEMBER, 1931.

BIGGER — BRIGHTER — BETTER

NEW ZEALAND RADIO

Handbook Annual

for 1931.

Full Sections devoted to A.C. and Short Wave Constructional Details for numerous A.C. and D.C. Sets.

Power Packs, Eliminators, Amplifiers, Chokes, Boosters, Transformers, Etc., Etc. Etc.

Up-to-date call-signs of N.Z. Amateur Transmitters. Latest Broadcast and S.W. call-signs.

A Veritable Encyclopaedia of Radio Information.

PRICE 2/6

Every Radio Transmitter, Listener, and Constructor should have one

If your Bookseller or Radio Dealer cannot supply, apply to the Publishers:

H. G. FARNALL & Co., Ltd. - 10 Civic Square, Auckland.

The test of convenience is the number of records you actually DO play on your combination machine. Probably, you rarely use it. You will use a Gramotrope far more.

MODEL A.

Fitted with high grade electric motor, B.T.H. or similar high grade pick-up, volume control and 20 feet speaker cord.

G170 Model A Gramotrope £12 0 0

MODEL B.

Fitted with Garrard Super spring motor, otherwise same as Model A. G171 Model B Gramotrope £14 10 0

MODEL C.

Fitted with Thorens motor (G178) and good quality pick-up. Good, in spite of its inexpensiveness. G172 Model C Gramotrope £5 10 0

DOUBLE GRAMOTROPIES — Price on application.

FITTINGS.

BRAKES.



G153 Outside type ... each 1 0
G154 Outside type ... best quality ... each 2 0
G155 Inside type ... each 1 0

"ALTONA" NEEDLES.



ALTONA NEEDLES are made by a first-class SHEFFIELD steel firm, who also make needles for many of the prominent gramophone firms. Who sell them under their own name, of course, at a much higher price.

ALTONA NEEDLES ARE THE BEST QUALITY IT IS POSSIBLE TO OBTAIN, so that you can use them with every confidence.

ALTONA NEEDLES ARE THE BEST QUALITY IT IS POSSIBLE TO OBTAIN, so that you can use them with every confidence.

Not suitable for ordinary gramophones.

G141 TONE ARM, plain ... 6 6

G142 TONE ARM, hinged ... 7 6

NEEDLE CUPS.



G133 Nickel plated, with covers 1 0

G144 Set of two, one with cover through a small hole in which used needles can be dropped. No mistake in using needles twice over.

G144 Per set 2 0

AUTOMATIC STOPS.



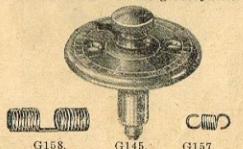
These will stop the gramo. motor when the record is finished. Light but certain trigger action. The electric model includes switch.

G179 Automatic stop ... 5 0

G180 Automatic stop, electric 3 6

SPEED REGULATORS.

Consisting of a nickel plated disc engraved with numbers to denote revolutions per minute. A knurled nut and pointer regulate the speed, by adjusting the brake arm under the motor board of the gramophone.



SPRINGS.

G157 Brake springs ... each 3d.
G158 Check springs (replacing winding ratchet) ... each 6d.

TONE ARMS.

Although most pick-ups will fit the average tone arm, many like to fit a special tone arm on their gramophone for the pick-up. A tone arm is necessary, of course, for those who purchase a motor to build up their electric gramophone.

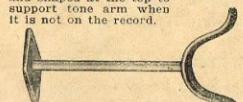
Not suitable for ordinary gramophones.

G141 TONE ARM, plain ... 6 6

G142 TONE ARM, hinged ... 7 6

TONE ARM SUPPORTS.

Small plated arms, which screw to central lid alongside the turntable, and stand at an angle to support tone arm when it is not on the record.



G143 With nut ea. 1 6

CONSULT US ON

"SOUND" INSTALLATIONS.

CYCLE ACCESSORIES.

NOTE.—Only the main items are listed here. Write us for any cycle accessory, and it will be promptly supplied.



BALLS—HOFFMANN.

Guaranteed true to a 10 000th part of an inch.

Y100 1/8-inch ... 2d. 1 2
Y101 3/16-inch ... 3d. 2 0
Y102 1/4-inch ... 4d. 3 0

BELLS.

Lucas excel in bells as well as in lamps for cycles. The Lucas brand is your guarantee of a really reliable article.



Diam. Each
Y103 Lucas No. 236 ... 2 3/16 1 6
Y104 Lucas No. 216 ... 2 1/16 2 0
Y105 Lucas No. 256 ... 2 5/16 3 0
Y106 Rouser (not Lucas) ... 1 0

BRACKET AXLES.

Made by Brampton, carefully hardened, and accurately ground.

Y107 Bracket axle 2 0

BRACKET CUPS.

Also made by Brampton, the cottered type for use with cotter pins.



and the cotterless type with left and right threads, the latter used with a lock nut on the left side of the cycle.



Y111 Bracket cup, cottered ... 1 0
Y112 Bracket cup, cotterless, left ... 1 0
Y113 Bracket cup, cotterless, left ... 1 0
Y114 Bracket lock ring for Y113 ... 1 0
Y115 Bracket cotters, complete ... 1 0

THE 'ACE' BICYCLE

£8:12:6
CASH.

Lady's 7/6 extra.

Speedy!
Reliable!
Rustless!

EASY TERMS.

3/6 Weekly

Delivered Free to any Port or Railway Station.

SPECIFICATION.

FRAME.

To ensure ample strength, only the best WELDLESS STEEL TUBE is used, with machined lugs. All parts are assembled with the utmost precision before brazing, so that true and easy running is guaranteed.

BEARINGS.

Ball bearings are fitted throughout, accurate to one thousandth of an inch, while the cones and cups are hardened and ground with equal precision.

WHEELS.

Best chromium plated rims, non-rusting spokes. Built true and remain true. Eadie coaster rear hub, combining a never failing powerful brake, with a perfect free wheel.

HANDLEBAR.

Upturned, adjustable as standard, but other types can be fitted to order.

Chromium-Plated—Non-Rusting.

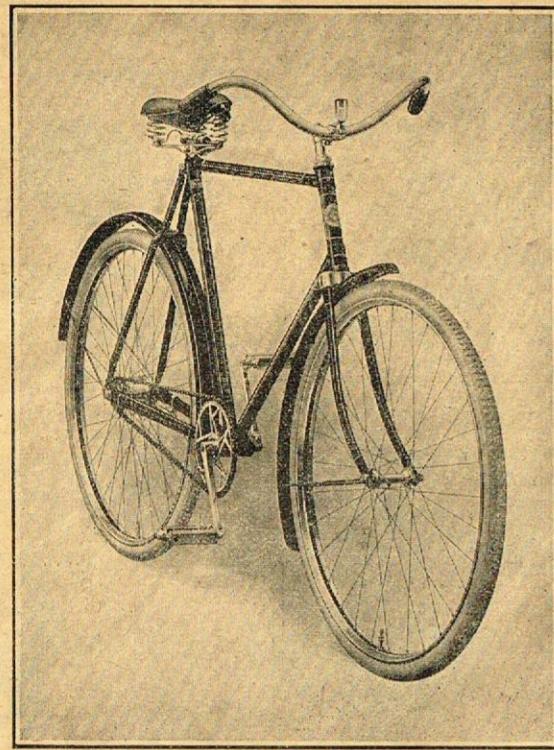
EASY TERMS:

Deposit	Weekly	Payments.	Total Price
3/6	58	3/6	£10/6/-
£1/-	52	3/6	10/2/-
£4/-	30	3/6	9/5/-

NOTE THE CONSIDERABLE SAVING by paying a **LARGER DEPOSIT**.

CHEAPER BICYCLES (not recommended) from £6.

FREE! AN ELECTRIC CYCLE LAMP INCLUDED WITH CYCLE
WHEN DEPOSIT OF £1 OR MORE IS PAID.



CARRIERS—REAR.

Both are complete with straps. The Hercules is a very strong carrier, suitable for heavy parcels, while the Sturdi is quite rigid, and perfectly safe for light parcels such as an overcoat.

Y116 Hercules carrier	3	9
Y117 Sturdi carrier	2	9

CHAINS—ROLLER.

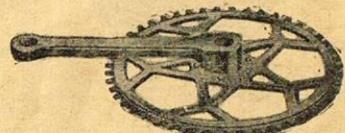
Brampton chains are very strong and smooth running. See if you can see between your chain wheel and chain. If so renew your chain, which has stretched, and will quickly wear out the wheels.



Y118 Brampton 1/2 x 1/8 or 3/16	4	6
Y119 Brampton military, extra strong	7	6
Y120 Renold chain	6	0

CHAIN WHEELS, CRANKS, ETC.

These are the best quality, the chain wheel being flanged to secure enormous strength, and the cranks being specially toughened. Complete set includes two cranks, and chain wheel.



Y121 Complete set	10	6
Y122 Right crank	5	6
Y123 Left crank	4	0



Y124 Crank cotter	3
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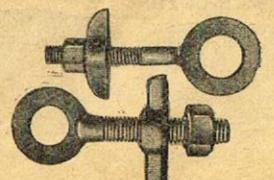


Y125 Chain wheel screw	2
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CHAIN ADJUSTERS.

Standard pattern, plated. Good threads, with well-fitting nuts.

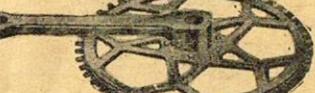
Y126 Chain adjusters, curved caps	8
Y127 Chain adjusters, straight caps	8



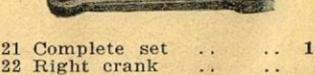
Y128 Fork, front	12	6
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HEAD FITTINGS.

Brampton quality, well nickel-plated. Two patterns the head clip fitting stems that are slotted, while the screwed race is used for expander type stems.



Y129 Head clip and bolt	2	9
Y130 Head lock ring	1	0



Y131 Head bolt and nut, as illustration	6
Y132 Head bolt and nut, plain	6
Y133 Head race, black	6
Y134 Head crown race, plated	9
Y135 Head screwed race, plated	1

HANDLE GRIPS.

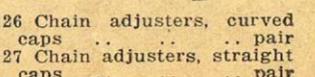
Celluloid is the usual pattern, the Bluemel grip being especially durable. For comfort, some prefer the rubber grip. All are very easily fitted.



Y138 Celluloid	pair	1	0
Y139 Celluloid, Bluemel	pair	1	6

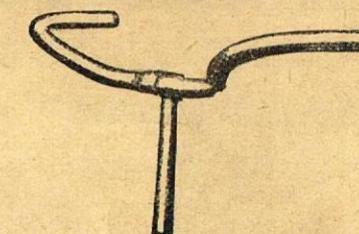


Y140 Rubber	pair	2	0
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HANDLEBARS—CANADIAN.

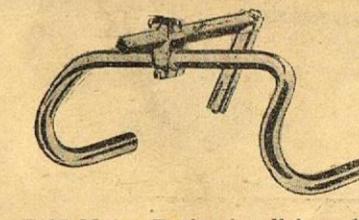
The Canadian handle-bar is the most popular shape, and it can be used down or up, since it has a reversible clip. Well plated, and fitted with grips.



Y136 Canadian handlebar	10	6
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HANDLEBARS—MAJOR TAYLOR.

Fitted with outrigger, giving forward as well as up and down adjustment. The pattern usually seen on racing machines. Complete with grips and thoroughly nickel plated.

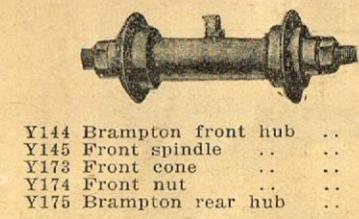


Y137 Major Taylor handlebar	18	0
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HUBS—ORDINARY.

Hubs fitted to your wheel, new spokes, 8s. extra.

Brampton hubs are perfectly reliable, and reasonably priced.



Y144 Brampton front hub	3	9
Y145 Front spindle	6	0
Y173 Front cone	6	0
Y174 Front nut	3	0
Y175 Brampton rear hub	7	0



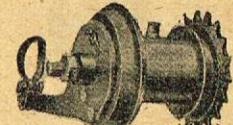
Y176 Rear spindle	6	0
Y177 Rear cone	6	0
Y178 Rear nut	3	0



Y179 Rear sprocket, 12-18 teeth	1	9
Y180 Rear sprocket, 20-22 teeth	2	6
Y191 Balaco	30	0
Y192 Bulbs for above	1	6

HUBS—EADIE.

The Eadie coaster hub combining free wheel and back pedal brake, is easily the best on the market. Many have attempted to imitate the Eadie, but it has readily maintained its undoubted supremacy for over 20 years. The brake is powerful and absolutely reliable.



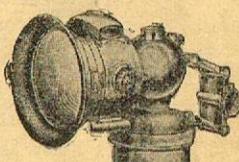
Y141 Eadie coaster hub	27	6
Y142 Eadie coaster hub, fitted with new spokes	33	6
Y143 Eadie coaster hub, complete new wheel, plated	39	6

EADIE PARTS.

Y146 Friction Plate	62R	4	6
Y147 Bronze brake ring	63R	3	0
Y148 Brake cone and lever	64R	3	0
Y149 Brake spring lever	65R	1	6
Y150 Clutch nut, toothed	66R	2	6
Y151 Right cup, toothed	67R	2	6
Y152 Driving nut	68R	3	6
Y153 Sprocket, 16-18 teeth	69R	3	0
Y154 Sprocket (not Eadie)	1	9	0
Y155 Left cup	70R	2	0
Y156 Brake clips, comp.	71R	1	3
Y157 Lock nuts	72R	1	3
Y158 Retainers & balls, lg.	73R	1	0
Y159 Retainers & balls, sm	74R	1	0
Y160 Clutch spring	75R	4	4
Y161 Adjusting cone	76R	1	6
Y162 Clutch spring screw	77R	3	0
Y163 Split collar, narrow	78R	3	0
Y164 Split collar, wide	79R	3	0
Y165 Packing piece, B.S.A.	80R	6	0
Y166 Spindle collar	81R	8	0
Y167 Packing piece, std.	82R	6	0
Y168 Chain stay clip nut	83R	2	0
Y169 chain stay clip screw	84R	3	0
Y170 Spindle nut	85R	3	0
Y171 Lubricator	86R	6	0
Y172 Spindle only	87R	1	6

LAMPS—ACETYLENE.

These give a very fine light, which is essential for safe riding on country roads.



LAMPS—ELECTRIC.

Small magneto generators, driven from the front wheel, supply electricity for lighting the head lamp, designed like a motor car headlight, with efficient reflectors. Magneto is sturdily built, and contains only one moving part. The no trouble light.

Y244 Record lamp, complete	26	6
Y245 Record generator	18	0
Y246 Record headlight	9	6
Y190 P. and H.	30	0
Y191 Balaco	30	0
Y192 Bulbs for above	1	6

ACE CYCLES. BEST BRITISH.

**THE
'ACE'
BICYCLE**
**£8:12:6
CASH.**

Lady's 7/6 extra.

**Speedy!
Reliable!
Rustless!**

EASY TERMS.

3/6 Weekly

Delivered Free to any Port or Railway Station.

SPECIFICATION.

FRAME.

To ensure ample strength, only the best **WELESS STEEL TUBE** is used, with machined lugs. All parts are assembled with the utmost precision before brazing so that true and easy running is guaranteed.

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Ball bearings are fitted throughout, accurate to one thousandth of an inch, while the cones and cups are hardened and ground with equal precision.

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Best chromium plated rims, non-sparking spokes. Built true and remain true. The coaster hub combining a never failing, powerful brake, with a perfect free wheel.

HANDLEBAR.

Upturned, adjustable as standard, but other types can be fitted to order.

Chromium-Plated—Non-Rusting.

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£1 1/-	52	2/6	18 0/-
44 1/-	30	1/6	9 5/-

NOTE THE CONSIDERABLE SAVING by paying a **LARGER DEPOSIT**.
CHEAPER BICYCLES (not recommended) from £6.

FREE! AN ELECTRIC CYCLE LAMP INCLUDED WITH CYCLE
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Y116 Hercules carrier 3 9

Y117 Sturdy carrier 2 9

CHAINS—ROLLER.

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Y119 Brampton military, extra strong 7 6

Y120 Renold chain 6 0

CHAIN WHEELS, CRANKS, ETC.

These are the best quality, the chain wheel being flanged to secure enormous strength, and the cranks being specially toughened. Complete set includes two cranks, and chain wheel.



Y121 Complete set 10 6

Y122 Right crank 5 6

Y123 Left crank 4 6

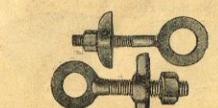
Y124 Crank cotter 3



Y125 Chain wheel screw 2

CHAIN ADJUSTERS.

Standard pattern, plated. Good threads, with well-fitting nuts.



Y126 Chain adjusters, curved caps 8

Y127 Chain adjusters, straight caps 8

Y128 Chain adjusters, straight caps 8

Y129 Chain adjusters, curved caps 8

Y130 Chain adjusters, straight caps 8

Y131 Chain adjusters, curved caps 8

Y132 Chain adjusters, straight caps 8

Y133 Chain adjusters, curved caps 8

Y134 Chain adjusters, straight caps 8

Y135 Chain adjusters, curved caps 8

Y136 Chain adjusters, straight caps 8

Y137 Chain adjusters, curved caps 8

Y138 Chain adjusters, straight caps 8

Y139 Chain adjusters, curved caps 8

Y140 Chain adjusters, straight caps 8

Y141 Chain adjusters, curved caps 8

Y142 Chain adjusters, straight caps 8

Y143 Chain adjusters, curved caps 8

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Y146 Chain adjusters, straight caps 8

Y147 Chain adjusters, curved caps 8

Y148 Chain adjusters, straight caps 8

Y149 Chain adjusters, curved caps 8

Y150 Chain adjusters, straight caps 8

Y151 Chain adjusters, curved caps 8

Y152 Chain adjusters, straight caps 8

Y153 Chain adjusters, curved caps 8

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Y155 Chain adjusters, curved caps 8

Y156 Chain adjusters, straight caps 8

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Y158 Chain adjusters, straight caps 8

Y159 Chain adjusters, curved caps 8

Y160 Chain adjusters, straight caps 8

Y161 Chain adjusters, curved caps 8

Y162 Chain adjusters, straight caps 8

Y163 Chain adjusters, curved caps 8

Y164 Chain adjusters, straight caps 8

Y165 Chain adjusters, curved caps 8

Y166 Chain adjusters, straight caps 8

Y167 Chain adjusters, curved caps 8

Y168 Chain adjusters, straight caps 8

Y169 Chain adjusters, curved caps 8

Y170 Chain adjusters, straight caps 8

Y171 Chain adjusters, curved caps 8

Y172 Chain adjusters, straight caps 8

Y173 Chain adjusters, curved caps 8

Y174 Chain adjusters, straight caps 8

Y175 Chain adjusters, curved caps 8

Y176 Chain adjusters, straight caps 8

Y177 Chain adjusters, curved caps 8

Y178 Chain adjusters, straight caps 8

Y179 Chain adjusters, curved caps 8

Y180 Chain adjusters, straight caps 8

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Y191 Chain adjusters, curved caps 8

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Y196 Chain adjusters, straight caps 8

Y197 Chain adjusters, curved caps 8

Y198 Chain adjusters, straight caps 8

Y199 Chain adjusters, curved caps 8

Y200 Chain adjusters, straight caps 8

Y201 Chain adjusters, curved caps 8

Y202 Chain adjusters, straight caps 8

Y203 Chain adjusters, curved caps 8

Y204 Chain adjusters, straight caps 8

Y205 Chain adjusters, curved caps 8

Y206 Chain adjusters, straight caps 8

Y207 Chain adjusters, curved caps 8

Y208 Chain adjusters, straight caps 8

Y209 Chain adjusters, curved caps 8

Y210 Chain adjusters, straight caps 8

Y211 Chain adjusters, curved caps 8

Y212 Chain adjusters, straight caps 8

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Y215 Chain adjusters, curved caps 8

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Y241 Chain adjusters, curved caps 8

Y242 Chain adjusters, straight caps 8

Y243 Chain adjusters, curved caps 8

Y244 Chain adjusters, straight caps 8

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Y332 Chain adjusters, straight caps 8

Y333 Chain adjusters, curved caps 8

EXELON TYRES TRAVEL FURTHER.

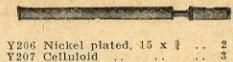
LAMPS—OIL.

These are cheap, and sufficiently powerful for use on good roads. They require very little attention.



PUMPS.

Both styles are strong, and capable of standing up under hard usage. Connections and washers are best quality.



Y206 Nickel plated, 15 x 1	2	9
Y207 Celluloid	3	5

EXELON TYRES.

EXELON TYRES are made to our own special order, and of the best rubber factories in the world. The quality is fully guaranteed against defects in material or workmanship, and all parts are specially made on a proportionate basis. Claims are so rarely made, that we can afford to be generous with them. The material of the tread, often referred to as crude rubber, has become prominent recently. Tires with crude soles practically never wear out.

EXELON CRYSTAL TYRES are extra strong and flexible fabric. Thus the tire is resilient, comfortable, and safe. CRYSTAL TUBES are of similar rubber, and you are welcome to test them AT OUR RISK—by stretching them several times, and then flattening them.

Altogether, EXELON CRYSTAL TYRES are bound to give every satisfaction.

GREY TYRES are also excellent value for money, and carry a similar definite guarantee.

EXELON CRYSTAL.



GUARANTEED 12 MONTHS.

Y233 Exelon "Crystal" cover 10 6
Y234 Exelon "Crystal" tube 4 6
Y244 Two covers, two tubes 29 0

EXELON "GREY."

A cheaper cover and tube, but very good value indeed. There is no need to ride using old tyres with now ones that are quite reliable cost so little.

Y235 Exelon Grey cover 6 6
Y236 Exelon Grey tube 2 6
Y237 Two covers, two tubes 17 6

SPECIAL OFFER.

We have discontinued SPECIAL OFFERS in which there is a so-called FREE GIFT with a set of tyres. Usually the gift is of no use to you. Instead we have reduced our prices considerably, for a complete set of tyres, and these will be sent POSTAGE PAID.

17/6—2 COVERS, 2 TUBES—17/6

DUNLOP TYRES.

Y110 Roadster cover, cord 12 6
Y239 Tube 5 6
Y240 Bates Red cover 10 0
Y241 Bates Red tube 4 0
Y242 Mercure cover 5 9
Y243 Mercure tube 3 0

SOLUTION.

Y227 Dunlop tube 4
Y228 Dunlop, in tins 6
Y229 Dunlop, in tins 1 3

TOE CLIPS.

Shesta metal toe clips, easily attached.
Y109 Shesta toe clips 1 6

TOOL BAGS.

Y224 Leather, 6in. 2 6
Y225 Leather, 7in. strong 3 9

TROUSER BANDS.

Y226 Plated bands pr. 6

TYRE LEVERS.

Y230 Set of three set 3

VALVE TUBING.

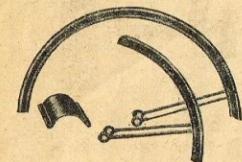
Y231 Special grade rubber, yd. 8

LAMP BRACKETS.

Y193 Head, ordinary pattern 9
Y194 Fork 9
Y195 Outrigger, for Major Taylor 1 6

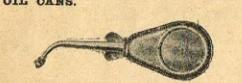
MUDGUARDS.

Made from heavy steel, stove enameled, strong stays.



Y196 Defiance 3 6
Y197 Protector, extra wide 4 4
Y198 Screws for front guard 2

OIL CANS.



Y199 Plated, with screw cap 9
Y200 Plated, best quality 1 0
Y201 Oil, best cycle quality, tin 1 0

PEDALS.

Good quality, strong and durable.



Y202 Brampton rat-trap pair 4 9



Y203 Brampton rubber pair 5 6

Y204 Celotina, rat-trap pair 4 0

Y205 Pedal rubbers, set of 4 2 3

ALL FOUNTAIN PENS HAVE 14 CARAT NIBS.

FOUNTAIN PENS.



All fountain pens listed have genuine 14-carat gold nibs, and their low price is certainly not to be recorded as a criterion of quality. The nibs, even in the Regent quality, ARE GENTLING, and the 14-carat gold is a special centring device which ensures true sharpness.

We can engrave your name on these pens at 1s. extra.

State whether fine, medium or broad nib.

REGENT.

Vulcanite, chased barrel, with self-filler, and 14-carat gold nib, iridium tipped. Pocket clip fitted. Cap SCREWS on either end, so is much safer than usual. An absolute marvel at the price.

Z159 Regent, black 3 9

BEAVER.

A larger pen than the Regent, self-filling, and with stronger clip. Larger and heavier 14-carat gold nib.

Z160 Beaver, black 9 6

Z161 Beaver, red, mottled 11 0

Z162 Beaver, black, oversize 12 0

A very strong pen, with extra large nib, carrying definite guarantee of service, according to price.

MAJOR SERVICE.

A very strong pen, nib carrying a five-year guarantee. Self-filler, complete with pocket clip, barrel in black vulcanite. The same pen is usually sold at 15s. or fl. Z163 Major Service "5" 10 6

MAJOR SERVICE "25."

Highest quality, with extra large 14-carat nib, fitted with best iridium tipped nibs by experts, and consequently guaranteed for 25 years, of service. Self-filler, large barrel of red mottled vulcanite, with rolled gold clip, lever and two bands. Makes a very fine presentation pen.

Z164 Major Service "25" 22 6

MAJOR SERVICE "Eternite."

Made of a new, malleable steatite, in a variety of very attractive colours, including jade, green, lapis lazuli, blue and flame. 25-year guarantee, two bands and clip of rolled gold. Lady's size.

Z165 Major Service "Eternite" 22 6

PROPELLING PENCILS.

These catch the fountain pens above. Screw action, with special point to keep the lead from turning or moving when writing. Six extra leads included. Black or beautifully assorted colours.

Z166 Propelling pencil 4 0

PENCIL LEADS.

These will fit most pencils on the market. One gross leads in box. Why buy one dozen in a small metal case which is worth more than the contents?

Z166 Pencil leads; per gross 3 0

PENCIL SHARPENERS.

A necessity in every office. Self-filler cutter has great improvement on the older six-blade. Z158 has a special centralizing device which ensures true sharpness.

Z159 Erco 24 0

Z160 Erco special 32 0

Special prices to schools.

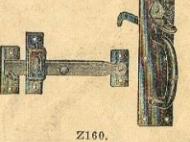
WARDROBE HOOKS.



Z158 Single, black ea. 3d. 2 6

Z159 Triple, bronzed 6d. 5 9

SUFFOLK LATCHES.



Z160 Black or bronzed ea. 1 4 15 0

CASEMENT STAYS—10 INCH.

Z152 Black finish 9 8 6

Z153 Malleable joint 1 0 11 6

CASEMENT FASTENERS—Black. State whether mortice or hook plate.



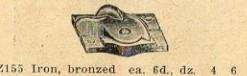
Z152 Hook, Z154 Mortice, Z155 Hook

Mortice 9d. 7 0 8 0

Z154 5d. 8 6 1 0 11 0

Z155 8 7 6

WINDOW FASTENERS.

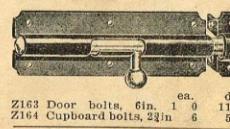


Z155 Iron, bronzed ea. 6d. 4 6

Z161 Cupboard but'ns, 2in 1 10 9 6

Z162 Cupboard but'ns, 2 1/2in 6 5 0

DOOR BOLTS.



Z163 Door bolts, 6in. 1 10 9 0

Z164 Cupboard bolts, 2 1/2in 6 5 0

DRAWER PULLS.



Z165 Bronzed, 4in. ea. 3 2 6

Z166 Bronzed, 4 1/2in. 3 2 9

HAT AND COAT HOOKS.



Z156 2 1/2in. 2 1/2in. 4 0

Z157 2 1/2in. 2 1/2in. 4 0

Z158 2 1/2in. 2 1/2in. 4 0

Z159 2 1/2in. 2 1/2in. 4 0

PLAYING CARDS.

CONGRESS.

High grade cards, both pleasant to play with and durable.

Single pack, 4s.; double pack, 7 6

BUILD A "GRANDFATHER" CLOCK.

CLOCKS.

GRANDFATHER CLOCKS—

There is no doubt that nearly everyone is strongly attracted by the grandfather clock, and a medium-grade one will clearly and softly heard all over the house.

These high-grade movements, exactly as used in clocks costing £50 upwards, are fully guaranteed by us. The price is within the reach of everyone.

The chimes are Westminster, which are by far the best. Length of Copeland chimes could be indicated to order. The price includes dial, brass weight covers, iron weights, and all working parts.

Approx. measurements as follows: Dial is 11 in. square, the height of the case being 36 in. Cabinet should be 18 in. wide (minimum). Works extend 3 in. below centre of dial, and chains require 6 in. drop. The chimes extend 6 in. above dial centre.

Our factory will construct a cabinet to your own design, and a sample clock and cabinet are on show at our shop.

COMPLETE CLOCKS.

Z156 Westminster chimes £32 0 0
Z157 Strike 25 10 0

MOVEMENTS—Complete.

Z143 Westminster chimes £10 10 0
Z146 Strike 4 15 0

Z146, with strike, but less chimes, is a special offer, applying to present stocks—get in early.

ELECTRIC CLOCKS.

A.C. current pulsates 50 times every second, exactly. Electric clocks have this feature, and MUST KEEP ACCURATE TIME as long as current flows. No springs, no winding, no oiling, no troubles, no repairs.

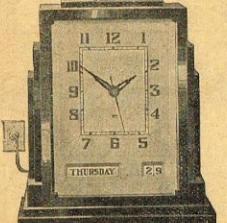
RAVENSWOOD ELECTRIC CLOCK.

Beautiful bakelite case—large second hand, clear reading dial and figures. Current costs as little as 2d. per month.

Z152 Ravenswood clock £3 15 0

GREGORY ELECTRIC CLOCK.

Modern design, novelty clock, which shows the day and date, changing automatically at midnight. This will absolutely delight those who want to be right up to date.



Easy Terms—Low Deposit

INGERSOLL ALARM CLOCKS.

Any alarm that really does wake you up at the time intended. First class timekeepers.

Z155 Ingersoll S. alarm clock 12 6

WE DO NOT Ourselves REPAIR CLOCKs AND WATCHES

But if you cannot do them to us, WE WILL HAVE THE WORK EXECUTED FOR YOU BY A QUALIFIED TRADESMAN. Our Reputation Stands Behind Any Work Undertaken.

Let us have your enquiries.

12 h.p., from £18 approx.

Similar water-cooled engines, from 1½ h.p., from £18 approx.

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