

*The Shop for BRITISH RADIO Goods*

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*YOU MAY NOT*

AT PRESENT BUY FROM  
US; BUT WHEN YOU GET  
DISSATISFIED WITH THE  
SERVICE OF OTHERS,

*TRY---*

*HARTLE & GRAY*

*Customs Street Frontage*

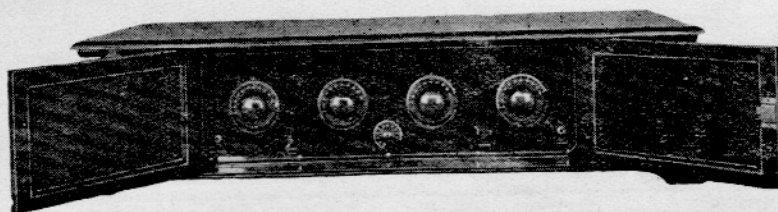
PALMERSTON BUILDINGS

CORNER QUEEN & CUSTOMS STS., Auckland

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*The Shop for BRITISH RADIO Goods*

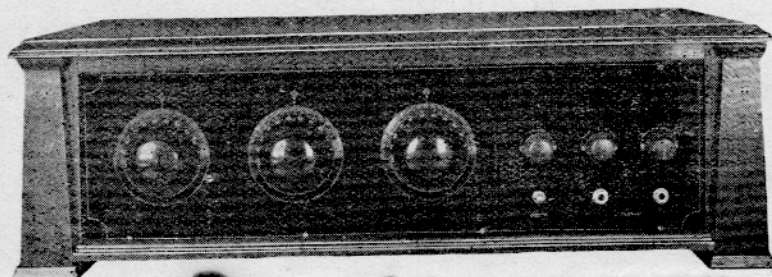


### 6-Valve Set

This is the very latest production, being a modification of the famous "Elstree Six." We sell this set with a definite guarantee that within one mile of the Auckland broadcasting station it is possible to tune in Farmers (Sydney), without interference from Auckland. This is the only set on the market at present that is sold with this definite guarantee. Easy to tune (just turn the dials to the numbers on the station chart, and there is the station); nothing to get out of order.

Price : £65 complete; Loud Speaker additional. Cabinet Work, and finest of same, to your order.

If fitted with device that enables your electric light to be used in place of batteries, price would be increased by £12/10/-.

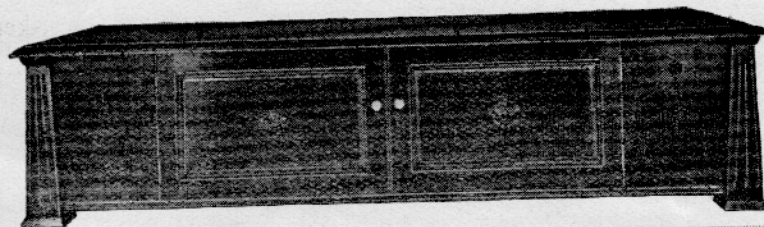


### 5-Valve Set

This is a set of the "Neutrodyne" type, easy to tune all Australasian stations upon the Loud Speaker. Made up in many styles. Prices range from £35.

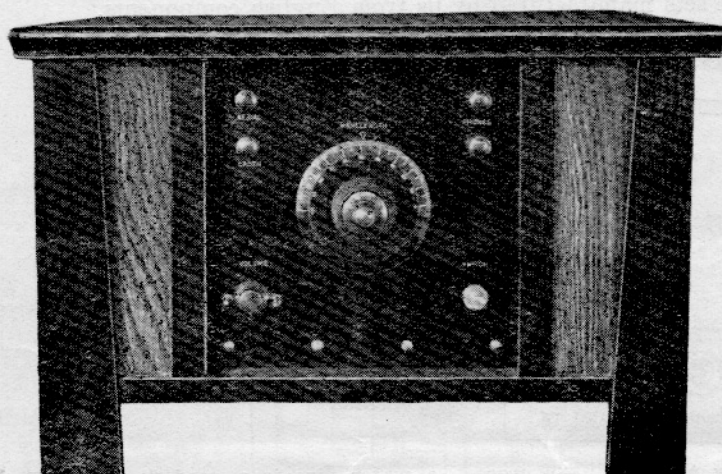
Illustration shows set finished in "Satin" colour. High-grade components providing tone reproduction not secured in the cheaper models of other manufacturers.

Price: £45, complete with small Loud Speaker, Accumulator, "B" Batteries, Headphones, etc.





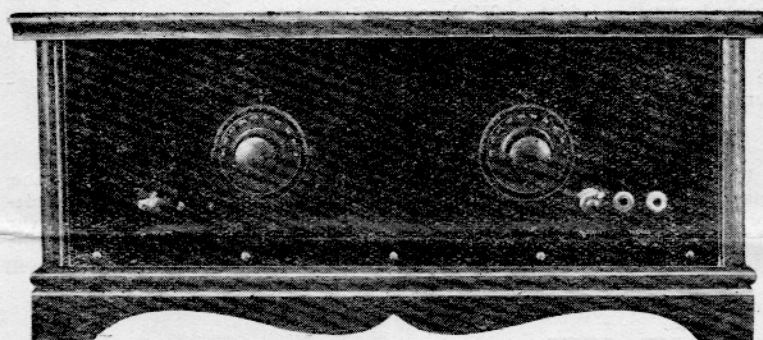
HARTLE & GRAY, Palmerston Buildings (Customs Street Frontage)



### 2-Valve Set

This is a high-grade set at low price. Will operate a Loud Speaker within 50 miles of Auckland station; will also receive Australian stations upon head phones; very easy to tune.

Price: £15, complete with Batteries, Valves, Headphones.



### 3-Valve Set

This set is designed to meet the demand for a medium-priced set that will receive all stations at good strength.

The Auckland station will be heard with good volume on the Loud Speaker; Australian stations also upon the Loud Speaker.

Dry Cell, "A" Battery, "B" Battery, and Headphones.

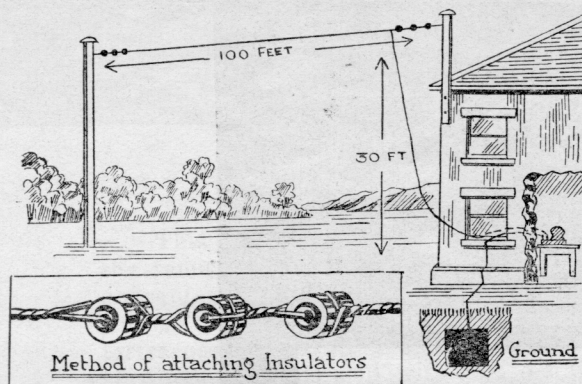
Price : £22/10/-, complete with small Loud Speaker,

This model is also made in a **4-VALVE SET**. For best all-round work, at least 4 valves should be used; all Australian stations upon Loud Speaker.

Price : Complete with Accumulator, "B" Battery, Headphones, small Loud Speaker, £32/10/-.

THE SHOP FOR BRITISH GOODS

The foregoing are some few examples of sets manufactured by us from English components. We give herewith information that will assist those desirous of making their own.



The above conveys a general idea as to how Aerial Wire may be erected. It will be noticed that wire from aerial passes thro' window or wall thence to set. From the set a wire is taken to an "earth," that is, anything that is making good contact with

the ground—a water pipe is a good "earth." The wire passing through wall must be "insulated" wire, and, if possible, pass through a "lead in Tube," which is of glass or ebonite.

## THE AERIAL

A good aerial is essential to good reception. This may be a single wire well insulated at both ends and suspended between the house and a post erected for the purpose. A down lead wire is soldered either exactly in the middle or at one end. This wire is carried inside the house through an insulated tube and attached to the aerial terminal of the set. Another wire is carried from the earth terminal of the set and buried in the ground. This wire should be soldered to a plate of metal and then buried about

three feet underneath in a moist position. Two wires, separated by spreaders, make a good aerial. In this case two leads-in are required. The over-all length of the aerial—that is, the horizontal length and the lead-in where it joins the set, should not exceed 120 feet. With a good aerial, a three-valve set will bring in Sydney concerts (which include transmission from the theatres and Town Hall), loud enough to operate a loudspeaker. Three-valve sets are receiving music from California.

## CRYSTAL SETS

These are simple to construct, very easy to operate, and inexpensive to maintain. No batteries are required, and, after installation, the only expense is the replacement of crystals from time to time. The crystal set will receive music or speech quite satisfactorily from fifteen to thirty miles, this depending upon the power of the broadcasting station.

The simplest crystal set is simply a cardboard tube, round which is wound some enamelled or double cotton covered wire. Some means of connecting the earth to this wire is provided by means of a "sliding" contact device. The circuit diagram given will convey the details as to how it is wired up.

## VALVE SETS

The employment of the Valve is essential if telephony (i.e., music or speech) is desired from a distance. An efficient single-valve set will receive telephony some hundreds of miles. It is not uncommon to receive music from Australia, using headphones, on a selective one-valve set, employing a good outdoor aerial. If it is desired to operate a loudspeaker, so that all may listen in without the use of headphones, more valves must be added to the set, one valve acting as the detector and the other valves acting as amplifiers to intensify the sound. Two-valve sets will work a loudspeaker at about 100 miles from Auckland, three-valve sets will receive Australia on speaker. The reception of American stations is possible upon sets employing four valves; but a good deal depends upon locality. The valve is similar to an ordinary electric light globe, the only difference being that in addition to a lighting filament it also contains what is known as a grid (generally a spiral wire) and also a plate usually in the form of

a metal sheath. The grid surrounds the lighting filament, though not touching it, and surrounding both of these is the plate, these three elements making what is known as the three-electrode valve. The valve requires a battery to heat the filament (the "A" battery); another battery (the "B" battery) is also required to energise the circuit and the plate.

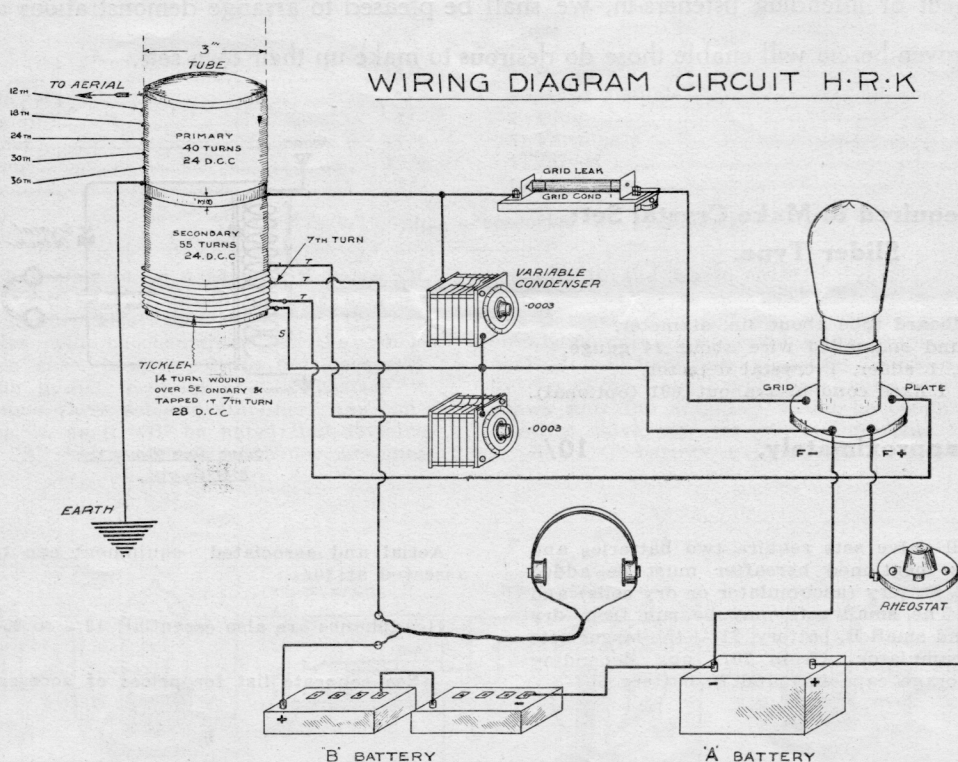
Briefly the operation of the valve is as follows:— Signals, which are either positive or negative polarity, are received by the aerial and come into the set and on to the grid, or spiral wire. Electrons or small charges of electricity are given off the grid and attracted to the plate. The lighted filament also gives off electrons, and these are attracted to the plate also, but have to pass through the grid, thus helping to make the signals stronger or weaker, according to whether they are of positive or negative polarity. The flow of the electrons through the valve is controlled by regulating the heat of the filament.

THE SHOP FOR BRITISH GOODS



HARTLE & GRAY, Palmerston Buildings (Customs Street Frontage)

## "NEW ZEALAND RADIO" RECEIVER USING ONE VALVE



The Parts You Need are as follow:

1 Piece Cardboard Tube .....	9d.	Grid Leak .....	1/6
$\frac{1}{2}$ lb. 24 Cotton Covered Wire .....	3/3	Grid Condenser .....	2/-
1 oz. 28 Cotton Covered Wire .....	1/3	Anti-Microphonic Valve Socket .....	3/6
5 Flush Sockets for Aerial Tap .....	10d.	Rheostat .....	3/6
1 Plug for same .....	9d.	Terminals .....	2/-
2 Straight Line Frequency Slow Motion Variable Condensers .....	2/10/-	10 feet Glazite .....	1/4
		Panel .....	5/-

**Total £3/15/8:** plus valve, 13/6; A and B. Battery, 7/6 and 10/6; 'phones 17/6.

## VALVE SETS

With all sets we furnish complete instructions for erection and efficient working.

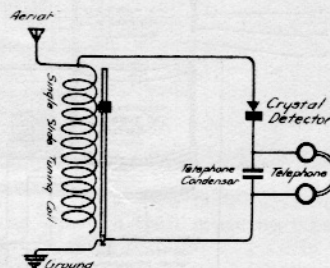
For the benefit of intending listeners-in, we shall be pleased to arrange demonstrations at any time.

The details given herein will enable those do desirous to make up their own sets.

### Parts Required to Make Crystal Set: Slider Type.

- 1 piece cardboard tube about 3in. diameter.
- Quarter pound enamelled wire about 24 gauge.
- 1 slider rod, 1 slider, 1 crystal detector.
- 4 terminals, 1 fixed condenser about .001 (optional).

Total cost approximately, 10/-



*Single Slide Tuning Coil  
With Crystal*

NOTE: All valve sets require two batteries and to the details mentioned hereafter must be added the price of A. battery (accumulator or dry cells) and B. battery. The small sets may be run from dry battery 7/6, and small B. battery, 21/-, the larger sets will need accumulator (from 70/- up, depending upon their storage capacity) and B. battery 50/-.

Aerial and associated equipment can be roughly assessed at 20/-.

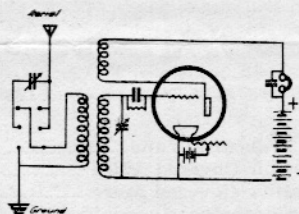
Headphones are also essential; 12/6 to 25/-.

(See separate list for prices of accessories.)

### Parts to Make a Single Valve Set: (three-coil type.)

Panel .....	8/9
Valve socket .....	3/6
2 Vernier Condensers .0005 .....	28/-
3 Terminals .....	2/-
Three coils .....	12/-
10 feet Glazite for wiring up .....	1/4
Rheostat .....	3/6
Grid Leak .....	1/6
Grid Condenser .0002 .....	2/-
1 Phone Condenser .001 .....	2/-
Three Coil Mount .....	12/6
1 Valve .06 type .....	13/6
1 Yard Solder .....	8d.
Screws, etc. ....	2/-

Total plus accessories as above .... £4/13/3



*Single Valve  
Three Coil Set*



### Parts to Make Two-valve Amplifier

This, if added to a crystal set, will give power enough to operate loud speakers; added to a valve set, will give Australian stations at loud speaker strength. It will be noted, of course, that if one only desires to make a "one-valve amplifier" the wiring

is exactly the same; only in this case one valve, one transformer, and one rheostat are required, and the double circuit jack may be eliminated. Terminals may be used in place of "jacks."

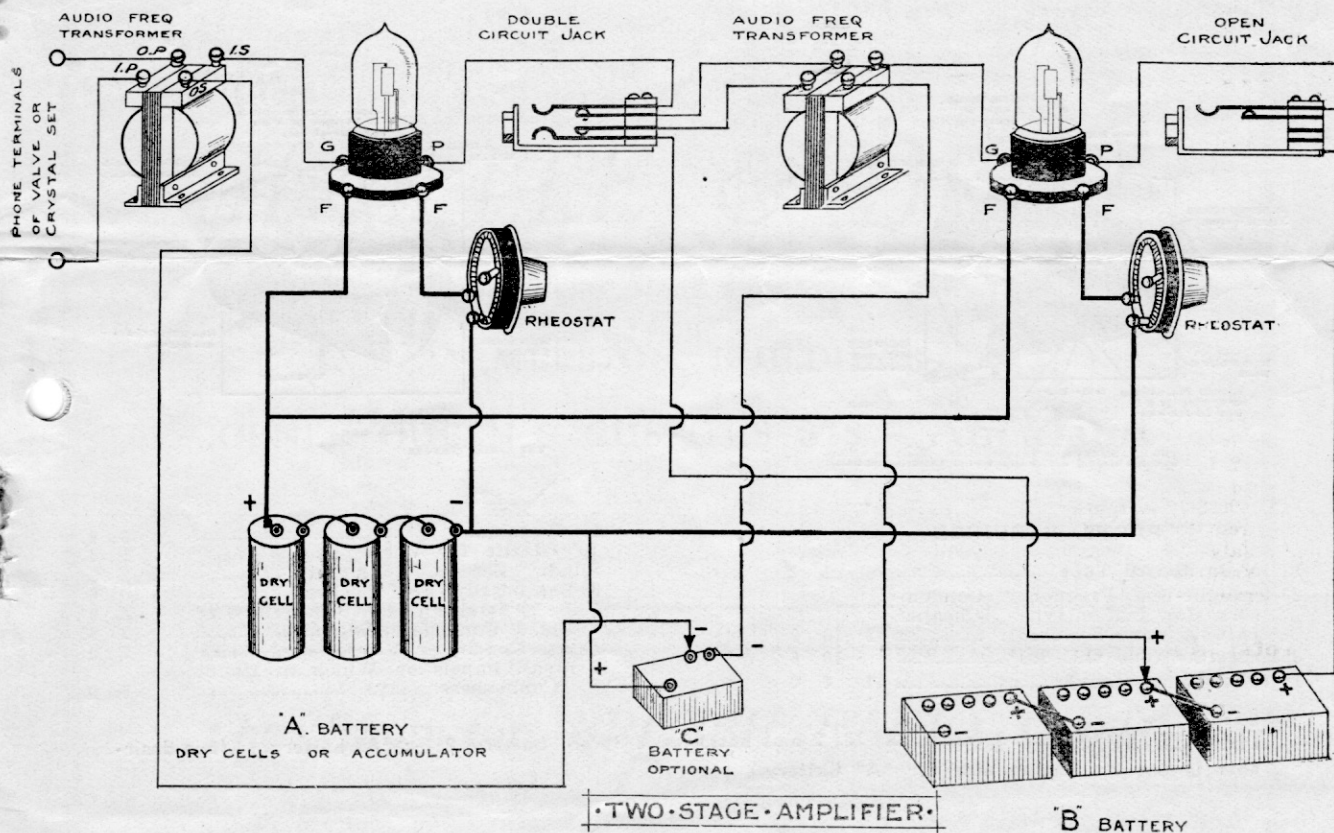
Panel .....	13/9	2 Rheostats .....	9/-
2 Valve Sockets .....	7/-	2 Jacks (double) .....	7/-
1 Jack (single) .....	3/-	1 Plug .....	3/6
1 Transformer .....	19/6	5 Terminals .....	1/3
1 Transformer .....	32/6	2 Valves .....	27/-
10' Glazite .....	1/4	Screws, etc. ....	2/-

Total: £6/6/10, plus accessories, as previously.

NOTE:—If amplifier to be used with a valve set, the "A" and "B" batteries already in use may be utilised for amplifier also; that is to say, the one set of batteries will be "common" to the whole outfit. In this case, however, it is not necessary to connect the minus terminal of "B" battery to both the previous valve set and amplifier; one connection will serve, as it will be noted that it joins up with the "A" battery positive, hence becomes

common to the whole outfit.

If "C" battery is not used, the wires may be all joined together or left out altogether, as shown in circuit diagram (two-valve audio frequency amplifier). It will be noticed that two diagrams are given for "amplifier," one being the circuit diagram, which shows how the amplifier would be connected to an existing valve set, the other represents the wiring lay-out. "C" battery is not shown in circuit diagram.

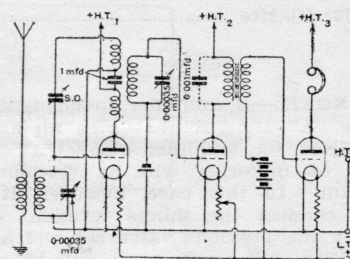
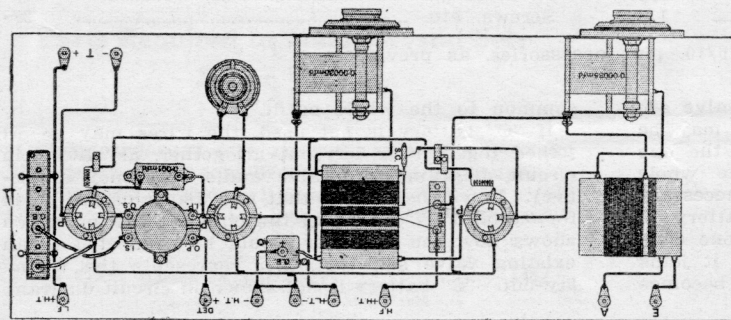


### 3-Valve Neutrodyne

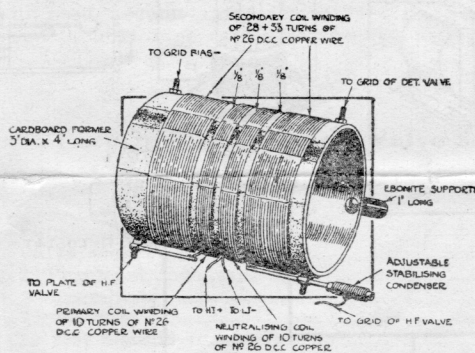
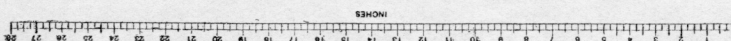
#### Lay-out and Constructional Details of Neutrodyne Set

This set has one stage high frequency, detector, and one stage audio. Cost of components can be cut down to about £5, plus valves, batteries, phones, etc. A panel is not essential, as only the variable con-

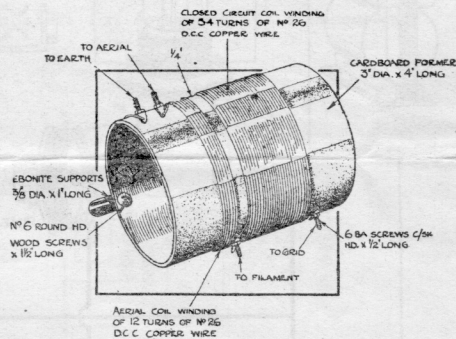
densers require small panels to support them. It is desirable to use condensers of the straight-line frequency type.



THREE-VALVE RECEIVER WITH STABILISED H.F. STAGE.



THE H.F. INTERVALVE TRANSFORMER. Details for winding intervalve coupling and constructing the stabilising condenser.



THE AERIAL COUPLER.

#### PARTS REQUIRED

PARTS REQUIRED					
12 in. Cardboard Tube .....	1	2		10 Terminals .....	3 4
2 Straight-line Frequency Condensers, slow motion type. (Cheaper pattern may be used).	2	10	0	10' Glazite for Wiring .....	1 4
3 Rheostats (one will do) .....		10	6	Sundry Screws, Bolts, etc. ....	2 6
1 Transformer (say) .....	1	0	0	3 Baseboard Valve Sockets .....	10 6
				$\frac{1}{2}$ lb. 26 Double Cotton Covered Wire .....	2 6
				1 Fixed Condenser .001 mfd. ....	2 6
				Fixed Condenser 1 mfd. ....	7 0
				2 Small Panels on Which to Mount Condensers (say) .....	5 0

Total £5/16/5, plus 3 valves, £2/-/6; 2 bias batteries, 3/3; "B" battery, 21/-; "A" battery. (It is desirable to use an accumulator for "A" battery.)

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