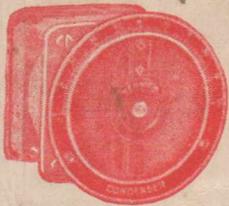


**THE**  
**RADIO EXPERIMENTER**  
 The Oldest  
 Established & Leading  
**WIRELESS PUBLICATION**  
 IN VICTORIA  
**AND BROADCASTER**  
 PRICE 1/6

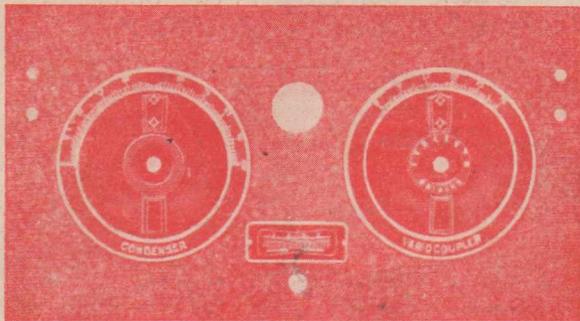
All Steel Wireless  
 Masts.  
 33 feet . £5 : 10 : 0  
 50 feet . £7 : 10 : 0



See our Expert:  
 Mr. Culliver,  
 (3 DP)  
 Telephone— after  
 hours, J3296.



"Eisemann" Variable  
 Condensers. Type LBV-  
 26.  
 Price, 46/6.



One-valve Set as illustrated  
 Price, including Patentee's Royalty, £11 : 7 : 6



"Eisemann" Variometers.  
 New Type Bar Controlled.  
 Price, 52/6.

DEMONSTRATIONS  
 ARRANGED.  
 Telephone—J4145  
 (5 Lines).

Sole Agents  
**D. & W. CHANDLER**  
 LIMITED  
 276-294 Brunswick Street (Next P.O.)  
 FITZROY

SPECIAL  
 WIRELESS  
 CATALOGUES  
 on APPLICATION.



## *Brown's Type "A" Headphones*

### *The Diaphragm for Distance*

Brown's Type "A" Headphones are fitted with unique cone-shaped diaphragms which may be readily adjusted to the position of maximum sensitivity.

These diaphragms are spun to the fineness of paper, and will respond to feeble impulses which would not affect other headphones. Consequently Brown's Type "A" Head-

phones are unsurpassed for use with Crystal Sets and for long distance work, having been proved by laboratory tests to have in the latter respect, three times the efficiency of headphones with ordinary diaphragms.

Of British manufacture, they are "as light as good headphones can be, and as comfortable as good headphones should be."

#### PRICES

2,000 and 4,000 ohms	...	...	...	...	£5 10 0
6,000 and 8,000 ohms	...	...	...	...	£5 15 0

*Procurable from all Radio Dealers*

**Amalgamated**  **Wireless**  
*(Australasia) Ltd.*

97 Clarence Street  
Sydney

Collins Street  
Melbourne

*Radio Dealers kindly write for Trade Price List*



# The RADIO EXPERIMENTER and BROADCASTER

NOVEMBER 15, 1924

VOL. 1, No. 12.

A monthly publication devoted to the interests of Australian Experimenting and Broadcasting. Published on the 15th of each month. Contributions are invited, and if accepted will be paid for.

Editor's offices: 59 Victoria St., Melbourne

For Advertising Rates apply advertising manager  
59 Victoria St., Melbourne.

## CONTENTS NOVEMBER ISSUE—

	Page		Page
Editorial . . . . .	3	Buying a Receiver . . . . .	13
A Few Notes on Audio Frequency Amplification . . . . .	5	Understanding Your Neutrodyne . . . . .	15
Why is it Difficult to Produce a Really Good Loud Speaker? . . . . .	7	The Police Wireless Patrol . . . . .	17
L.S2 Valve . . . . .	7	Regeneration Can Now be Measured . . . . .	24
Kilocycles and What They Mean . . . . .	9	Wireless Speed . . . . .	25
Mr. D. Campbell (Constructional Engineer Amalgamated Wireless (A/sia) Ltd. . . . .	11	Fooling With Radio . . . . .	27
		On the Air . . . . .	28
		Questions and Answers . . . . .	31
		Around the Showrooms . . . . .	33

TRADE MARK

## -ADVANCE-

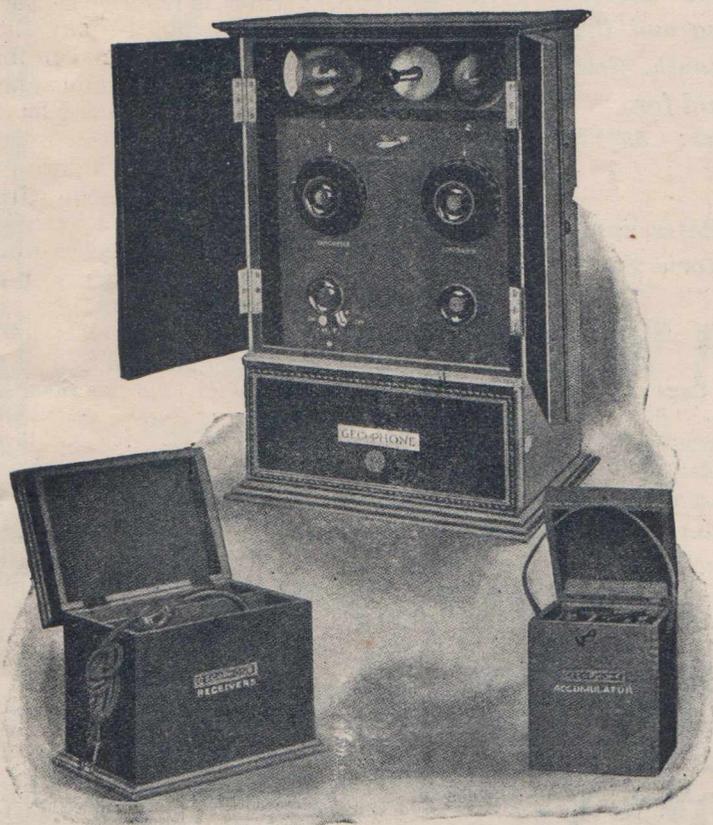
RADIO GOODS

*For Better Reception of  
The Broadcasting*

Watch for the  
**NEW VALVE  
PEEP SCREEN**  
AND USE  
**"ADVANCE"**  
Double Coil  
Mountings.  
Coil Plugs.  
Potentiometers.  
Rheostats.  
Valve Sockets  
Condensers.  
Transformers  
Etc., Etc.  
**CLARKE &  
HAGBLOM**  
Products

IMPROVED  
PHONE CONDENSER  
300 mfd.

# GECOPHONE



## A Wireless Receiver in Every Home

Instal a GECOPHONE WIRELESS RECEIVER in your home and enjoy the Concerts now being broadcast.

The GECOPHONE RECEIVER is a product of the General Electric Co., England, designed specially for Australian conditions, and is entirely British made.

Stocks are now available of Complete Sets to enable you to receive Melbourne and any of the Inter-State Broadcasting Stations.

For Particulars, Prices and Expert Advice

## British General Electric Co. Ltd.

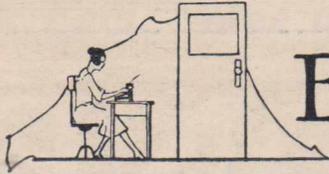
Magnet House 590 Bourke Street, Melbourne.

Phone 9940-1-2 and 10408

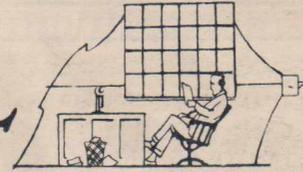
**MARCONI VALVES**  
MADE AT THE OSRAM LAMP WORKS

Gilbert Place, ADELAIDE.

154 Clarence Street, SYDNEY.



# EDITORIAL



## The Child Educator.

The average Australian father, whilst taking good care of his business, often neglects the needs of his son. He entrusts the boy's education to the school, his religion to the church, his morals to his mother, etc., but he does not often take the boy as a playmate. It is only by being a playmate with your boy that you can enter into the various things which interest the lad and prepares him for the life before him. The Boy Scouts Organisation endeavours to take this burden from the shoulders of the father, and too often the latter contents himself by paying the dues for his boy and fails to pay strict attention to the results of the training.

The father should go back to his own boyhood in thought and action for a short space of time every day, and mingle with his boy in his tastes and aspirations, only so can he find out the boy's instincts, inclinations and trend of thought, all of which may be boyish and without direction, perhaps, but good is bound to follow from the desire to be an engineer, lawyer, minister, doctor, or whatever else the childish mind may fancy. The father should follow each effort of the boy to its conclusion, and if he tires of one thing encourage him in the next. As the boy passes along in life the seed planted by the encouragement of the parent will find fruition.

It may be said that the Radio science is one which captures the imagination of the boy quicker than anything else we know of. Apart from being a plaything it can be developed to enormous proportions. A few yards of wire, a cardboard tube, a telephone receiver and a crystal, and the boy has an outfit for doing something really won-

derful. Powerful broadcasting stations, as well as weaker ones in his vicinity, are sending out daily programmes, to which he may listen with his home-constructed set.

The boy advances from the simplest set onward and onward until he brings to play the required knowledge of the most profound problems in electricity and mechanics.

The simple apparatus he first used has in it the elements for keen study and solution, the thickness of the wire, its length, its covering for purposes of insulation, its effect when wound on a cardboard tube and a current of electricity is sent through it, the effect this has on a smaller tube passed within the first, the action wireless signals have on the crystal detector, and finally, the results on the diaphragm on the receiving telephones. These are problems of the highest order—men of the deepest scientific achievements are studying the problems these things have occasioned.

After the boy has taken up the simplest apparatus he soon comprehends that there are fields afar for studying and experimenting, he builds other apparatus, improves on it and begins to delve in the ohm, the ampere, the farad. He advances

along the line of his school studies in electricity, and soon entertains ideas of his own—later we find that the boy, who began with his simple apparatus, costing a few shillings, to have for his personal use, an outfit defying criticism and measuring up to the needs of the scientific aspect of the matter.

The wireless field is teeming with men who began just in this fashion. Parents encourage your boy in the Radio game.

## COMPETITION !

### Experimenter's Prize Contest

IN order to encourage experimenters who are constructing their own apparatus, we are offering prizes for the two best papers in order of merit, submitted upon the following:—

#### “The Reduction of Static and the Prevention of Interference”

The paper must include description of apparatus and the results obtained from personal experience.

#### FIRST PRIZE

Order on Homecrafts for £3 worth of Wireless requirements.

#### SECOND PRIZE

Order on Oliver J. Nilsen for £2 worth of Wireless requirements.

Contestants should forward their papers to this Magazine addressed “Editor,” envelope to be marked “Contest.” Closing date has been extended to the 12th December, 1924.

All papers submitted will be judged by the “Editor,” whose decision will be final.



*For*

THE BEST

**RADIO RESULTS**

you must have the

*Western Electric*

**LOUD SPEAKERS**

which give the most faithful reproduction and purity of tone, free from distortion.

Broadcasting will soon be available. Consult us on radio matters and the selection of the most suitable apparatus for your home use.

Victorian Agent for

*Western Electric Company*  
*(Australia) Ltd.*

**C. R. FOSTER**

588 Bourke Street,  
MELBOURNE

## A Few Notes on Audio Frequency Amplification

By MAXWELL McCALMAN.

Now that broadcasting is in full swing receiving sets incorporating two or three stages of audio frequency amplification will become increasingly popular in country districts where good loud-speaker strength is desirable.

When designing a receiver employing audio amplification, care should be taken to have the high and low frequency components well separated, and when two or more stages of audio are used, the intervalve transformers should be well spaced on the panel. When the transformers are wired up see that the output and input terminals on both primary and secondary are correctly joined up, otherwise trouble will result. The O.P. (outer primary) should go to the plate, and the O.S. (outward secondary) to the grid, the I.P. (inward primary) and I.S. (inward secondary) being connected to the positive B. battery and negative A battery respectively. A small capacity about .002 fixed condenser should always be connected across the primary of the transformer, and in the case of a reflex receiver a similar condenser is usually essential across the secondary. Cheap transformers should be avoided at all costs, poorly constructed transformers are a sure cause of distortion and howling, especially those having high ratio values. For the first audio stage, a high impedance and fairly high ratio transformer is advisable, but for the second or third stage a lighter transformer should be used. Earthing the core or the shield of transformer is a procedure which will help to eliminate a tendency towards distortion which may be present.

The choke coil is becoming increasingly popular in amateur constructed sets, and it is perhaps the cheapest and most efficient substitute for a transformer in use. A Ford ignition coil is almost, if not quite, as effective as the most expensive transformer, and the slight loss in signal strength is compensated for by freedom from distortion. It is essential to include a grid condenser (see fig. 1) when using choke coupling, a suitable value for this is .001 mfd.

Second-hand Ford coils may easily be obtained from motor garages at a cost of about 5/- (the secondary winding must be continuous for wireless use, the primary being unused). When using dull emitter valves such as the Radiotron UV-

199, 201A, Marconi D E R, DE3, AWA 33 or AWA 101 as audio amplifiers it is necessary to apply a negative grid bias of from 3 to 4½ volts, according to the plate voltage used. An ordinary Marconi R valve with from 50 to 60 volts on the plate is an excellent audio amplifier. Power amplification with the use of special valves is more economical for the operation of large loudspeakers than is realised, inasmuch as one power amplifying valve with, say, 200 volts on the plate, will give as much amplification as two or three of the ordinary valves, with a smaller drain on the high tension current.

An intervalve transformer with a ratio of 1 to 1 or a choke coil is usually used in conjunction with power valves. A 1 to 1 telephone transformer is also advisable to protect the windings of the phones or the loudspeaker from a burn out owing to the amount of current passed.

---

Dame Clara Butt recently had the honor of being the first to sing directly to all Great Britain. Her voice was broadcast from the new high power station, 5XX, at Chelmsford, without lower power stations acting as relays.

It was not a complete success, and there is little danger of the supersession of local stations for the present. Atmospherics interfered with the reception in London, Cardiff, and Newcastle, but as far North as Aberdeen, in Scotland, the concert was heard without interference.

---

Marconi's first experiment in trans-Atlantic wireless, which took place at Signal Hill, Newfoundland, was represented in the Wembley Pageant. The scene reproduced as faithfully as possible, the eventful trials Marconi made in December, 1901. G. S. Kemp, who assisted Marconi in the Signal Hill experiments, took the same part at Wembley that he did at Newfoundland, more than a score of years ago.

# WHOLESALE AND RETAIL RADIO DEALERS

*Distributors of*

Gilfillan Radio Products, Marco Parts, "Imperia"  
Valve Sets, "Imperia" Crystal Sets

AND MANY OTHER LEADING LINES

*Call or Write for Price Lists*

*Wholesale and Retail*

*Harringtons* LTD

266 COLLINS STREET, MELBOURNE

Also at Sydney, Brisbane Adelaide, Auckland and Wellington.

*To Obtain the Best Results from Your Set, instal*  
THE



## RADIO BATTERY

Obtainable all Radio Stores or

A. MAIR & CO.  
L. COEN, Wireless Dept.

GLOBE RADIOS.  
ASSOCIATED WIRELESS.

OLIVER J. NILSEN & CO.  
P. A. MORRIS, Wireless Depot.

Battery Service Station

**E. A. MACHIN & CO. PTY. LTD.**

Corner Elizabeth and a'Beckett Streets, MELBOURNE.

Phones: C 5430 and 10589

## Why it is Difficult to Produce a Really Good Loud Speaker?

The search for a really perfect loudspeaker continues to absorb the attention of radio engineers all over the world.

The extraordinary difficulty of this effort is not hard to understand when one sets down the number of different scientific problems which demand solution before this invention is possible. A cursory look through recent loudspeaker literature discloses at least six or eight of these problems.

The most important and well known one is that of electric distortion in the circuits. This is really a name for the habit of any electric speech-transmitting apparatus to absorb and remove from the sound some of the frequency that ought to be in it. The human voice, for example, sounds sharp and nasal when it loses its lower frequencies (say, below 1,500 cycles a second) and hoarse and throaty when it lacks the normal higher frequencies. All of the frequencies from about 200 cycles to 4,000 or over, must be present and must come satisfactorily through the apparatus if the reproduction is to be reasonably normal.

Then, in addition to the electric distortion (determined, of course, by the combined capacities, inductances, and resistances of the circuits) there is a magnetic distortion due to the fact that the magnetic properties of iron ore not perfect, that any electromagnetic system which one can devise will always respond more readily to some frequencies than it does to others.

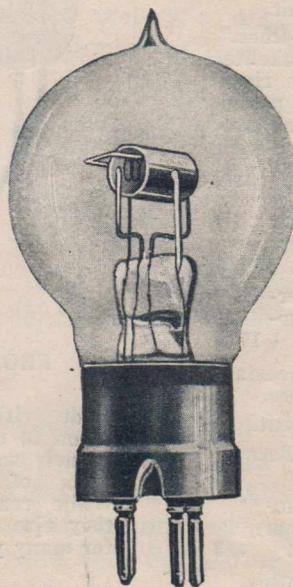
And when one has solved these two troubles there are the peculiarities of the diaphragm to reckon with; its persistent tendency to seize hold of one particular frequency that it happens to like and sing it out at one to the practical exclusion of all the other tones that ought to come out too. The horn or other sound-magnifying device adds still other peculiarities. Like the diaphragm it has its preferences, and it insists that the listener shall hear them.

Then a loudspeaker must be heard, usually, in a room, and the room, too, has its acoustic properties and preferences. There are echoes and rattles and the absorption of sound by hangings, all to be reckoned with. A person speaking in a room or anywhere else adjusts unthinkingly the loudness and quality of his voice to the needs of the circumstances, such as the size of the room

and the number of auditors. No one has yet invented a brain for the loudspeaker that will enable it to do this.

Finally, there are a couple of difficulties that are in the auditor instead of in the apparatus. The human ear is one of them. Gallileo is reported to have said that if any optician had sent him an instrument so imperfect as the human eye he would have returned it.

### L.S2 Valve

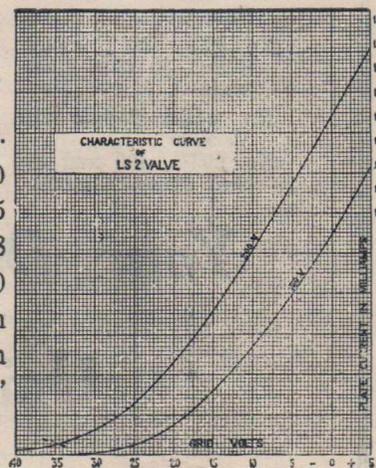


L.S.2 is similar to L.S.1 but has a lower impedance for use as last stage of multi-valve low frequency amplifier. It has a voltage magnification of 5, but will deliver even more power than the L.S.1.

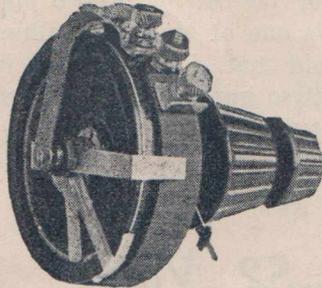
These valves are ideal for loud-speaker work and are eminently suitable for amplifiers in systems designed for distributing speech or music throughout large buildings, through the medium of a number of loud-speakers.

#### Details—

Type	L.S.2.
Fil. Ter. Volts	6.0
Fil. Amps	1.5
Fil. Bat. Volt'ge	8
An'de volts	300-600
O'all l'gth	125 m/m
Dia. bulb	67 m/m
Socket Type	"R"



## You Can Depend Thoroughly on FROST GUARANTEED PARTS



**FROST-RADIO Bakelite  
Tube Control Unit.**

Called for Short, "Pot-Rheo."  
Made of maroon Bakelite.  
Combines in one unit rheo-  
stat with vernier, and poten-  
tiometer, with two-knob control.  
All controls work with  
extreme smoothness. A val-  
uable addition to any set.

No. 607, 6 ohms Vernier  
and 200 ohms Poten-  
tiometer . . . . . 17/6

No. 610, 35 ohms Ver-  
nier 400 ohms Poten-  
tiometer . . . . . 17/6

**FROST-RADIO Rheostats  
and Potentiometers.**

Precision adjustment.  
Apparatus that reflect  
quality.

No. 650-2 Maroon Bake-  
lite 6 and 30 ohm  
Rheostats, . . . . . 7/3

No. 651-3 Same, with  
Vernier . . . . . 9/6

No. 654, 400 ohm Poten-  
tiometer . . . . . 9/6

No. 600-2 Metal Frame  
6 and 30 ohm Rheo-  
stats . . . . . 5/6

No. 601-4 Same, with  
Vernier . . . . . 7/6

No. 603-5, 400 and 200  
ohm Potentiometers 5/6



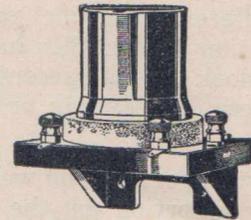
**FROST FONES.**

Made with watch-like pre-  
cision to respond to the ex-  
tremely small electrical cur-  
rents of radio reception.  
While remarkably sensitive  
they also are sturdy enough  
for many years use.

No. 161, Frost Fones,  
2,000 ohm Aluminium  
Head-pieces . . . . . 32/6

No. 171, Frost Fones,  
3,000 ohm Aluminium  
Head-pieces . . . . . 37/6

No. 172, Frost Fones  
3,200 ohm Maroon  
Bakelite Head-pieces 45/-



**FROST-RADIO**

**FROST RADIO  
Sponge Base Sockets.**

No. 618, Moulded Bake-  
lite Shock Absorber  
Socket for Standard  
Base Valves . . . . . 6/3

No. 617, Same, for U.V.  
199 Valves . . . . . 6/3

No. 107, Same, for  
Standard Valves . . . . . 5/-

No. 612, Moulded Bake-  
lite panel, maroon  
finish, for U.V. 199  
Valves . . . . . 5/-

No. 616, Compact gang  
of three Shock Ab-  
sorber Sockets, for  
panel or table mount-  
ing. For U.V. 199  
Valves . . . . . 24/6

No. 619, Same, for  
Standard Valves . . . . . 24/6

**FROST RADIO.**

Jacks, all styles, 4/6 to 6/6  
Plugs, double and single,  
. . . . . 4/6 and 5/-

621, Parallel Switches 5/-  
608, Push and Pull Bat-  
tery Switches . . . . . 4/-

400, Crystal Loose  
Couplers . . . . . 75/-

410, Crystal Tuning Coil  
Slider . . . . . 27/6

**Your Dealer can supply all these!**

*At the above Prices*

**United Distributors Limited**

Wholesale only

72 Clarence Street, Sydney

592 Bourke Street, Melbourne

## Kilocycles and What they Mean

Read the following article and understand exactly what Kilocycles means. We anticipate that this term will be commonly used in Australia at an early date.

As more and more broadcasting stations are likely to come into operation in Australia in the near future, a method of designating Radio waves is likely to be introduced, which will be somewhat new to the Radio public.

This is the use of frequency in Kilocycles (abbreviated KC) instead of wavelengths in meters.

The advantage of this practice have been familiar to Radio engineers for some time past, and it is probable that it will eventually entirely replace the use of wavelengths in meters. As a matter of fact wavelength is a somewhat artificial conception in the handling of Radio apparatus, and is one of the difficult things for the beginner to understand.

The frequency of the Radio wave is the same as the frequency of the alternating current which flows in the Radio transmitting or receiving set. In reality the "Kilocycle" is simpler than the forbidding aspect of the word suggests (Kilo means 1000, and cycle means one complete alternation). The number of Kilocycles indicates the number of thousands of times that the rapidly alternating current repeats its flow in either direction in the aerial in one second, the smaller the wavelength in meters, the larger is the frequency in Kilocycles.

The reason Kilocycles are coming into use and displacing meters is that the necessary separation of the frequency of transmitting stations to prevent interference is the same no matter what the frequency may be. This necessary separation is variable and quite misleading when expressed in meters, thus the number of stations that may operate simultaneously without interference may be correctly judged from Kilocycles, but not from meters.

Let us consider the amateur working on a band of wavelengths from 150 to 200 meters, that means a frequency band from 2000 to 1500 Kilocycles. This is an enormously wider band when considered from the view point of Kilocycles than, for example, the band having the same width in meters from 1000 to 10050 meters, which is 300 to 286 Kilocycles. While it is possible to carry on fifty simultaneous radio communications between 150 and 200 meters only one could be carried on between 1000 to 10050 meters.

At the second National Radio Conference, held in America last year, the Department of Commerce and other Government Departments, decided to follow the practice of specifying in even values in Kilocycles, rather than meters. The Conference recommended the practice of expressing wave frequency in Kilocycles per second with wavelength in meters in parentheses thereafter. The relation between them is very simple.

To obtain Kilocycles divide 300,000 by the number of meters, to obtain meters divide 300,000 by the number of Kilocycles.

For example:—

100 meters—	approximately	3000	Kilocycles
300	"	1000	"
1000	"	300	"
3000	"	100	"

For highly accurate conversion the factor 299,820 should be used instead of 300,000.

We are informed that sixteen observation cars of a Canadian Railway have been equipped with receiving sets. Although no trains have been fitted up commercially in Australia, nevertheless some very interesting experiments have been carried out by the Amalgamated Wireless, which proves that the plan will be quite feasible. Our RESO train in Victoria was fitted early this year, and during the trip down to the Gippsland district, successful transmissions were carried out through the Domain wireless station. Mr. Clapp, Chairman of the Board of Commission, spoke into the microphone at VIM, and was plainly heard on the train; on another occasion, Mr. Canning, Outdoor Superintendent, also addressed the invisible audience on the RESO train, and, as reported by Mr. Hoskings, in charge of the arrangements at the receiving end, the only words lost were those drowned out by the laughter of the people in the parlour car when Mr. Canning perpetrated a joke.

"The Better Farming Train," on the recent tour, was also equipped with wireless and was highly successful.

## Radio "A" Batteries



## 2 Volt. Cells

Type.	Capacity Ignition.		Code.	Price.
SSR1	60 amps. hr.	30 amps. hr.	Omega	£1 6 0
SSR2	80 "	40 "	Active	£1 13 0
SSR3	100 "	50 "	Regalia	£2 0 0
SSR4	120 "	60 "	National	£2 10 0

Maple Crates for 4 and 6 volt Radio Batteries, complete with Leather Strap Handle, 8/- each.

Prices include standard Lead Alloy Connectors where necessary.

These Batteries are designed on the principal of the "U.S.L." Lighting and Starting Batteries. They are constructed in single unit cells of 2 volts. The plates are encased in a strong ebonite Jar, fitted with moulded Jar Cover, incorporating the "U.S.L." Company's patented post design, which makes it impossible for creepage of acid, and therefore prevents corrosion of Terminals. The complete 2-volt unit being fitted in a dovetailed Wood Case makes the "U.S.L." Radio units the most durable Battery for those desiring the best results from their Wireless Sets.

Central Distributors and Main Service Station—

# Smith, Sons & Rees Ltd.

100 Flinders Street, Melbourne.

Telephone—Central 10178 and 919.

Distributors—S. N. MONKS & Co., 544 Elizabeth St., Melb.; ACCESSORIES LTD., 358 Elizabeth St., Melb.

# "Exide"

## BATTERIES

Are essential for the success and  
enjoyment of a wireless outfit

Specify "Exide" when  
ordering your set

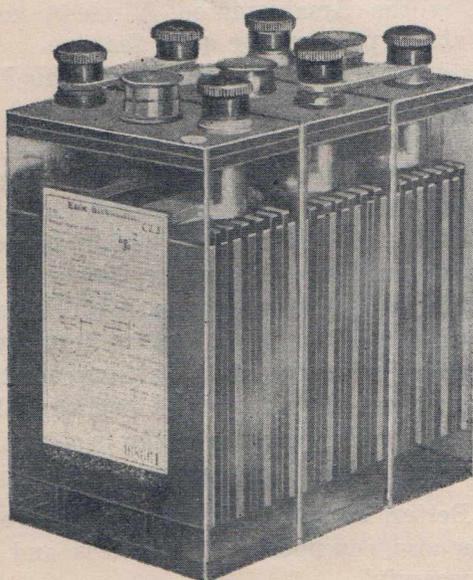
Both "low" and "high" tension

Obtainable from all Radio Dealers

Distributor for Victoria and Tasmania :

## A. P. Sutherland

Queens Bridge, (2 Maffra St.), Sth. Melb.



Telephone 4694

## Mr. D. CAMPBELL

Constructional Engineer—Amalgamated Wireless (A/sia) Ltd.

Few men, especially in Australia, can claim to have been associated with wireless activities for such a long period as Mr. Campbell.

On the inception of experimental wireless in H.M. Navy in England, in 1898, Mr. Campbell, having had an electrical training, and being Chief Signal Instructor at Portsmouth Signal School, was one of the first detailed to carry on experiments in connection with the new method of communication. At that time the wireless duties associated with the position were only of a secondary nature.

In 1903, Mr. Campbell was appointed to the H.M.S. "Caesar," Flagship of the Channel Fleet, then under the command of Lord Beresford. The ship's wireless equipment consisted mostly of coherers, leyden jars, jiggers, condensers and magnetic detectors, supplemented in the words of Mr. Campbell by "plenty of confidence." A daylight range of 50 miles was then considered good.

Later, he was attached to the Royal Yacht for the summer cruise, and at the end of that period joined the H.M.S. "Powerful," and so journeyed to Australia. Two years later he returned to England, took charge of the wireless section of the Naval Signal School at Portsmouth, and remained there until, having completed his service, he left for Sydney in 1909. The following year he joined up with the Australasian Wireless Company, taking charge of the workshops and the maintenance of ship stations.

Two years later he was engaged in the construction of the Pennant Hills Wireless Station, and was afterwards installing engineer in the erection of the Amanui and Awarua Coast stations built for the New Zealand Government.

On the absorption of the Australasian Wireless Company by Amalgamated Wireless (A/sia) Ltd. in 1914, Mr. Campbell was appointed Equipment Manager in charge of ship's installations and maintenance.

During the last ten years Mr. Campbell has been engaged on many important and highly interesting wireless jobs, viz: the preparation and installation of stations at Macquarie Island and

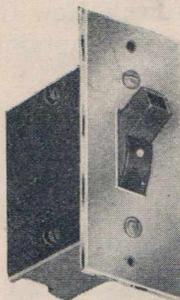
Adelia Land, in connection with the station at Garden Island for the Dr. Mawson's Antarctic expeditions; Navy, the coast station at Nukualofa for the Tongan Government; the motor launch "Wattle" for Dr. Campbell Brown's New Guinea expedition; and the equipment for Captain Hurley's New Guinea Expedition.



Mr. Campbell was also responsible for the constructional work in connection with the Broadcasting Station "2FC" erected by Amalgamated Wireless (A/sia) Ltd. for Messrs. Farmer and Co., Sydney, and was in charge of the erection of the new Broadcasting Station at Braybrook, Melbourne.

The Federal Experimental Transmitting Station, call 3 UZ, is on the air every Monday and Wednesday evening at 8 p.m., on a wavelength of 350 meters. It will pay listeners-in to tune in to this station as some very fine musical programmes are transmitted.

## RADIO PARTS



Flush Panel Switches  
for Filament Control or  
Loud Speaker Switching  
3/6 each.

### NOTICE!

At an Early Date  
will be Available

### THE "GOLDENTONE" RECEIVER.

An instrument of superlative quality,  
embodying the latest ideas in Broadcast  
Reception.

*Call and Inspect*

## J. R. BOW PTY. LTD.

LICENSED RADIO DEALERS

224 Queen Street, MELBOURNE

Tel: C 716



*Headphone*  
4000 ohms.  
35/- Set

Valves  
Type A.R.  
17/6 Each

Plate Voltages  
30/80

Filament  
Voltage 4Volts

Filament  
Current 0.75  
amperes

This valve has been specially  
designed for amateur use. It is  
compact, silent in working, and  
gives high amplification.

## Edison Swan Electric Co. Ltd

368 Little Collins Street, MELBOURNE

Also at ADELAIDE, SYDNEY and BRISBANE.

# "PICO" HEAD-PHONES



WONDERFUL sensitiveness of reception, and extreme lightness and  
comfort on the head make "PICO" Head-Phones the ideal choice.  
They enable you to hear the original voice or music in its full  
volume and natural beauty.

Although so finely adjusted, they are most durable, being strongly made  
for long and satisfactory service. They are accurately wound to 2,200  
ohms resistance.

**FULLY GUARANTEED**

*One Price: 25/-*

Insist on "PICO" Head-Phones—they are popular because they are  
perfect.

*Your Dealer Can Supply You*

**UNITED DISTRIBUTORS LIMITED**

(Wholesale only)

72 Clarence Street, Sydney. 592 Bourke Street, Melbourne

And at Adelaide, Perth, Brisbane, Hobart, Wellington.

## Buying a Receiver

HERE IS AN ARTICLE WHICH WILL ASSIST YOU TO SELECT A TYPE OF RECEIVER CONSISTENT WITH YOUR NEEDS AND PURSE.—EDITOR.

The simplest kind of receiver is of the Crystal variety, so called because mineral or crystal is used as part of the system. The prices of these sets range from £3, upwards, and the very best Crystal set, including interchangeable coils to cover long and short waves, head-phones and aerial equipment would not cost more than about £8.

The quality of reception obtainable with a crystal receiver is very pure and corresponds exactly with what is being sent out from the Broadcasting Station. The only limit of the Crystal set is its range; generally speaking 20 miles may be regarded as the average figure for the class A stations, although with a good high aerial, a much greater distance could be covered.

### Single Valve Set.

There are many kinds of receivers employing a single valve, and most of them may be relied upon to give satisfactory performances. There is little need for the prospective buyer to go into technical discussion of the relative merits of different circuits used in single valve receivers with one exception, and that is the so-called single circuit regenerative receiver. A receiver of this kind in the hands of an inexperienced person is likely to act as a feeble transmitter, causing a very disagreeable howl to be heard by other receivers in your neighbourhood. The peculiar whistle given by such a receiver has become known in Australia as a "Joey" owing to a certain similarity to a canary call.

Most single valve sets are designed to work with a pair of head telephones, but a well designed set with a good aerial will probably give good loud-speaker results up to a distance of about 30 miles.

Another method of obtaining the most out of single valve receivers is to use a crystal detector and add on a valve to amplify the signals received on the crystal. This will be found to give excellent results.

### 2-Valve Set.

By the addition of another valve good loud-speaker results may be obtained, where otherwise signals strong enough only to actuate telephones would be obtained.

An additional valve may be used in two ways, either as a radio frequency amplifier or Audio frequency amplifier. In the first case it is used where it is desired to increase the range of the set, and in the latter case where greater volume is desired (which does not necessarily mean increase in range).

### Let us Consider Three Valves.

The number of three-valve receivers is rapidly increasing, and they are becoming popular on account of the fact that a loud-speaker may be used.

Referring to the matter of loud-speakers we would point out that the distance over which results may be obtained is materially shorter than most of the glowing accounts would lead you to believe. There are a great many exceptions to the rule, but the rule is, that a few stations may be heard clearly on a loud-speaker with a three-valve set over distances in excess of 100 miles. It appears there is a large number of people who are suffering from a bad attack of "distant-itis," and would rather hear a few sqawks from a 1,000-mile distant station than a complete programme from a nearby station. Unless you happen to be within a distance of about 20 miles of a class A station an out-door aerial will be necessary. For those within a suburban area a few feet of flex strung along the picture moulding would give good results. It should be understood, however, that an out-door aerial is always preferable to an in-door one.

### 4-Valve Set.

At the present time the two most popular four-valve sets are the tuned anode set and the neutrodyne. Of the two it is safe to say that the former is rapidly gaining favor.

From the point of view of purity and reproduction the neutrodyne set takes first place, but the tuned anode receiver properly handled could cover extreme distances. There are in Victoria several well designed four-valve receivers which successfully receive Farmer's service on a loud-speaker, but we have yet to learn of one that can be relied on day in day out to give good loud-speaker results without occasionally fading.

## W. CUMMING & CO.

### RADIO SUPPLIES

222 Swanston Street, Melbourne

Telephone Central 2122

1-5 Victoria St., Windsor. Tel. Windsor 6987

Complete Parts for

### 1-VALVE CABINET RECEIVER

Price, £11-0 0

Write for Full Particulars

We will pay freight on cash with order if you return this advertisement.

Dear readers, do not believe all the glowing reports you hear. Enthusiastic owners very often let their imagination hold full sway when describing the merits of their particular set. The person who owns a receiving set is closely allied to the angler in this connection, inasmuch as the tendency to exaggerate is always present.

As a four-valve set will give good loud-speaker results 20 or 30 miles from a class A station on a loop, the above type will find favor with motorists during their week-end runs.

#### 5-Valve Sets.

The addition of another valve can be used for either increasing the receiving range or the volume of sound desired. Especially where it is desirable to fill a large hall with music for the purpose of dancing, etc.

#### 6- and 8-Valve Sets.

We are now approaching the limit in receivers. For the man who can afford to pay the price a six or eight-valve super-hetrodyne receiver will give him the maximum results.

These sets have practically unlimited range, their only limitation being interference through

atmospherical causes, a trouble, which, up to the present moment, radio engineers have not been able to abolish.

The six or eight-valve super hetrodyne set may be built in the form of a cabinet similar to a gramophone, with its loop aerial concealed, and will give satisfactory loud-speaker results on stations thousands of miles away.

The Radiola 8, built by the Radio Corporation of America, is an example of what can be done in this respect. Major Armstrong, inventor of the Super Hetrodyne, when speaking at a meeting of the Radio Engineers Association of New York, described how an old lady 70 years of age, in Boston, Mass., successfully tuned in "2 LO London" on a set of the above type.

Now broadcast listeners, we have given you an idea of what may be expected from the various kinds of receivers. It is now up to you to get busy and select one according to your particular needs.

In conclusion, we will tender one word of advice. Select the nearest high class station to you and stick to it. The consistent good results will fully justify your doing so.



#### 1. CONSTRUCTION OF RADIOPHONE and TELEGRAPH RECEIVERS for BEGINNERS.

Specially prepared photos and drawings are a feature of this book, which will give the amateur a thorough knowledge of the erection and working of Radio Apparatus.

#### 2. HOW TO MAKE COMMERCIAL TYPE RADIO APPARATUS.

Explaining how to make apparatus equal in appearance and operation to that supplied by Commercial Companies. Numerous illustrations to guide you.

#### 3. CONSTRUCTION OF NEW TYPE TRANS-ATLANTIC RECEIVING SETS.

Complete information with special drawings, hook-ups and photographs, on building the newest types of Transoceanic Receiving Sets. Schedule of the Transoceanic Stations and recent recommendation of the National Board of Fire Underwriter is included.

#### WIRELESS COMPONENT PARTS

An exceptionally good book, describing and explaining the function of each part of a Wireless Set, also the construction of each part. **2/-** Post Paid

#### 4. IDEAS FOR THE RADIO EXPERIMENTER'S LABORATORY.

Contains much valuable data on the Construction and Use of such Laboratory Instruments, as the Oscillator, Wave-meter, etc., as well as instructions for winding Inductance Coils

#### 5. RADIO HOOK-UPS. A REFERENCE AND RECORD BOOK OF CIRCUITS USED FOR CONNECTING WIRELESS INSTRUMENTS.

Up-to-date and efficient diagrams are given for all types of Crystal and Audion Receivers. Spark Coils, Transformer, Vacuum Tube Transmitters and other Apparatus.

#### 6. DATA DESIGN FOR RADIO TRANSMITTER AND RECEIVERS.

A reference book of tables and simplified formulas necessary for Radio Circuits. Engineering data is made available to the experimenter, and helpful tables are supplied for Radio Engineers.

**2/6**  
Each  
Post  
Paid

#### A BOOK YOU MUST SECURE

Homecraft's Catalogue and Handy Book, 130 pages, 400 illustrations, lists everything for Wireless. Send now. **6d.** Post Paid

**Homecrafts**  
P. H. McELROY.

211  
SWANSTON ST  
MELB.

MATERIAL FOR  
ELECTRICAL & MECHANICAL  
HOBBIES

CENTRAL RADIO SERVICE for AUDIOPHONE RECEIVERS.

# Understanding Your Neutrodyne

By E. J. CRANE.

It is really more simple to operate a neutrodyne receiver than to operate the average set, even those employing only one or two main controls. To get the distant stations it is necessary to know a little more than to get the stations that are near at hand.

The dimensions of the aerial are directly responsible for distance, selectivity and volume. As a rule, the higher the aerial the greater the distance obtainable with it; the longer the aerial the greater will be the volume from it. However, it should not exceed 100 to 150 feet.

When the aerial is the proper height and length the problem is selectivity, or the ability to cut out all but distant stations. If there are no broadcasting stations within thirty-five or more miles, the high aerial is just the same, but when the set is installed near a broadcasting station it is necessary to cut down to increase selectivity.

## Size of Aerial.

For all-round results in congested districts 75 feet is a good length. This measurement is from set to the furthest end of the aerial.

It is important that at no time (whether the aerial is inside or outside) should the aerial repeat itself. It should keep going away from the set.

For electrical reasons, when installing an aerial it is best to keep the lead-in, or wire leaving the aerial, away from the building as much as possible. This is of great importance when the building is of steel construction.

An aerial that has but a single wire has a slight directional effect. Stations in the direction of which a single wire aerial is point (open end of aerial) will not come in as strong as will stations from the other end.

Flexible lamp cord can be used for the ground wire, and sometimes better results will be obtained if it be connected to the radiator instead of to the water-pipe. Usually, the water-pipe is better.

When an outside aerial is used, it is necessary to use an approved lightning arrester.

With most neutrodyne sets a loop aerial is not to be recommended unless it be separated at least six or more feet from the set. This prevents the tendency of the valves falling into oscillation, due to an electro-magnetic effect of the loop in its relation to the coils of the set.

## Neutralising Condensers.

Quite often a man is called in to examine or give

advice on a set that is not operating properly. Usually the advice is to change the electrical value of a device inside the cabinet. This device is called the neutralising condenser, and should never, under any consideration whatever, be tampered with.

When it is taken into consideration that the secondary and primary coils also belong to the grid and plate circuit of a tube, and that the capacity existing between these two coils is much greater than the capacity of the tube alone, it is apparent that the little capacity differences existing in different tubes are not sufficient to warrant changing an adjustment made by experts under operating conditions.

## Types of Valves.

It is recommended that the owner of the set use the same type valve tube throughout. This applies to the detector valve, the one on the extreme right as one faces the set. Some owners of neutrodyne sets are using a soft valve as detector, but experience indicates that a hard valve gives better and more uniform results.

In testing out the relative efficiency of valves, tune in a fairly weak station and have the phone plug in the first jack, using the last two valves as spares. When the station is tuned in, change each valve around. After changing each valve, re-adjust the tuning dials as well as the rheostats until the greatest volume is obtained on the weak station. Then put the phones in the second jack, keeping out the last valve as a spare to test out the second last valve. In this way defective as well as noisy tubes can be eliminated and new ones substituted for them.

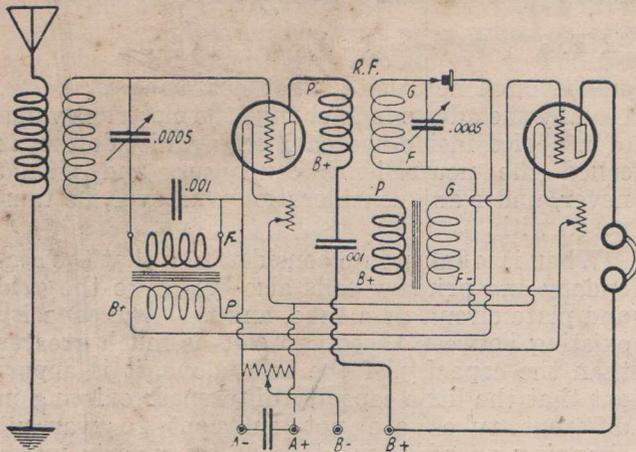
## Tuning for DX.

Rheostats often play a part in distant reception and they should also be varied, when a weak station is on the air, to determine their most sensitive point. The amplifier rheostat is used to regulate the flow of current to the filaments of the first and last two valves, and the detector rheostat for regulating the middle valve only.

When you want to pick out a distant station, the first step is to find out whether or not the station is due to be on the air at the time.

Plug phones in second audio jack, bring up the rheostat to the proper operating point and set first and second neutrostage dials; now slowly turn aerial tuning dial over its entire range. If nothing is heard, try various combinations of the neutrostage dials, but all combinations to be within one or two degrees. If unsuccessful, try other stations.

**TRY THIS OUT**



This is the Harkness Reflex Circuit with one stage of audio frequency. Don't omit the .001 mfd condenser across the primary of the audio frequency transformer. This is absolutely necessary to by-pass the necessary radio frequency current from the plate of the first valve past the transformer instead of through the high resistance winding.

**WIRELESS LECTURE AT SYDNEY UNIVERSITY.**

Before a large audience, including the Dean of the Faculty of Science, the Professors of Physics, Electrical Engineering and others, in the Union Hall, at the Sydney University, recently, Mr. E. T. Fisk, Managing Director of Amalgamated Wireless (Australasia) Ltd., delivered a lantern lecture on the latest developments in wireless telegraphy, wireless telephony and wireless broadcasting.

The lecture was arranged by the University Radio Society, and in the course of an hour's address the lecturer dealt with the fundamental principles of modern radio communication, and described the technical and other applications in its various branches. Marconi's new inventions in the production of powerful ultra short wave transmitters and his new "Beam" System were described, and the descriptions were received with great interest by the audience, which comprised a considerable number of students in the Department of Physics.



*The Most Fascinating Hobby for Young and Old*  
**A "Leviaphone" Senior Crystal Set £3/3/-**

**GETS THE BEST RESULTS - HONEST VALUE**

You will find it a constant source of enjoyment for every member of the family. Guaranteed Braybrook Wavelength (20 mile radius), and complete with one pair of phones, aerial wire and insulators. The "Leviaphone" will carry three pairs of headphones if desired.

**For Long Distances**

**SPECIAL 1-VALVE SET, £11/0/0**

A practical and reliable set, complete with Head-phones, Valve, Batteries, Aerial, etc.

**"Leviaphone" Special Cabinet Sets, £60**

The "Leviaphone" 4-valves, guaranteed perfect reception up to 500 miles on loud speaker; in Rosewood, Jacobean, Oak and Maple Cabinets, complete with all accessories.

Write for Illustrated Wireless Catalogue. Phone 9840 (3 Lines)

Order by Post—Carriage Extra on all Sets.

**LEVIATHAN**

PTY. Cr. Swanston and Bourke Sts.,  
 LTD. MELBOURNE.

## The Police Wireless Patrol

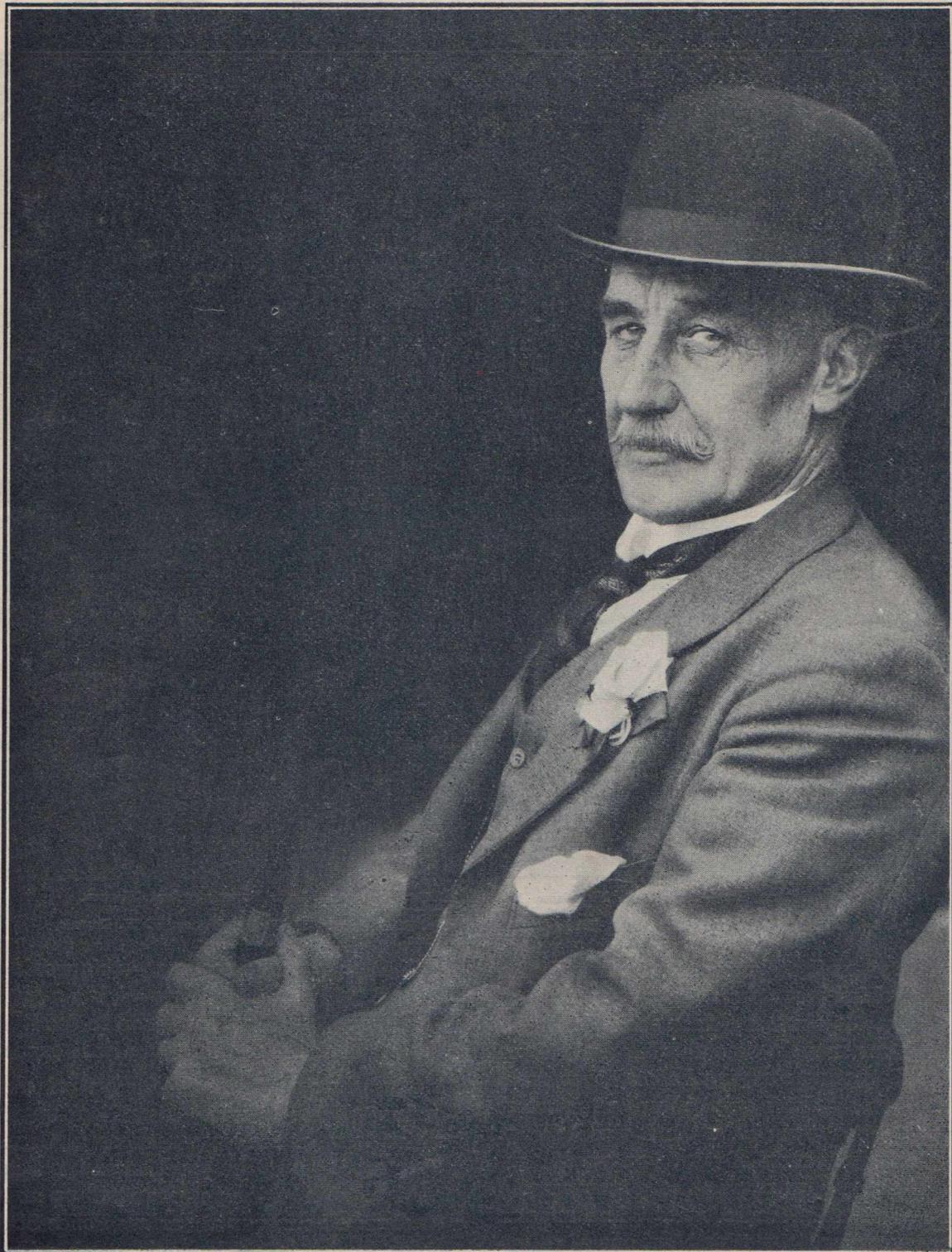


Bottom Row—Centre: A. Nicholson, Esq., Chief Commissioner. Left: Superintendent Warren, Right: Inspector Montague, C.T.B.  
Top Row—Left to right: F. J. Williams, A. R. Currie, R. S. Bastin, W. R. Hutchinson, F. W. Downie, C. R. Hughes.

FOR some years the Victorian Police have had a car patrolling the suburbs during the hours of darkness. At about 9 o'clock each evening, a big touring car may be seen driving away from the Police Barracks, carrying half a dozen men. Should you be standing on the curb of a street near to the car in question, while it was held up, pending the traffic right-of-way, you would probably be under the impression that it contained a number of men on pleasure bent. The mission of the car, however, is anything but one of enjoyment, and the six pairs of eyes, apparently glancing idly around, are taking in every detail of the passers by.

The car has no fixed beat—this would be fatal from a Police point of view—it has a great effect on members of the underworld to see it suddenly appear at a given point when least expected.

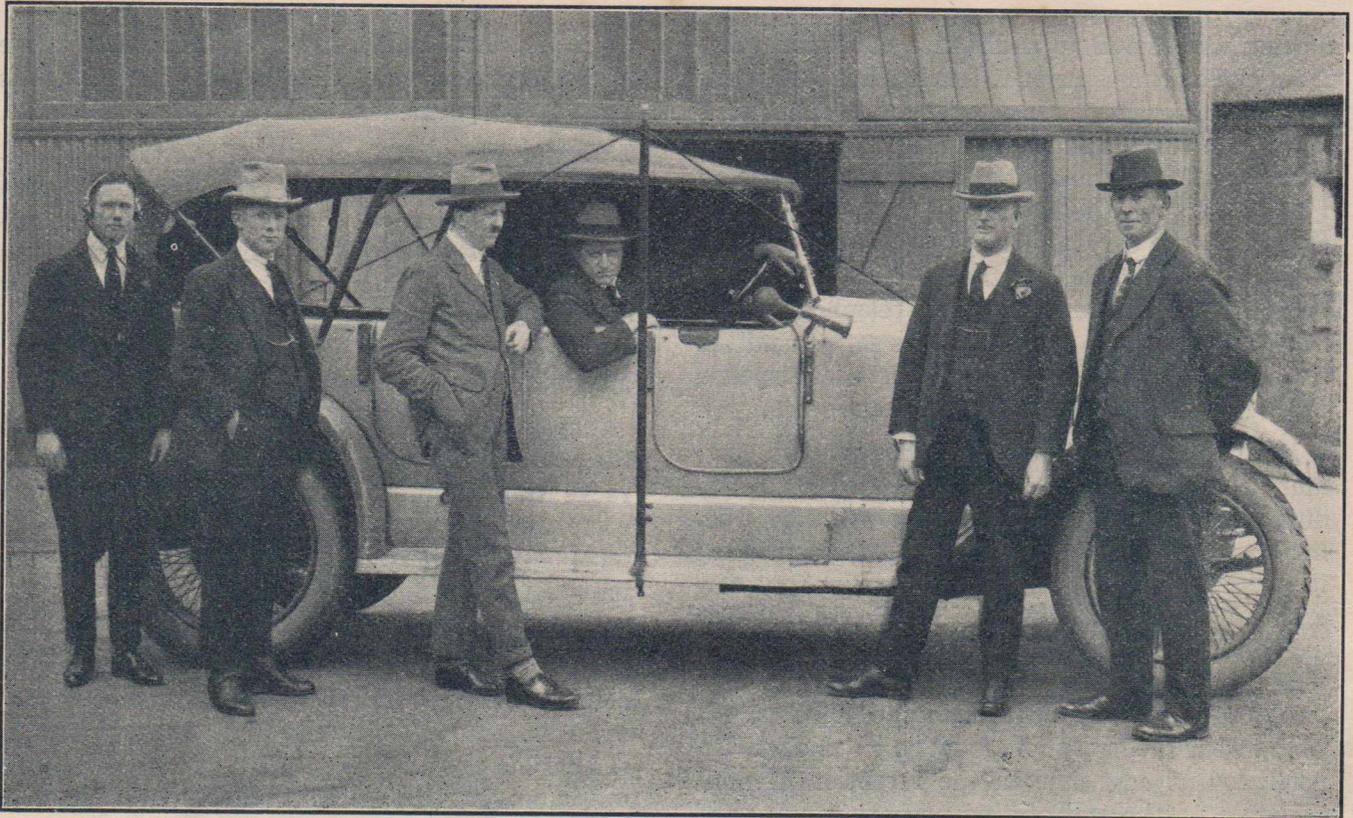
The principal work of the patrol car in the earlier period was to protect lock-up shops, of which there are a large number in Greater Melbourne. It was the practice of the Senior Officer in charge of the patrol to pull up at intervals of about a half hour at various Police Stations, in order to get into telephonic touch with Russell Street, and ascertain whether the car was required in any particular vicinity. It frequently happened that five minutes after the Officer had



A. NICHOLSON, Esq., Chief Commissioner of Police.

It is due to Mr. Nicholson's enterprise that the Wireless Patrol has become a firmly established branch in the Victorian Police Force. "Progress" is our Chief's watchword.

CENTRAL RADIO SERVICE for CENTRAL PORTABLE CAR SET.



Another photograph of the Patrol Car with members of the Force. At the extreme right is Senior Constable Downie, in charge of the Motor Patrol.

so communicated, an urgent telephone report would be received at Russell Street stating that burglars were entering certain premises. This information, of course, it would not be possible to convey to the patrol car until they again telephoned from some suburban Police Station, when, in most cases, it would be too late to be of any use.

One member of the patrol, keen and alert, gave a great deal of thought to this matter and wondered whether some other method, more reliable and quicker, could not be utilised—that man was Senior Constable Downie (then Constable Downie), of the Plain Clothes branch.

In order to reach the South side in quick time, the Police car often raced through the Domain, and it was while on one of these journeys that Senior Constable Downie, passing the Domain Wireless Station, saw a possible solution of the Patrol's communication troubles. He sought an interview with Mr. Nicholson, Chief Commissioner, who was quick to grasp all possibilities of the scheme outlined by Mr. Downie. It is greatly to Chief Commissioner Nicholson's credit that

he lost no time in obtaining an interview with Mr. Hooke, Melbourne Manager, Amalgamated Wireless Co., and detailing to the latter the particular requirements of the patrol car. The Chief Commissioner was absolutely emphatic on the point that the car must not, under any consideration, give any indication of the fact that it contained a wireless plant. This naturally made far more difficult for the Wireless Co. the task set them, and it reflects well on the engineering staff that the conditions imposed were successfully carried out.

A special set was installed in the Police Patrol car, the accumulator being mounted on the running board and connected to the receiver by means of a flexible lead. A small frame aerial was mounted immediately under the hood of the car and a special condenser employed for tuning purposes.

One evening in November 1922, the car, containing Mr. Nicholson, Chief Commissioner; Supt. Potter, in charge of the Criminal Investigation Branch, and several senior detectives, and Mr.

Hooke, was driven to a distance of fifteen miles from Melbourne. Prior to leaving Russell Street, Mr. Nicholson had arranged that certain messages, the text of which was known only to himself, were to be transmitted to the car at stated intervals (it may be mentioned that messages intended for the car were telephoned to the Domain Wireless Station, where they were immediately broadcasted by means of a  $\frac{1}{2}$  KW telephony transmitter to the car). All messages so transmitted were successfully received, and this trial dispelled all doubts as to the feasibility of the scheme.

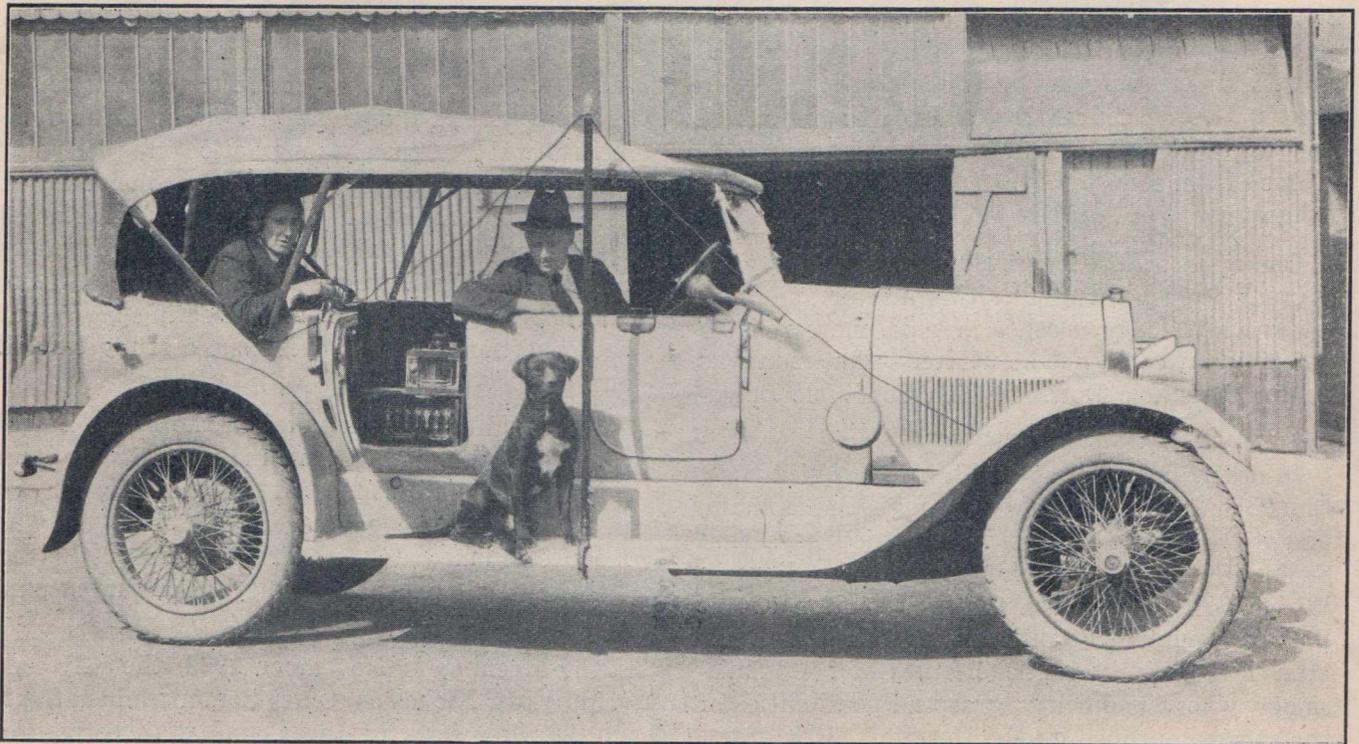
It next remained to be seen whether such communications could be relied upon under all conditions, and, after negotiations between Mr. Nicholson and the Wireless Co., it was decided to try it for a period of a month. For the first few nights Mr. Jones accompanied the Patrol, instructing the Police in the tuning and adjustment of the receiver. At that time the constable who happened to be sitting nearest to the Wireless Set would wear the headphones and no trouble was experienced at any time in the reception of messages. At the end of this probationary period the value of this new mode of communication was

so clearly demonstrated that Mr. Nicholson made a recommendation to the Government that this should be a permanent service.

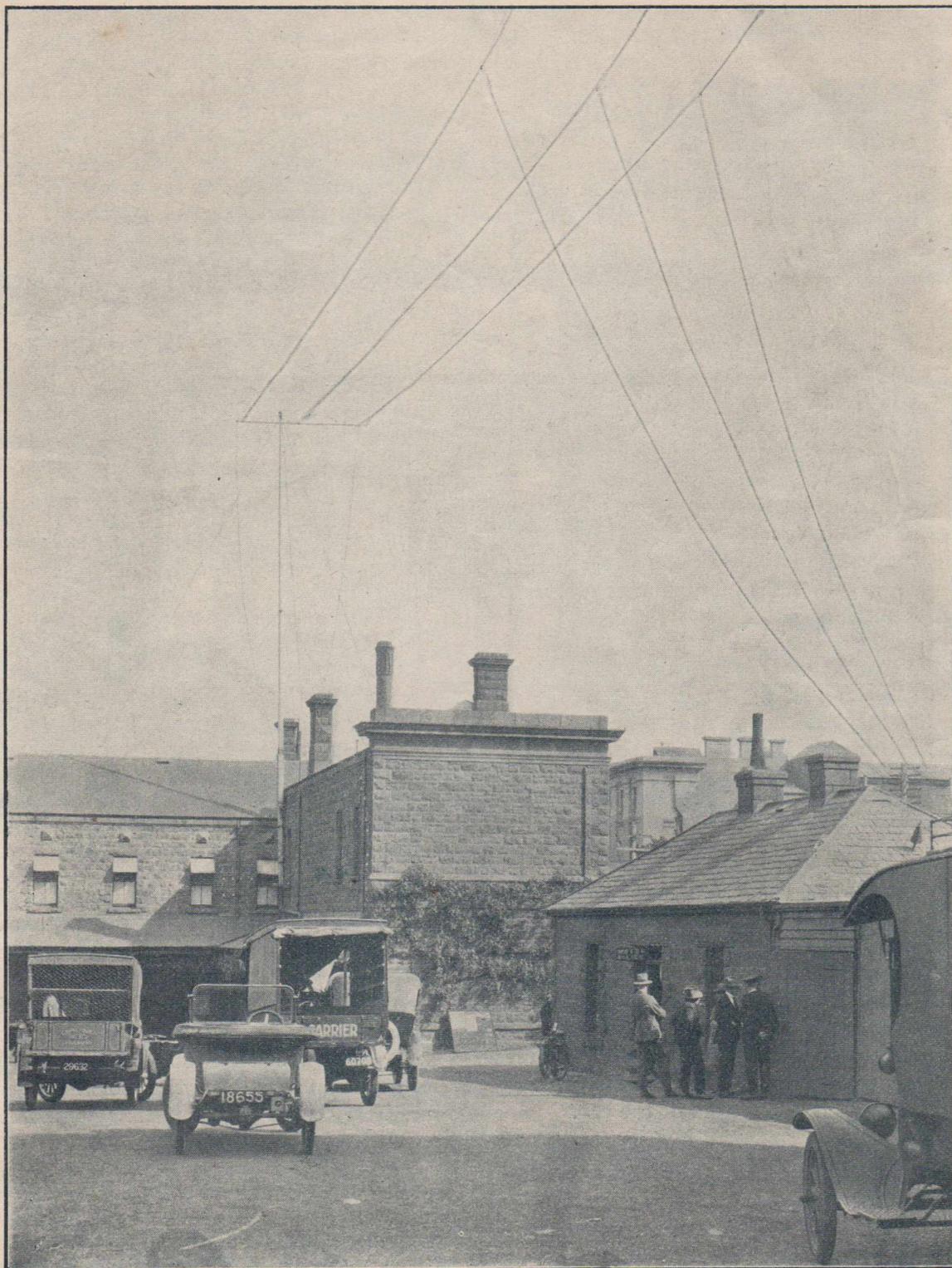
During the ensuing months the number of messages passed nightly to the car increased to such an extent that it was considered necessary to discontinue the use of telephony and substitute morse code. This necessitated employing fully certificated operators, and a new wireless branch was organised under Mr. Downie, who is responsible for the efficient working of this section.

The next step in the "March of Progress" was the erection of a very fine aerial at the Police Barracks (it was unfortunate that this job was not completed before the Police strike, as it would have been of material use during the time the serious riots occurred).

Occasionally criticism is levelled at the Police Wireless Section owing to the fact that wireless communication with the car is only established one way, that is to say, messages are only sent to the car but not acknowledged. It may be pointed out however, that in this respect fully 100 per cent. efficiency has been attained—no message has

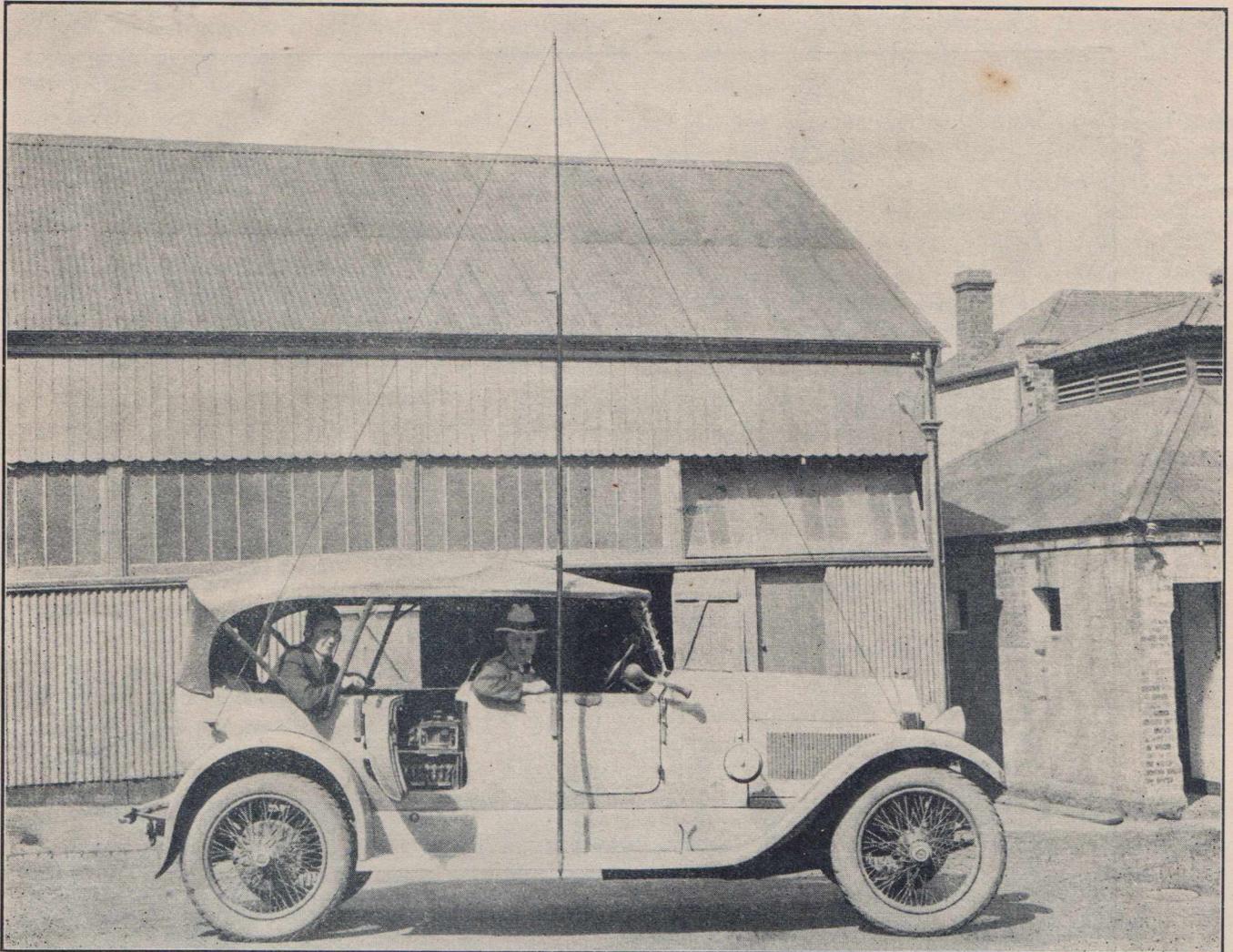


The above illustration shows one of the Police Patrol Cars with a short aerial which has been effectively used for short distance transmissions. The 7-stage amplifier with the tuning condenser can be plainly seen through the open door of the car. Note the Police dog on the running-board, which has been very useful in tracing criminals when the car has been called to burglarized premises.



The above photograph will give our readers a good idea of the excellent aerial that has been erected at Police Head Quarters. . . Note the lead-in insulator on the roof of the Police Barracks Operating Room. It is a Bradfield Insulator of the type used on some thousands of ships stations. "Nothing but the best" is the maximum of the Victorian Wireless Police.

CENTRAL RADIO SERVICE—NEW ADDRESS, 282 Post Office Place.



The Transmitting Aerial fully extended. This operation takes exactly thirty seconds,—efficiency again!

ever been missed and no word has ever been in doubt. It should be borne in mind that the operator in the car is a fully certificated officer, holding a first-class operating license, and all men in the Police Wireless Section have seen actual wireless service afloat. Then again, the strength of signals received is such that within forty miles of Melbourne signals can easily be received with the phones lying in the bottom of the car.

It must not be thought, however, that consideration has not been given to the possibility of two-way communication between the car and Russell Street. Late in 1923 numerous experiments were carried out in this connection, the Amalgamated Wireless installing in the car a very small, but exceedingly powerful spark transmitter of the

type used by the English Marconi Co., for ships life-boats. The car was driven down to Mordialloc and communication maintained throughout the run with both the Domain Station and Russell Street, in fact, while the car was near Brighton Beach, communication was actually established with a ship just off Sydney Heads, and we think we are right in stating that this is the first time in history where a ship has communicated by wireless with a motor car in motion.

Further experiments were not carried out in this connection owing to the fact that at that time the early inauguration of the broadcasting service was expected, and it was realised that a spark transmitter in the car was liable to interfere with broadcast listeners. The next step was

to experiment with continuous waves. A few months ago, Mr. Canning, the Police Wireless expert, was given permission to construct a small transmitter, which it was thought may be successfully employed on the car. Every assistance was given Mr. Canning by the Wireless Company's engineers, and all apparatus supplied free. A very small compact transmitter was developed, and with this set direct communication with Russell Street was successfully established at a distance of twenty-two miles, signal strength being maximum. The design and construction of this small set is not available for publication, but we understand that it forms a distinct advance in small power transmitters, utilising absurdly small input power.

Prior to the time of the strike the patrol car was a Hotchkiss, somewhat the worse for wear, and it is due to Doctor Argyle, then Chief Secretary, that the Police Force was supplied with two up-to-date powerful Lancia cars, to replace the defunct Hotchkiss. The receiving set was transferred from the Hotchkiss to one of the new cars, and one fact immediately noticed was that while the car was running no interference was experienced from the generator of the car.

It should be mentioned that on the Hotchkiss, trouble was experienced at times from the dynamo commutator. This was only one of the many difficulties encountered and surmounted by the Wireless engineers in the initial stages.

With the two cars doing patrol duty, one fitted with wireless and one without, it gave the Police Department an excellent opportunity of comparing the results obtained by the two cars. It became immediately apparent to Mr. Nicholson that the car not fitted with receiving apparatus was, to all intents and purposes, useless for patrol work, and he then decided that the second car must also be equipped with this new, important aid in the department's constant fight against crime. Arrangements were immediately made for the installation of a receiver on the second car.

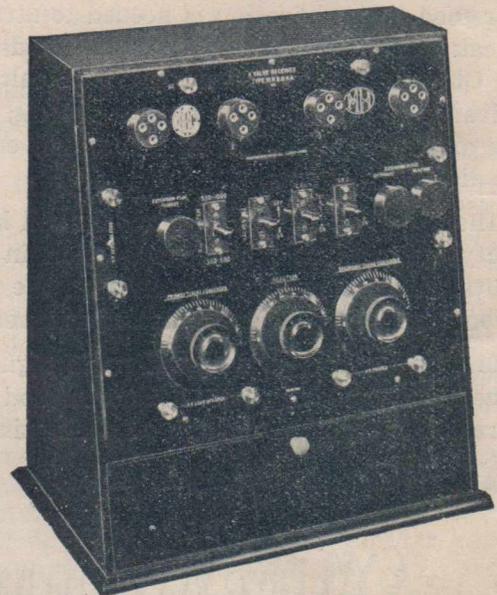
Although New York, Chicago, London and Paris Police now utilise radio as one of their anti-crime weapons, we, as Australians, may be justly proud of the fact that it was used in this connection in Melbourne before any of the above cities.

What fresh use for Radio Mr. Nicholson will find in the future it is hard to prophecy, but we may depend upon him to give due consideration to any suggestions submitted by responsible experts. It is a reassuring fact that Victoria's Police Chief is up-to-date and ever ready to apply the latest scientific methods to Police administration.

# McMichael

## ALL-BRITISH

# WIRELESS SETS & COMPONENTS



**Standard 4-Valve Set, complete  
with Valves, Batteries and Phones**  
**£48**

McMichael Special Components have achieved a wonderful reputation in England. Stocks shortly landing of High and Low Frequency Transformers, Fixed Condensers, Grid Leaks and general components. Also the famous McMichael Home Assembly Sets, 1-, 2- and 4-valve, at a popular price.

Send for list.

## Osboldstone & Co.

PTY. LTD.

Sole Agents—

100 Flinders Street, Melbourne.

## Regeneration Can Now be Measured

The Bureau of Standards has devised a method of calculating the amplification produced by the "Tickler" method of regeneration. This discovery, in the opinion of experts, marks another milestone along the road to a perfect radio-receiving set.

The importance of the discovery can be estimated only when the necessity of amplification is understood. Amplification is needed to strengthen weak signals, and also to operate a loud-speaker. Obviously, if amplification can be calculated in advance, it will result in clearer signals, as too much amplification is just as bad as not enough, since distortion results.

Hitherto, while it was well understood how to amplify radio signals by regeneration in valve circuits, there were very few data on the amplification produced by this method of regeneration.

The amplification of received radio signals by regeneration is well known. One method of regeneration is the feeding back of alternating cur-

rent power by means of inductively coupled coils in the two circuits, from the plate circuit to the tuned circuit connected to the grid of the valve. This method has been used extensively in modern radio-receiving sets, and is known as the "tickler" method of regeneration. However, very few quantitative data have been available on the amplification produced by this method of regeneration.

By means of a simple alternating-current theory an equation has been derived from which the amplification produced by inductive feedback can be calculated. This equation shows that regeneration can be considered as producing a reduction in the resistance of the tuned circuit and so increasing the current. The equation derived was completely verified by experiment.

An unusual feature about the discovery is that a woman participated actively in the experiments. Dr. C. B. Jolliffe and Miss J. A. Rodman of the Bureau of Standards of America, are given credit for the discovery.

*Minchinbury*

*Sparkling Harmony*

## WIRELESS SPEED

### ASTONISHING TRAFFIC

Few people in Australia realise the enormous volume of Wireless traffic carried on in Europe. The following article by a special representative of the Sydney "Daily Telegraph" will prove of interest to our readers.—Editor.

**T**HE long-continued muddle over the control of wireless in Australia, and the comparative lack of wireless facilities there, may have caused Australian people to regard wireless as something only slightly beyond the experimental stage, merely supplementing the telegraph and the cable. If they could see Radio House in London, as I have just seen it, a huge place, bustling with life and business, they would realise better what wireless is doing to-day—and what Australia is missing.

I am indebted to Mr. Hunter, the clever young engineer who represents Amalgamated Wireless in London, for the chance of seeing Radio House in full operation. Everyone connected with our Amalgamated Wireless weeps when he sees Radio House. Radio House, every moment of the day, should be reaching out to Australia; but Radio House, under present conditions, does not get anywhere near the Commonwealth.

Australians who get messages from Europe may suppose they travel all the way by cable. But an astonishingly large proportion of them start their journey by wireless. They are flashed from Radio House, London, to North America, and from there on they go along the submarine wires. To a great and ever-growing extent, wireless is taking traffic from the cables and telegraphs. Wireless is as cheap as the wires (it ought to be much cheaper), and it is quicker.

#### Serving the Speed God

There are a number of Marconi stations in London and England, but they all feed Radio House, which is not far from St. Martins le Grand. Radio House is a place buzzing with fierce activity, yet calm, well-ordered, intensely efficient. Speed here is the great god to which everything is subordinated. A Marconigram travels like a flash from New York to London; and that flash, in a way, sets the standard for the handling of the message in New York and London. It is not a matter of clipping seconds off the minutes. Rather, they are trying in all sorts of ways, to clip hundredths off the seconds.

So one's first impression of Radio House is simply a mass of whirling automatic carriers. Take the cash-carriers in a Sydney shop, speed them up, and multiply them indefinitely, run them up pillars, along counters, under and over the ceilings, in and out of numberless rooms, and you will have something remotely resembling the interior of Radio House. The message going to or arriving from the instruments is like a car being assembled in Ford's factory. It buzzes along on an

endless chain, and everyone it comes to does something very rapidly, and starts it off again. It is recorded, counted, enveloped, addressed, despatched, in one continuous movement.

Traffic comes in from the branches through one department, goes out through another. There are rooms for receiving and despatching direct traffic. There is a big room with lines of girls, operating telephones.

#### Four Minutes to New York.

Hundreds of firms in this, the centre of the commerce and finance of the world, want almost instant communication with all other parts of the world. They become "direct subscribers" to Marconi, and some have a special telephone wire to Radio House. A financial magnate in Lombard St., can get a vital word to his agent in Wall Street, New York, through direct telephones and by wireless, in three or four minutes.

Even while I watched, a city firm telephoned a message for a firm at Berne, in Switzerland, and rang off; the girl, who had written it as it was telephoned, put it in the automatic carrier, which is constantly galloping past her desk; it was grabbed therefrom in the next room by the recorder, and almost instantly stuck on another carrier, which automatically dropped it before the section operating Berne; the operator worked a thing like a typewriter keyboard, very fast, and this perforated a tape; the tape went instantly into a transmitter, which working along a land line, operated automatically a wireless sending instrument at Ongar, in Surrey, where the Radio House aerials are; the message was automatically received on a perforated tape in Berne; run through another instrument, which immediately converted it into a typewritten slip; and this was in turn telephoned on a direct line to the subscriber in Berne, to whom it was addressed. In less than four minutes the London subscriber rang again; he wanted to alter a word in his message. "Too late," said the supervisor, who was showing me around. "The message is already delivered in Berne." He seemed greatly to appreciate this opportunity of demonstrating to me the extraordinary efficiency of Radio House.

#### European Traffic.

The operating department was fascinating. There seemed to be a section for every European capital—I saw messages going through at a great rate to such places as Madrid, Berne, Paris, Stockholm, The Hague. There was here no congestion of traffic waiting for the wires to be cleared. The only limit to the traffic which may be directed

immediately it is received to Paris or Madrid, or anywhere else, lies in the number of operators available. The volume of North American traffic is huge. One large section does nothing but send and receive messages for Canada and the United States. A good part of this traffic, as explained, goes on from North America by cable, and much of it reaches Australia.

They said that the night gave better working conditions, but Radio House never ceases operations. Receiving and sending goes on during the whole 24 hours. "Atmospherics"—mad discharge of electricity into the ether from Heaven knows where—sometimes annoy the operators, but wireless has now reached that stage where it is not rendered inefficient by such things.

Wireless messages for distant points are not sent out from London aeriels, atmospheric conditions here not being suitable. European traffic goes by landline to two stations in adjoining counties, clear of London; while American messages are directed by landlines through the Pol-dhu station in Cornwall.

**AVOIDING HAND CAPACITY EFFECTS.**

The home constructor very often fails to take into consideration the troublesome and annoying effect of hand capacity when connecting up a variable condenser to tune the secondary circuit to his receiver. When connecting a variable condenser in a circuit always see that the rotary plates are connected either to the earth side of the circuit or the filament side, and the stationary plates of the grid side of the circuit. The reason for this is evident. Your hand, as well as the rest of your body, is very near earth potential, that means to say, at zero voltage with respect to earth, now if the movable plates and the shaft of the condenser are connected to the filament or earth side of the circuit there will be no difference of potential between your hand and the dial on the panel, and consequently no condenser effect.

A condenser that has its movable plates earthed to the frame work is a particularly advantageous instrument, as the greater part of the metal work in it is at earth potential, and if connected up in accordance with these directions it will be found that hand capacity effects are practically nil.



No. 2A Phones

*A Shipment of*

**Stromberg-Carlson**

**Radio Products**

*Has Just Arrived*

*They stand alone. Ask your Dealer*

- Phones . . . . . 40/-
- Jacks, Open Cir. 3/9
- Jacks, Double Cir. 5/-
- Jacks, Db. & Fil. . . . . 7/-
- Audio Transf. . . 33/6
- Plugs . . . . . 5/3
- Transmitters . . . 25/-
- Trans. Panel . . . 40/-
- Loud Speaker, with Cord and Plug . . . . . 150/-

**Variable DURHAM Resistances and Grid Leaks, 4/6**

**Lighting COOK Arrestors,**

With the R 73 Switch and Fuse Arrestor, you cannot forget to put protector on your Set, 10/- and 20/-

Fixed but **F.B.A.** Adjustable Detectors;

Glass Cartridge holds Crystal, Spring, etc., and clips into supports

Interstate Distributors:

**HENRY G. SMALL & Co.**

360 Post Office Place, Melbourne.

Factory Representative—

**L. P. R. BEAN & Co. Ltd.**

229 Castlereagh Street, Sydney.

T. MUIR and CO., Perth, S. H. SMITH, Brisbane, J. A. COOPER, Hobart, CHAS. ATKINS and CO. Adelaide.

## FOOLING WITH RADIO

Probably one of the commonest expressions heard in Australian households to-day when the whereabouts of father or son are sought, is, "Oh, he's fooling with the radio."

It is fortunate for the new art that he is. There is more in the phrase than is realised. Radio owes a larger part of its development to this so-called "fooling" than can ever be estimated—not only "fooling" by father and other novices, but by experts and engineers.

It is easy to understand how a man who has been busy in a store or office all day is glad to get home at night and "fool with the radio." It makes him forget the cares of the day. But it is not quite so easy to understand why radio experts and research men who have worked at the top speed all day on radio problems of one kind and another start in as soon as they have had their dinner at night to "fool with the radio" at home.

"Radio widows" may not all agree, but, of course, the real answer for their "strange" conduct is that they are impelled by the urge of experimentation. To members of their families who are waiting to go to the "movies" or to be taken out in the car they are simply "fooling with the radio," but in reality they are conducting the practical experiments from which so many of the improvements of the last five years have resulted. They are eternally striving to make the set work better, to make it simpler, to eliminate minor difficulties, to increase its range, and, above all, to perfect the quality and purity of tone. It is the never-ending quest for perfection which is bringing radio, in common with all other great public utilities, to new stages of efficiency and usefulness.

Recently great strides have been made in simplifying the control of modern sets. A well known four-tube reflex set has only one knob to tune with, and a new station can be brought in by every turn of a few degrees on the dial.

"Radio widows" and the general public need not waste any sympathy on either experts or amateurs who sit up half the night "fooling with the radio." The wife of the chief engineer of an important transformer manufacturer which maintains one of the leading research laboratories in the industry told the writer recently that her husband stays up till 12 and 1 o'clock several nights a week experimenting with the set in their home.

"But I do not feel sorry for him," she observed. "It does not tire him. It is not the actual amount of work which one does that tires. Fatigue and happiness in one's work do not go to-

gether. In fact, I do not think my husband gets as tired as some men who work far fewer hours, but who do not have work which so absorbs all their faculties and creative instincts. Probably the reason that Edison can live on so few hours of sleep a night is that his trained brain, working on problems which interest him so deeply, operates with a degree of fatigue far below the average person's."

Pre-eminent among the problems of radio development on which novices and research experts alike are now working is improving the clarity and purity of tone in receiving sets—to secure amplification without distortion. Without good tonal quality any set, whatever may be its range of power, falls short of the ideal of perfected operation. Accurate and pure reproduction of the voice or of the musical instrument in a radio set depends, in the last analysis, upon proper amplification, in which the sound is multiplied but not distorted.

### HARMONIC OSCILLATION OF RECEIVERS

A cord may be caused to vibrate by impulses which are harmonics of its fundamental frequency. In a similar manner when a receiving set is tuned to a certain wave-length it will respond to oscillations which are harmonics of its own tune. Thus a receiving set, adjusted to a tune of 15,000 metres will respond to signals on a tune of approximately 5,000 metres, its third harmonic. When the receiver is oscillating harmonically in this manner it is difficult for the operator to tell whether he is receiving signals on the fundamental oscillation of his receiver or on an harmonic, so he should search the lower range carefully in order to obtain the true wave-length of the transmitting station.



**-DENNIS-**  
**RADIO EXPERT**

Phone Windsor 6549

**WIRELESS RECEIVING  
SETS and ACCESSORIES**

**D**EMONSTRATIONS  
DAILY AT  
ENNIS'S

583 Chapel St., South Yarra.

## ON THE AIR

### 3 LO BROADCASTING SCHEDULE.

MELBOURNE MEAN TIME.

WAVE LENGTH: 1720 METRES.

#### Midday Session—

- 12.55 Tune in to the Studio Chimes.  
 12.58 Time Signals, Melbourne Town Hall.  
 1. p.m. Herald News Service.  
       Argus News Service.  
       Weather Report.  
 1.15 Close down.

#### Afternoon Session—

- 3.15 Tune in to Studio Chimes.  
 3.18 Orchestra Music from principal Melbourne Picture Theatres.  
 4.45 Herald News Service.

#### Early Evening Session—

- 6.30 Tune in to Studio Chimes.  
 6.33 Children's hour, Billy Bunny's Bedtime stories.  
 7 p.m. Herald News Service.  
       Late Herald News and Cable Service.  
       Market Reports (Wool, Wheat, Stock).  
       Fruit and Vegetable Markets.  
       Closing Stock Exchange Information.  
 7.15 Close down.  
 7.55 Tune in to Studio Chimes.

#### Night Session—

8. 0 Entertainment, see list below.  
 The evening entertainment from this Station consists of transmissions of Studio Concerts, Dance Music from Carlyons, Town Hall Service, and Theatre transmissions..

Farmers 2 FC; Sydney Mean Time; Wavelength: 1100 metres.

#### Midday Session—

- 12.55 Tune in to the Studio Chimes.  
 12.58 Time Signals from Farmer's Master Clock (Sydney Observatory time), Stock Exchange Intelligence Weather News, "Sydney Morning Herald" news and cable service, "Evening News" midday news bulletin.  
 1.15 Closing down.

#### Afternoon Session—

- 3.30 Studio Chimes.  
 3.33 Musical programme by Farmer's Orchestra, broadcast direct from Farmer's Oak Luncheon Hall. Numbers will be played at intervals to 4.45.  
 4.45 Stock Exchange, Weather, Afternoon news.  
 5.0 Close down.

#### Early Evening Session—

- 6.30 Studio Chimes.  
 6.33 Children's hour.  
 7. 0 Dalgety's Market reports, Fruit and Vegetable Markets, Stock Exchange, Shipping News, Sussex, Street Markets, Late News.  
 7.15 Close down.

#### Night Session—

8. 0 to 10.0 Entertainment. See list hereunder.

#### EVENING ENTERTAINMENT.

As far as possible the following schedule is adhered to:  
 Monday Theatre Night.  
 Tuesday Popular Concert.

Wednesday  
 Thursday  
 Friday  
 Saturday  
 Sunday

Studio Concert.  
 Studio Concert.  
 Classical Night.  
 Jazz Night.  
 Semi-Sacred Concert (7.30 to 9.30 p.m.).

Broadcasters, Sydney, 2 BL; Sydney Mean Time; Wavelength: 350 metres.

#### Midday Session—

- 12 to 2 p.m Musical programme with News Reports supplied by "The Guardian."

#### Afternoon Session—

- 3 to 5 Musical programme with News Reports supplied by "The Guardian."

#### Early Evening Session—

7. 0 Nursery Rhymes and Bedtime Stories.  
 7.45 Pitt Son and Badger, Stock Exchange Reports.

#### Night Session—

8. 0 Nightly Concert.

#### EVENING ENTERTAINMENT.

Monday

"Jazz" night with vocal items from the Studio.

Tuesday

Classical Studio Concert.

Wednesday

Dance Night.

Thursday

Broadcasters' Popular Concert.

Friday

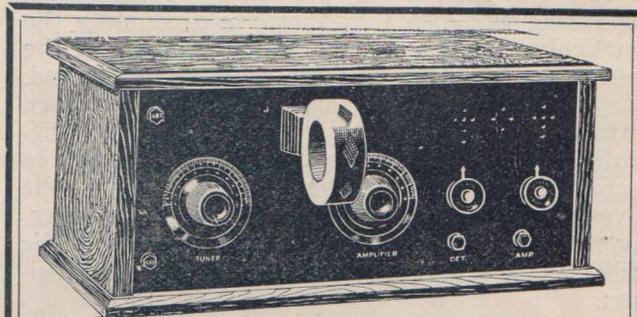
"Jazz" night with popular items from the Studio.

Saturday

Popular Concert.

Sunday

Classical and Operatic Concert.



## SIGNAL

## Home Assembly SETS

can be put together with a screw-driver and a pair of pliers in a few hours, at about half the cost of shop-assembled sets.

Everything is supplied except valves, batteries, head-phones and aerial equipment.

Clear diagram and full instructions.

1 valve, £5/10/-; 2 valves, £9/9/-; 3 valves (Audio Frequency), £11/11/-; 3 valves (Radio Frequency), £11/11/-; 4 valves (Radio Frequency), £13/13/-.

**YOUR DEALER HAS THEM !**

USE PICO PHONES

**United Distributors Limited**

(Wholesale only)

592 Bourke St., Melbourne.

CENTRAL RADIO SERVICE for ALL WIRELESS ACCESSORIES.

**YOUR ANTENNA RECEIVES ONLY A LITTLE ENERGY!**

Don't Waste It—Use the  
**ACME** and make the most of it. **ACME**  
 Then Use

**Lowest Loss Condenser**

**A2 Transformer**

And Obtain Amplification without Distortion. Also ask to see

**WALNART & HILCO Apparatus**

Obtainable from all Good Stores.

**P. H. CLARK LIMITED**

Wholesale Only

Phone City 8469

38-44 CARRINGTON STREET, SYDNEY

Box 914 G.P.O.

MELBOURNE:  
 Mr. W. N. BARTHOLOMEW,  
 Builders Exchange, Flinders Lane.

BRISBANE:  
 Mr. COLIN CAMPBELL,  
 "City" Buildings, Edward Street.

ADELAIDE:  
 CEDRIC WRIGHT and CO.,  
 Hayward Buildings, Charles Street.

Westralian Farmers, Perth, 6 FW; Perth Mean Time;  
 Wavelength: 1250 metres.

**Midday Session—**

- 12.30 Tune in to Sonora.
- 12.35 Market Reports of the Westralian Farmers Ltd.
- 12.42 News Service.
- 12.55 Weather Report.
- 1. 0 Time Signal.
- 1.1 to 1.30 Sonora and Pianola.
- 1.30 Close down.

**Afternoon Session—**

- 3. 0 Tune in to Piano-Player (Duo-Art).
- 3. 5 to 4. 0 Special programme, comprising Talks,  
 Sonora and Pianola.

- 4. 1 Close down.

**Early Evening Session—**

- 7. 0 Tune in to Sonora.
- 7. 5 Bedtime Stories.
- 7.45 Market Reports.
- 7.55 Weather Reports.
- 8. 0 Time Signal.
- 8. 2 News Cable.

**NIGHT SESSIONS—**

- Monday 8.10 A Lecture; 8.45 Music, Pianola and Sonora.
- Tuesday 8.10 Professional Concert.

- Wednesday 8.10 Concert Evening.
- Thursday 8.10 Professional Concert.
- Friday 8.10 Talk on Wireless to Amateurs by a Representative of the Affiliated Radio Society.
- Saturday 8.45 Concert Evening.  
 No Saturday afternoon, only from 12 to 1,  
 and again at 7,0, 8.10, The Westfarmers  
 Studio Cabaret Jazz Orchestra, under the  
 direction of Irwin Lawrence.
- Sunday 7.30 Mr. C. H. Coff's Choir.

Close down at 9 p.m.

With the exception of Saturday, when the Station closes down at 10.30 p.m., all other evening sessions conclude at 10 p.m.

"T.O.N." (South Yarra). Asks whether the fact that a Crystal passes current as indicated by a click in the telephones, or the fact that a cat-whisker adjustment behaves as a microphone indicates that the detector is functioning properly.

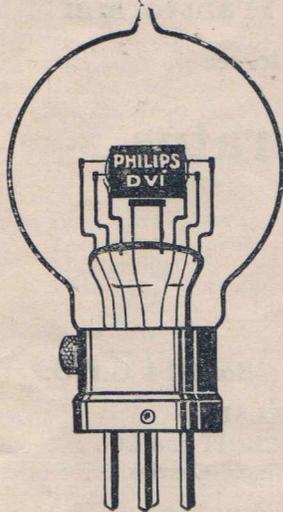
No, neither of the tests in any way prove that the Crystal is capable of rectifying H.F. currents.

The world's largest loud speaker appears to have been used, it is said, at Leipzig Fair, in Germany. It had a mouth fifteen feet in diameter.

## LISTEN IN WITH Philips' Radio Valves

Types D.IV. and D.V. will interest those who prefer the American Standard Socket because they are fitted with American Caps.

	Type D.IV.	Type D.V.
Reproduction.	2	2
Fil. Consumption	0.5 amps	0.5 amps
Fil. Voltage	5.5	5.5
Plate Voltage	25/30	30/75
Dimensions	45 x 115 m/m	45 x 115 m/m



Type D.IV. Detector (Soft). (4 lines).

D.IV. (Soft) is a gas-filled Valve mainly used as a Detector. It will remain absolutely constant even when used for long periods. When used in conjunction with a grid condenser, a grid leak is unnecessary.

D.V. (Hard) is a high Vacuum Valve for general use both as a Detector and Amplifier.

Wholesale Distributors  
NOYES BROS. (Melb.),  
PTY. LTD., Electrical  
Supplies Dept.,  
495-501 Bourke Street,  
MELBOURNE.  
Phone, Cent. 10109.

## M. DESCHAMPS

Union House, 284 Little Collins Street,  
Melbourne.

**IMPORTER & MANUFACTURER  
OF RADIO APPARATUS**

Leading British and Continental Radio  
Apparatus Stocked.

### Complete Broadcast Receivers

CABINET TYPE  
CRYSTAL TO 4 VALVE

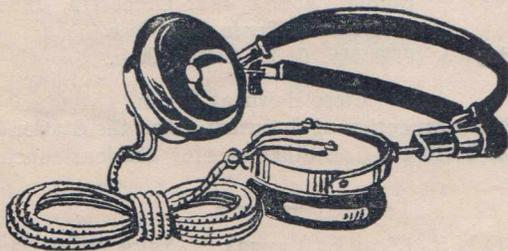
Prices ranging from £5.

Call or Write for Full Particulars.

**CALL AND INSPECT  
FREE DEMONSTRATIONS DAILY**

# "PICO" HEAD-PHONES

*The Standard of Satisfaction*



"Pico" Head Phones combine PERFECTLY all the essentials you seek—lightness, volume, clarity and durability.

They are extremely light—indeed negligible in weight, and most comfortable on the head. These qualities make them doubly welcome in warm weather.

They are accurately wound to  
2,200 OHMS RESISTANCE.

Every set of "Pico" Head Phones is minutely tested before packing, and is accompanied by a

**FULL GUARANTEE**  
against defective workmanship or Material

**Price 25/-**

*Ask your dealer to show you "PICO" Headphones*

**UNITED DISTRIBUTORS LIMITED**

72 Clarence St., Sydney.

(Wholesale Only)

592 Bourke St., Melbourne.

And at Adelaide, Perth, Brisbane, Hobart, Wellington.



# QUESTIONS AND ANSWERS



This section of the Magazine is placed at the disposal of readers who wish to receive advice and information on matters pertaining to both technical and non-technical sides of Wireless. Readers should carefully comply with the following rules:—

1. Each question should be written on a separate sheet, one side of paper only, and addressed "Questions and Answers, Editor Radio Experimenter and Broadcaster."
2. Before sending in questions readers are advised to search recent numbers to see whether the same queries have been dealt with before.
3. Each communication sent in to be accompanied by the Questions and Answers Coupon to be found in the advertising columns of the issue current at the time of forwarding questions.
4. The name and address of sender (which is for reference and not for publication) to be written at the top of each sheet, and, unless type-written, this should be in block capitals. Queries will be answered under the initials and town of the correspondent, or, if so desired under a nom-de-plume.
5. These columns are intended for the assistance of the experimenter and Broadcast listener. Questions of a very involved character will not be treated in these columns, as there are numerous advanced text books on the market dealing with such subjects.
6. Four questions is the maximum that may be sent in at one time.

"O.M.W." South Yarra, encloses circuit of his two-valve set on which he receives 3 LO and 3 AR good phone strength but not sufficient to work loud speaker. Requires suggestions for improving without addition of more valves.

We are returning your sketch with a couple of alterations which should considerably strengthen the signals you are obtaining at present—trust this will give you the desired result.

We would like to say that generally speaking you should not expect loud speaker results with two valves, unless you have a very efficient aerial and earth system. We notice in your sketch that the telephone and loud speaker are in parallel, this should not be so, as using only two tubes you have no energy to spare, and the fact of placing a pair of telephones in parallel with your loud speaker robs the latter of some of the current, which it can ill afford to lose. Remove the phones from the circuit when employing loud speaker.

With regard to your second question, would recommend a tune plate circuit for reception of Farmer's service, but would say for 1,100 metres, atmospherics are very bad at the present time, and you are not likely to do much good with 2 FC until summer is over.

"C.A.M." Brighton Beach, encloses diagram of a 3-valve set with which he is anxious to pick up Oakland, California, and invites criticism. The circuit is a 3-valve one comprising tuned anode with one stage audio.

As the matter of tuning in to KGO is of considerable interest to our readers we will devote a little more space than usual to this reply.

With regard to your condenser in the Aerial Circuit we would like to say that this could be of a much bigger capacity, even as high as .01, as the tuning of the aerial circuit is not so critical. The use of a vernier on that condenser is of no advantage. We would suggest that you change your condensers around and put your vernier condenser .000889 in the place circuit. With regard to the rest of your circuit everything is quite OK, apart from the fact that the amount of negative bias used will depend upon the plate potential employed on the particular valve in use. Reference to the characteristic curves, which have appeared previously in this Journal, will enable you to determine the correct bias to employ, generally speaking it should be from  $1\frac{1}{2}$  to  $4\frac{1}{2}$  volts, unless power valves are employed, when the value would be considerably higher.

KGO's wavelength is 312 metres. Your set should be quite suitable for the work you have in view, bearing in mind that tuning in KGO is very much like a game of chance. There is no set built at the present date for which it can be claimed that it can with certainty bring in Californian signals, although KGO has frequently been heard on two valve sets in Australia. You need not be disheartened if you do not get them for the next few months, as during the Summer period atmospherics are so prevalent that they are likely to drown out Oakland signals.

With regard to the best time, it is between 5 and 7 p.m. on Sunday.

Should you be successful in picking up KGO we would be pleased to hear from you, and to publish your remarks for the benefit of other readers.

Wishing you luck.

"Ajax," Beechworth. Wants to know—

1. Why he cannot tune-in bedtime stories from "Uncle Rad at 6.30 p.m.?"
2. What is the object of the chimes from 3 LO?

*Before buying your*  
**BROADCAST RECEIVER**  
*Consult the*  
**Suburban Radio Service**

Demonstrations daily.  
All Radio Requirements Stocked

**SUBURBAN RADIO SERVICE**  
241 High Street, Malvern

# Listen-In

on the

# RADIOLA



### Model 4A

This Set embodies all the latest improvements in Radio Science. It is handsome in appearance, efficient in every way, and is unsurpassed for simplicity of operation.

Larger and Smaller Sets available.  
Also all Accessories.

**Built by Australians—in Australia—  
for Australian Conditions**

**LET US DEMONSTRATE TO YOU**

**Price** (Complete with Aerial  
Accessories, all Batteries **£68**  
**4A** and Headphones)

Loud Speakers (if desired) from £4

## Dalgety & Co. Ltd.

Merchandise Department

461-471 Bourke Street  
Melbourne

3. Can he expect to obtain 2 BL, Sydney, with a one-valve set?

1. 3 AR does not commence his bedtime stories until 7 p.m., we understand.

2. The chimes are to enable listeners-in to adjust their receivers to their most sensitive point, so that they may not miss parts of the programme.

3. We do not think so.

“Crystal,” Southport. Wants to know do any of the Melbourne stations transmit on Sundays?

Yes, both 3 LO and 3 AR at present transmit between 3 and 5 on Sunday afternoons and 7.30 to 9.30 in the evenings. Transmissions include Sacred Concerts and Church Services, etc.

“R.V.S.” (Elsternwick) Submits a diagram of a Crystal Set and asks—

1. Values for the Variable Condensers.
2. A question about connecting up.
3. If certain formers will be suitable.
4. For criticism of set.

1. A.T.C. enclosed circuit condenser 0.0005 mfd each. Blocking condenser 0.0002 mfd.

2. Preferably 2Y.

3. The suggested values should be alright. If you cannot tune down to 480 metres, remove a few turns from the fixed portion of the coil.

4. O.K.

“W.D.O.G.” (Millwood). Asks whether the down lead should be taken from the lower or higher end of an aerial.

2. Whether down leads may be lashed together round the insulator from which they fall or should pass freely through it.

3. If not convenient to get down leads to a suitable room, if loud speaker leads may be run from the receiving room to that in which signals are to be heard.

1. Very little difference. It is generally best to take it from the end nearest to the instruments.

2. Leads should be fastened round the insulators.

3. Yes.

### QUESTIONS AND ANSWERS COUPON

To accompany questions sent in  
during month of .....

Vol.....No.....

See conditions on page 31

## Around the Showrooms

**Homecrafts Ltd.** We have just received from Homecrafts Ltd., a book entitled "Material for Radio Electrical and Mechanical Hobbies" Catalogue No. 24.

The price of this wonderful little volume is merely sixpence, but for the information contained therein it is easily worth ten times that amount. Apart from the very complete list and description given of all Radio accessories the book contains very valuable data, which no person interested in wireless can afford to be without. One section of the book contains information on Radio Broadcasting and Receiving for the uninitiated. In this case Radio is likened to a Ford car, and we must admit that it is the best analogy we have seen for some time for explaining in simple terms the mysteries of a receiving set to those "who want to know how."

It must not be gathered that the book is useful only to the beginner, because the advanced student is also well catered for. There are circuits galore, from simple crystal circuits to the most complicated multi-valve circuits. In our opinion, the twelve pages containing the circuit diagrams are alone worth far more than the modest sum asked for the book—in fact we are informed that the price merely covers publishing costs, the Firm's chief desire being to bring before the public Radio and Mechanical Instruments stocked by them, and this they have done in a very interesting manner.

To completely enumerate everything covered in this

handbook would take up too much of our space, but we give below just a few articles which will be of interest.—

Aerials of all descriptions; Aerial Inductance; Wiring the Set; Series-Parallel Sets (with several diagrams); Particulars of time signals and weather reports by Australian Stations; List of Call Signals; Complete list of Text Books, both for advanced and Elementary students, etc.

Copies may be obtained from Homecrafts, 211 Swanston St., Melbourne.

That established Mecca of Radio fans, Homecrafts, is becoming increasingly popular day by day. There must be a reason. A visit will reveal it. Every shelf is packed with apparatus, from the simple crystal to the elaborate Multi-Valve Set. The customer is sure of getting what he wants. Pains are taken to see that he is satisfied, and helpful advice is always his for the asking. Homecrafts, 211 Swanston Street, was the pioneer Radio Firm.

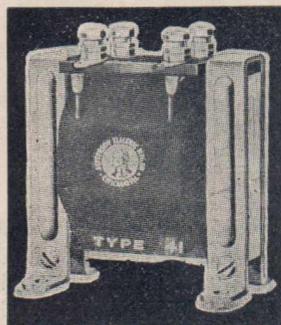
**Exide Radio Batteries.** The Exide Radio Batteries are daily becoming more popular with wireless experts. Mr. A. P. Sutherland, the managing director, informs us that it is hard to supply the demand; so those requiring this high-class Radio Battery

# Fox & MacGillycuddy Ltd.

Daily Telegraph Buildings, Sydney

*Sole Australian Agents for*

**JEFFERSON ELECTRIC MFG. COY. TRANSFORMERS**



No. 41 Transformer

FRAMINGHAM PRODUCTS.

De VEAU GOODS.

RUSSELL FRASER WIRE CO.

DA and DUTILH - PARIS.

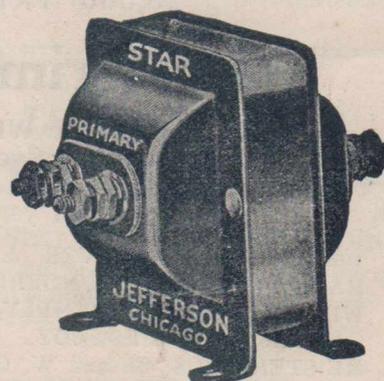
HEINEMANN and CO.

WIRE,

METERS,

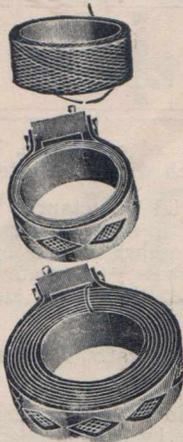
SWITCHES.

Wholesale Only.



Star Transformer

CENTRAL RADIO SERVICE for CENTRAL PORTABLE CAR SET.



No. 8 Honeycomb Coils

## The Family's Xmas Gift Nothing Equals a Wireless Set

The most popular gift this Xmas for your BOY, your FRIEND, or your FAMILY is certainly a Wireless Set, or some of the various parts for making a set.



### THE MOST SENSATIONAL EQUIPMENT

Can be obtained from us. We are Radio Experts, and retain the confidence of every customer by only dealing in reliable apparatus. Are you our customer?

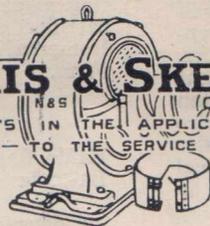
### "ELECTRON" AERIAL WIRE

England's latest Sensation—perfect insulation, without insulators or supports of any kind. Use it for extension of 'phone or speaker; for lead-in or aerial. Increased reception is assured. Price, 2/9 per 100 feet.

- All American L.F. Transformer . . . . . 35/-
- Knobs and Dials . . . . . 2/3
- "Supreme" L.F. Transformers . . . . . 15/-
- Lissen Variable Grid Leaks . . . . . 4/9
- Cossor Valves, P.i. . . . . 20/-
- G. and G. Crystals, all varieties, each . . . . . 1/9

## NORRIS & SKELLEY

SPECIALISTS IN THE APPLICATION OF ELECTRICITY TO THE SERVICE OF MANKIND



Pty. Ltd.

- Standard American Sockets . . . . . 3/9
- English Table Valve Mounts . . . . . 1/8
- Head Phones—
- Brunet, single . . . . . 19/6
- Pico, double . . . . . 25/-
- Brandes's, double . . . . . 35/-

Manufacturing and Installing Electrical and Radio Engineers.

211-213 ELIZABETH STREET, (opp. G.P.O.), Melbourne. Tel. Cent. 926-927.

SECURE OUR CATALOG OF INFORMATION 1/-. Post, 1/3.

# PERFECT REPRODUCTION ON

# TRIMM

- "Dependable" Headset, 2400 ohms . . . . . 35/- per set
- "Professional" Headset, 3000 ohms . . . . . 45/- per set
- "Grand" Loud Speaker . . . . . £12 each
- "Standard" Loud Speaker, . . . . . £8 each
- "Giant" Phonograph Unit . . . . . £3 each

20,000 TRIMM Phones Sold in Australia Alone

## The Trimm LIFETIME Guarantee

We will replace WITHOUT ANY CHARGE any magnet which becomes weak, any defective coil or any complete Trimm Loud Speaker or Trimm Headset that fails to give perfect satisfaction. We will do this not merely during the first year or the second year, but for life.

Obtainable from:—OLIVER J. NILSEN, HOMECRAFTS LTD., P. A. MORRIS, A. E. CARROLL, HARRINGTON'S LTD., NORRIS and SKELLEY, STANLEY RADIO COY., LEVIATHAN PTY. LTD., WIRELESS HOME ASSEMBLY, ALEX. N. COOKE PTY. LTD., GLEN RADIO, WIRELESS BROADCASTING SUPPLIES COY., G. H. GRAHAM, STANFORD RADIUM COY., F. WILLIAMS, BURMEISTER BROS., D. and W. CHANDLER, THOS. DRAPER and SONS, and All Other Radio Houses.

Sole Australian Agent and Wholesale Only:

BRANCH—  
516 Collins Street Melbourne  
Phone—Central 2179.

# O. H. O'BRIEN

HEAD OFFICE—  
37-39 Pitt Street Sydney  
Phones City—3302 and 10592.

should order early to save disappointment in delivery. They are made up in separate 2-volt units so that a buyer of a 6-volt battery for use with the ordinary bright emitter valves can afterwards change over to a lower voltage for dull emitter valves, without any difficulty whatever, utilising the existing cells.

**W. Sangster.** Whose salon is situated at Toorak Road, South Yarra, manufactures Receiving Sets of any size, and gives demonstrations any time of the day or evening. A complete range of accessories and raw material always in stock. Inspection invited.

**Hartley's** Attention is drawn to the very complete stocks of Wireless Sets and Accessories carried at Hartley's Sports Stores, both at their main Store, Flinders Street, opposite station, and at their branch Store, 148 Swanston Street.

This firm, with its usual enterprise and thoroughness, has taken on the Wireless business in a no half-hearted way. They have a special department entirely devoted to Wireless Accessories, which is in charge of expert men well versed in all Wireless matters. The chief mechanic is a man of very large experience in research work, and holds a Government research licence. His advice is always available to the firm's clients.

It is claimed that Hartley's stocks in their Wireless Department are now the most comprehensive in the State, and they have very large consignments of the latest and most up-to-date Wireless Accessories arriving daily.

Their Stocks will at all times be found interesting, and will repay inspection at any time.

Following their usual policy, prices have been marked at the lowest possible figure in every case.

So far as Sets are concerned Hartley's have, after much experience, adopted the "Silvatone" Set, which, mounted in a handsome, polished cabinet, constitutes the last word in workmanship and material and has proved its efficiency to their entire satisfaction. This firm are prepared to quote for the complete installation of a "Silvatone" Set including erection of aerial, tuition and a trial demonstration.

**Thos. Draper.** The enterprising firm of Thos. Draper and Co., of 267 Little Collins Street, are now catering for the requirements of the Radio enthusiasts by supplying everything necessary in Radio. Customers are given free advice, and demonstrations are held daily.

**O. J. Nilsen.** Many fine Federal Receiving Sets are on view at O. J. Nilsen's Showrooms, both at 45 Bourke Street, and 332 Flinders Street.

Federal Accessories of all kinds are largely stocked and can be procured at very reasonable prices.

Federal Radio goods have been called the "Rolls Royce of Radio," and the fact that O. J. Nilsens have staked their reputation on this line shows that it is as efficient electrically and mechanically as possible.

A feature of the 332 Flinders Street Showroom is the

new and up-to-date Demonstration Parlour which has been designed for the comfort of patrons as well as exhibiting, in a modern manner, their Radio Receivers and Appliances.

**P. H. Clark Ltd.,** Mr. W. N. Bartholmew of Builders Exchange, Flinders Lane, is the local agent for Messrs. P. H. Clark Ltd., Sydney.

During last week we had an opportunity of inspecting, at the Builders Exchange, the Acme, Walnart, and Helco apparatus. The outstanding article in the above range of instruments is the Acme "Lowest Loss" condenser, which is, without doubt, the finest condenser for low loss work it is possible to make. The importance of such a condenser for tuning in weak signals is apparent.

Other Acme apparatus includes the Audio Frequency transformers, variable ratio transformers, 30 K.C. transformers, Radio Frequency transformers and Twin Rheos.

The Walnart manufactures included variable condensers, both plain and vernier, tube sockets, variable grid leaks and condensers, inductance switches, plain and lettered binding posts. Helco apparatus is a line of low loss tuning units wound on an entirely new principal, and includes adjustable variometers, vario-couplers, Rienartz Coils and the Super-Helco-Dyne-Kit. The last is a complete set of transformers, couplers and condensers especially matched for use in building a superheterodyne set.

The above articles are obtainable, wholesale only, from Mr. W. N. Bartholomew, at the above address, or Messrs. P. H. Clark and Co. Ltd., Sydney.

**Henry G. Small** Upon visiting the Show Rooms of the above Co., at 360 Post Office Place, we were interested to find that they had just landed a shipment of Stromberg Carlson Radio apparatus including Headsets, Jacks, Plugs, Audio Frequency Transformers, Loud Speakers, etc.

This Company informed us they are being forwarded to the trade and will be available from all dealers immediately.

We were more than ordinarily interested in a new line stocked by Henry G. Small and Co., and this was a F B A Detector. F B A stands for fixed but adjustable, and no words could better describe this unique crystal detector. It is easy to mount and possesses all the advantages of the fixed type plus the sensitivity of the adjustable type, and

**AT LAST!**  
**The Super-Crystal**  
**ARGENTITE**

**LOUDER! CLEARER! BETTER!!!**

Try it, and be convinced. Proved by test to have greater rectifying properties than any other known crystal.

Insist on ARGENTITE.

SOLE AGENTS

**WELBY RADIO COMPANY.**

WHOLESALE ONLY

13 Royal Arcade, 1st Floor (N<sup>th</sup>), Sydney N.S.W.

## MEYER BROS.

### *The Motor Block*

TELEPHONE: 7599 and 11307.

320 Elizabeth Street, Melbourne

Brunet Head Phones, 4000 ohm. 25/- pair.

Crystal Sets: £2 : 10 : 0 and £3 : 3 : 0  
Complete with Aerial and Head Phones.

Supplies of 1 to 7 Valve Receiving Sets,  
complete with Aerials. Installations  
arranged in your own home.

### *All Parts to build your own sets*

Obtain our price lists. Information and  
advice free. Everything in Radio.

## Thos. Draper & Co.

267 Little Collins St., Melbourne

Tel. Cent. 1413.

*Can supply everything necessary for  
the construction of your Radio Set*

Here are a few of our lines:—

Best British-made Phones, 4000 ohm. 30/-

Wood Parts for Loose Couplers, 5/6 set.

Base Boards, only 3/6 each.

Tuning Coil Ends 6d. each.

Cardboard Formers 12 in. and 6 in. long,  
6d. and 3d.

Sheet Ebonite, cut to any size required,  
5/- per lb.

Egg Insulators, 2½d. each.

Shell Insulators, 6d. each.

*Call or write, our advice is free*

# Stanford Xray & Radio Co.

214 RUSSELL STREET, MELBOURNE

We manufacture here apparatus for all applications of high frequency electric currents, and claim to be in the best position to give practical and sound help in all its uses.

**This advice is free and must save you from mistakes**

Write, phone or call for free price list.

Telephone, Cent. 5685.

## ALL RADIO ACCESSORIES STOCKED

Any circuit will be made up on order at cost of materials and time required in assembling them.

*Demonstrations given before acceptance of any set*

may be used for table or panel mounting. The Firm gave us a demonstration of how this detector is mounted on a panel, which we followed with interest, two 1/8 inch holes were drilled 9/16th apart for mounting the brackets in position, the cartridge was then snapped into position, being ready for immediate use. Each detector is thoroughly tested before leaving the factory, but may be readily adjusted at any time without removal from the clips, simply by holding the metal ferrule on one end of the tube and slightly turning the metal ferrule on the other end until signals are loudest. When thus set it will remain so against considerable vibration.

Experimenters are advised to try out this excellent FBA detector, it will prove to be what you have been looking for for some time.

**Suburban Radio Service.** This enterprising firm on Henley Day and evening, fitted a boat on the Yarra with one of their renowned receivers, with the result that many of the thousands at Henley received the Broadcasting, which they thoroughly enjoyed.

**Dennis, Chapel St., South Yarra.** On the evening of the 13th ultimo, when the Broadcasting was inaugurated in Victoria, Dennis, the Radio expert of South Yarra, installed a powerful receiving set through the fanlight of his building, for the benefit of passers-by. The attraction was so great that soon a great crowd assembled to listen, so much so that it was with difficulty that the police were able to regulate the traffic.

**Meyer Bros Radio Store** These people have just opened up with a complete stock of Radio Material, including English, French and American lines. Complete sets and parts for almost any type of outfit.

A unique program of their business is their Information Bureau.

The public requiring replies to enquiries on anything Radio have been provided with a client's office, where free writing material is supplied them to put their request for information in writing, which is replied to by mail.

Naturally this method ensures each enquiry getting proper attention, which can be filed for reference and saves congestion in the shop.

**Harringtons Ltd.** Harringtons Ltd. have now opened new premises at 322 Little Collins Street, first floor, over Lattice Tea Rooms, for wholesale radio business.

The new showrooms are also specially equipped for demonstrating, and are well stocked with Gilfillian Radio Products, Marco Parts and Imperia Valve and Crystal Receiving Sets, for which they are the special wholesale and retail distributors.

The above firm reports good business with their Imperia Sets, particularly the four valve set, many of which they have installed in suburban and country homes to the complete satisfaction of their clients.

**DEPENDABLE GOODS RETAIN CUSTOMERS' CONFIDENCE.**

**Norris and Skelley Pty. Ltd.** The remarkable advancement made by Norris and Skelley Pty. Ltd., backed by the vast knowledge of Radio experts, has proved a decided advantage in retaining the satisfaction and confidence of a large clientele.

The high-grade apparatus retailed by this firm has received favorable comment throughout the Radio world.

We hear that during the last few weeks tremendous sales have resulted, these, we feel sure, will be augmented during the next two months.

We congratulate this firm on their remarkable progress.

**Stanford X-ray and Radio Co.** The Stanford X-ray and Radio Co., now manufacture all apparatus for high frequency currents.

All Radio accessories are stocked, including a big range of Receiving Sets in any number of valves required. Demonstrations given before acceptance of any Set.

**Smith, Sons and Rees. Ltd.** The "A" Battery is the heart of the receiver. The above Company have a very fine stock of Accumulators which our readers would do well to inspect.

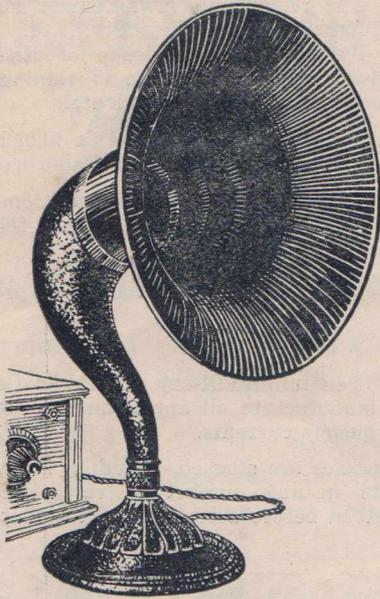
As the success of all Wireless Sets depends upon the care given to the Lead Acid Accumulator, a few brief remarks on the action of a cell under charge and discharge will be of assistance to all users of U.S.L. Radio Batteries, which are extensively used in Radio Broadcast Receivers.

When the cell is fully charged the electrolyte has a density or specific gravity of 1.285, the active material on the positive plates being oxide of lead and on the negative plates pure spongy lead. The pressure between the positive and negative groups is about two volts, and if these groups are connected together through an electrical conductor, such as an electric lamp or other resistance, current will flow between them, discharging the cell. During this discharge a chemical action takes place which converts the lead oxide on the positive plates and the pure spongy lead on the negative plates to sulphate of lead. This chemical change removes sulphur from the acid, thereby

**W. SANGSTER**  
**266 TOORAK ROAD (near Chapel St.)**  
**SOUTH YARRA**  
 TELEPHONE WINDSOR 2146

Receiving Sets for Broadcasting Reception. Also Complete Accessories and Raw Material for the Radio Fan.

Demonstrations any time of the day or evening



Hear the most fascinating programmes without stirring from your chair or without adjusting ear-phones.

You will appreciate this in the warmer weather. All the family can listen-in if you choose one of the superb Loud-Speakers quoted on this page.

# Loud Speakers

that give you radio as you OUGHT to hear it!

United Distributors, Limited, hold the exclusive agency in Australia of some of the world's best Loud-Speakers.

A Choice of Several — Each One Perfect.

Ask your Dealer to let you hear them all.

**Music Master Loud Speaker**—This has a resonant wood amplifying bell which neutralises all mechanical effects, and produces a remarkable volume of clear, pure tone, free from muffling or distortion—a life-like re-creation of the original.

As illustrated above, £12...

**Atlas Loud Speaker**—The "Musician of the Air." Its scientific design, with careful fabrication and assembly, goes far to compensate for any shortcomings of broadcasting. It gives you the programmes clearly, sweetly and naturally. £7/10/-.

**Signal Loud Speaker**—of special shape and construction, as illustrated on top of Radiovox Cabinet at foot of page. Strong and sweet £4/15/-.

**Brandes Table Talker**—known the world over £4/15/-

*All Radio Dealers can supply you!*

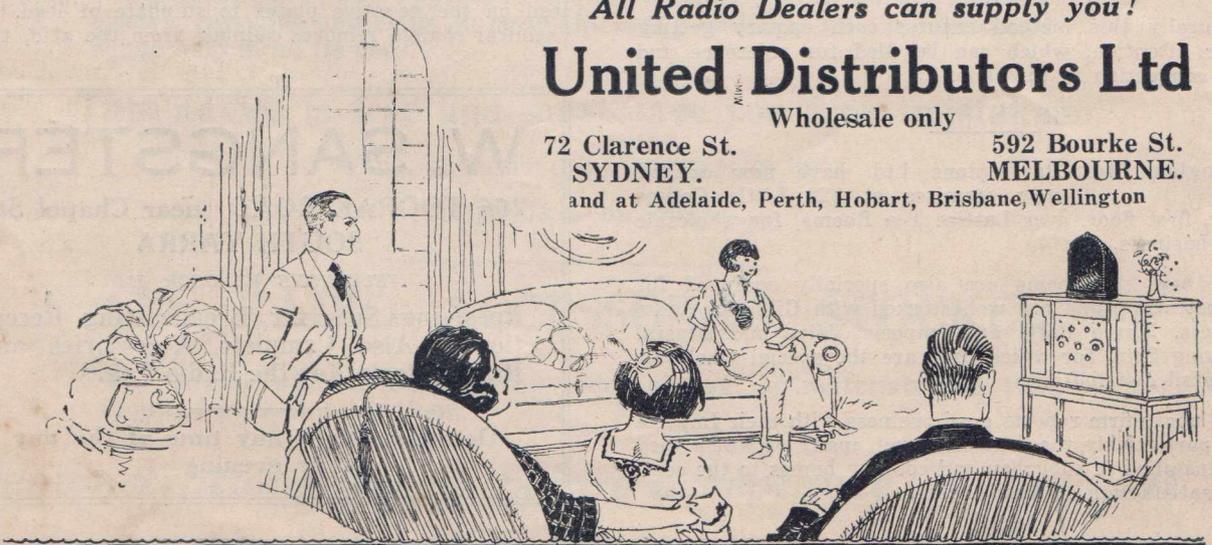
## United Distributors Ltd

Wholesale only

72 Clarence St.  
SYDNEY.

592 Bourke St.  
MELBOURNE.

and at Adelaide, Perth, Hobart, Brisbane, Wellington



lowering the specific gravity or density of the solution. When the cell is completely discharged its density is about 1.150.

When current is sent through the cell in an opposite or charging direction, a chemical action occurs precisely the reverse of that on discharge. The action of the charging current removes the sulphur from the plates, changing the lead sulphate on the positive plates back to lead oxide, and on the negative plates to spongy lead. Inasmuch as the sulphur returns to the solution, this solution becomes more dense, and when the cell is fully charged the solution reaches its original density of 1.285.

From the above it is evident that a Battery will work more satisfactorily if it can float on a line, charging and discharging alternately, such as a motor car starting and lighting Battery.

However, as such conditions of work on a large number of Wireless Sets is improbable, we recommend the following instructions, to ensure satisfaction as regards efficiency and durability of our Batteries:—

1. All Batteries should be given a boosting charge before putting into service, i.e. charged until the specific gravity is 1.285;
2. Do not discharge Battery for the first eight to ten discharges below 1.175 specific gravity;
3. Charge the Battery for the first eight to ten charges until the specific gravity has been constant for two hours and reaches 1.285;
4. Give Battery an overcharge once a month by continuing the charge until the specific gravity has been constant for at least four to five hours;
5. Keep plates covered by using distilled water. Never put acid in, as only the water evaporates.
6. Do not let the Battery stand in a discharged condition if Battery is not being used. Be sure to give a boosting charge once a month.

If the foregoing instructions are carried out, we are sure that most satisfactory results will be got from "U.S.L." Radio Batteries.

#### ..An Australian Achievement.

**The United Distributors Ltd.** Much has been said of late about giving preference to Australian-made goods, and certainly the future financial greatness of Australia is largely dependent on the general acceptance of this policy.

Yet this acceptance rests on the ability of Australian manufacturers to fulfil the anticipations of purchasers who have long been accustomed to the finished products of overseas manufacturers. Now, however, it may fairly be stated that Australia can in most instances, produce goods equal in every way to the imported varieties.

Take wireless as an instance, Australia is coming to the fore with radio lines which promise to suit local conditions of atmosphere and broadcasting as well as any imported goods for the same purpose could.

One outstanding example is the Signal Audio Frequency Amplifying Transformer. This is a perfect piece of workmanship, really wonderful in the delicate precision

of its adjustment, yet thoroughly strong and reliable. It is magnetically shielded in a shell of original design and beautifully neat finish. Attached to a set, it ensures a loud, clear tone, while guarding against howl or distortion.

The fact that the Signal Audio Frequency Transformer is made by the Electricity Meter Manufacturing Co., Ltd., who makes the electrical meters for the Government, is in itself, a guarantee of workmanship by thoroughly experienced craftsmen in this class of work.

Every Signal Transformer is guaranteed by the manufacturers and the distributors.

Needless to add, the fact also that this Transformer is made in Australia results in a saving of about 60 per cent. in freight and duty.

The Signal Audio Frequency Transformer is now obtainable at all Radio Dealers, the price being 21/-, and is said to be fully equal to imported transformers which sell as high as 35/- and 40/-.

Dealers themselves may obtain supplies from the Wholesale Distributors: United Distributors, Ltd., 72 Clarence Street, Sydney; 592 Bourke Street, Melbourne, and at Adelaide, Perth, Brisbane, Hobart and Wellington.

### SHORT WAVE BROADCASTING.

It is reported from the United States that the result of the first test in short wave relay work showed a great improvement, and the results in general have been very encouraging. Westinghouse station has lately been expanding and engaging extensively in investigating the various wavelengths, and it is not surprising that the people of the Argentine, several thousands of miles away, received the signals which were broadcasted from KDKA, on the very short wavelength of 70 metres.

We have not been able to obtain schedule of KDKA, but owing to the fact that numbers of Australian experimenters are continually searching on wavelengths below 100 metres, it will be interesting to see who will be the first Australian to receive the broadcasting from the Westinghouse station.

In view of the fact that these signals have been received strongly in the Argentine it should not be impossible to receive KDKA in this country.

### 2130 MILES IN DAYLIGHT.

We think you will all agree that 2,130 miles air line is good DX work for a broadcasting station to cover while the sun is shining. CKAC La

Presse Broadcasting station, of Montreal, recently entertained the members of the Byron Harman Picture Company with an afternoon concert while several thousand feet above sea level among the Rocky Mountains. This is the first time that a radio set has been carried so far north.

The expedition is going still further north, and a special effort will be made by the expedition to pick up CKAC during the fourth night when they will be camped near the great Columbia Ice Fields.

**A CURIOUS WIRELESS EXPERIMENT.**

One morning early in July, a very curious experiment was tried out with some carrier pigeons at the Radio Telegraph Station of Paterna, near Valencia (Spain). Several of these birds were released near to the aerial mast at the same moment as the station was transmitting messages,

and it was observed that the birds, through the influence of the electric waves, lost their sense of direction, turning around and around in confusion. The tests were repeated many times, invariably with the same result, thus proving that the sense of direction of the carrier-pigeons was destroyed by the influence of the electro-magnetic waves.

*Advertisers  
Please Note.*

*All new copy must be in our office by the 1st of each month, otherwise previous month's advertisement will be repeated*

TEAR OFF HERE AND POST TO-DAY.

**SUBSCRIPTION ORDER FORM**

To The Manager,  
MAGAZINES PTY. LTD.  
59 Victoria Street, Melbourne.

**Subscription Rate :**  
**12/6**  
PER ANNUM  
INCLUDING POSTAGE

Please send me "The Radio Experimenter and Broadcaster" for 12 months post free, commencing

with the issue of.....for which I enclose remittance 12/6

Name.....

Address.....

.....



Write for Price Lists

- BOOKS.**  
 Crystal Receiving Sets, and How to Make Them . . . . . 2/-  
 Single Valve Sets, and How to Make Them . . . . . 2/-  
 Telegraphy and Telephony . . . . . 2/-  
 Component Parts . . . . . 2/-  
 Telephony Explained . . . . . 2/-

- CONTACT STUDS.**  
 Brass Contact Studs, 1/8in. x 1/8in. head per doz. . . . . 1/-  
 N.P. Contact Studs per doz. . . . . 1/-  
 Brass Contact Stops 1/8in. x 1/8in. head per doz. . . . . 1/3  
 Valve Legs, each, . . . . . 2d.

- VARIABLE CONDENSERS**  
 Kellogg, No. 601, 11 plate, V. . . . . 42/9  
 Kellogg, No. 603, 23 plate, V. . . . . 48/9  
 Table Type, .0001 M.F. Gap. each . . . . . 15/6  
 Table Type, .0002 M.F. Gap. each . . . . . 16/6  
 Table Type, .0006 M.F. Gap. each . . . . . 17/6  
 Table Type, .0008 M.F. Gap. each . . . . . 25/-

- Condensers—Unassembled.**  
 43 Plate . . . . . 13/6  
 23 Plate . . . . . 8/9  
 11 Plate . . . . . 6/3  
 5 Plate . . . . . 5/3  
 3 Plate . . . . . 4/6

- CONDENSERS, FIXED.**  
 'Phone Condenser .001, each . . . . . 9d.  
 Grid Condenser .0005, each . . . . . 9d.  
 Grid and Leak .0005, each . . . . . 1/-

- DIALS.**  
 Bestone, Bakelite, 4 1/2in. . . . . 7/6  
 Bestone Dials, 3in. . . . . 4/-  
 Hartley's Dials 3 1/2in. . . . . 5/9  
 Hartley's Dials 3in. . . . . 2/3  
 Hartley's Dials 2in. . . . . 1/9  
 Ivorine Rheostat Dials . . . . . 1/-

- GRID LEAKS.**  
 "Freshman" Variable, with .00025 Cond. each . . . . . 6/6  
 "Filtron" Variable 0-7 Meg. . . . . 8/6  
 Quick Heat, Fixed, 1, 1 1/2, 2, 2 1/2, 3 Meg. . . . . 1/6

- HONEYCOMB COILS.** (Unmounted).  
 from 2/- each.

**CONSTRUCTIONAL SETS.**  
 The Constructional Sets are in every case sent out with ready drilled Panels, assembled Condensers and Transformers ready wound, with wiring diagram. The Sets, however, do not include Valves, Headphones, Aerials, A. and B. Batteries, 'Phone Plug, all of which can be selected from General List. When ordering it is essential to state type of valves which is proposed to use, so that suitable socket may be forwarded.

1. Valve Constructional Set . . . £5/5/0  
 2. Valve Constructional Set . . . £7/5/0  
 3. Valve Constructional Set . . . £12/7/6  
 4. Valve Constructional Set . . . £13/16/0  
 Crystal Cups, Brass . . . 3d. and 6d.  
 Sliders, Brass 3/16in. 1/- 1/4in. 1/3

- Cylinder Formers, Cardboard, ft. . . . . 1/-  
 Telegraph Keys . . . . . 7/6  
 Syko Flex. Tubing, per foot. . . . . 3d.  
 Terminals for end of wire, doz. . . . . 6d.

**CRYSTAL SETS**  
 from 8/6 each.

- POTENTIOMETERS.**  
 Cutler Hammer . . . . . 12/6  
 Frost . . . . . 5/6

- RHEOSTATS.**  
 Rheostats, 6 ohms. . . . . 4/6  
 Rheostats, 30 ohms. . . . . 5/6  
 Rheostats, 125 ohms. . . . . 12/6

- HEADPHONES.**  
 Brunet, 4,000 ohms, . . . . . 34/6  
 Sonyte, 8,000 ohms . . . . . 38/6  
 Brown's, 8,000 ohms . . . . . 42/6

- VARIOMETERS and COUPLERS.**  
 Kellogg Variometer 600 met. . . . . 50/6  
 Bestone Variometer and Dial, 600 met. . . . . 50/  
 English Variometer 580 met. . . . . 8/6  
 Pall Mall Variocoupler, . . . . . 21/-

Opp. Station, 270 Flinders St., Melbourne

# OLIVER J. NILSEN & CO.



## Wireless Experts

### FEDERAL SERVICE STATIONS

Complete Stocks of American and English Sets and Accessories.

We have just purchased the whole shipment of "The Home Constructors Guide," by W. James. This is the finest book for amateurs or professionals that has ever been brought to this country. Price, 4/6.

OUR HIGH CLASS CRYSTAL SET 90/- Complete.  
 FOUR VALVE Set De LUXE £55 Complete.

A FEW SAMPLES FROM OUR KEENLY PRICED STOCK.

- |  |   |  |
|--|---|--|
| Aerial Wire 100-ft. 3/20 . . . . . 3/-   | .0005, .0003, .0002 each . . . . . 1/8      | Jefferson 41 . . . . . 30/-                      |
| Insulators, egg . . . . . 2 1/2d.  | <b>VARIABLE GRID LEAKS.</b>                 | Federal 4 1/2-1 . . . . . 32/6                   |
| Insulators, reel . . . . . 3d.   | Lissen . . . . . 4/9                        | All American (Push Pull) per pair . . . . . 90/- |
| Insulators, barrel . . . . . 5d.   | Durham . . . . . 4/6                        | <b>PHONES.</b>                                   |
| <b>CONDENSERS.</b>   | Watmel . . . . . 4/9                        | Pico, 2,200 ohms . . . . . 25/-                  |
| Engishn, Variable Condensers, complete with knob and dial, 43 plate, 14/-; 23 plate 10/6; 15 plate 10/-; 11 plate 9/-. | <b>RHEOSTATS.</b>                           | Manhattan, 2,000 ohms 30/-                       |
| 43 plate, vernier condenser . . . . . 19/-   | Ormond, 6 ohm . . . . . 4/-                 | Manhattan, 3,000 ohms 32/6                       |
| 23 plate vernier condenser . . . . . 18/6  | Un-x-ed, 6 ohm . . . . . 3/9                | *Federal, 2,200 ohms 35/-                        |
| Fixed Condensers, Mica Dielectric .002, .001   | Federal, 6 ohm . . . . . 7/6                | Baldwins . . . . . 75/- and 80/-                 |
|  | Hercules, 30 ohm . . . . . 4/6              | Crystal Detectors 3/- to 4/-                     |
|  | <b>TRANSFORMERS.</b> (Audio)                | <b>CRYSTALS.</b>                                 |
|  | United Ratio 3 1/2-1 and 5-1 . . . . . 21/- | Galena . . . . . 1/- and 1/6                     |
|  | Jefferson Star . . . . . 22/6               | Midite . . . . . 1/6                             |
|  |   | Hertzite . . . . . 1/6 and 2/-                   |
|  |   | Molybdenite . . . . . 2/-                        |

PHONES—CENTRAL—

67920, 6604, 6651, 10933.

These highly efficient Phones are exclusively used in many of the high-powered Commercial Stations in America.

45-47 Bourke St & 332 Flinders St Melbourne AND AT GEELONG

# LOUIS COEN WIRELESS Pty. Ltd.

*The Leading Amateurs' Store now cuts "Ebonite any size whilst you wait" by square cutting electric saw*

IN ORDER TO FURTHER SHOW OUR DISINTERESTED PHILANTHROPY WE ARE GIVING A FREE COPY OF

**The Amateurs' Own Paper**

**The Experimental**

**Radio and**

**Broadcast News**

**Official Organ of the Wireless Institute**

(One only to each address)

Extract from the late Official Organ of the Wireless Institute, "Radio Experimenter."—

**Philanthropy** The advertisement of Messrs. Louis Coen Pty. Ltd., appearing in another portion of this issue, is an illuminating revelation of disinterested philanthropy, rarely seen in these days of stringent business stress and turmoil.

Without reward or the hope thereof, save such as may be gleaned from the consciousness of a beneficent action performed, readers of the advertisement are directed therein, by the Coen Company, to consult the Company's price list, which, it is stated, will appear in the pages of our wireless contemporary.

No doubt the publishers of our newly born brother will enthusiastically acclaim the Coen method of advertising; in any event, it affords us an opportunity, not only to give credit to the benevolent Company, but, at the same time, to wish our young relative a successful voyage on the sea of wireless journalism.

## AMATEURS !

### Support Your Own Paper

We will post one Free Copy of EXPERIMENTAL RADIO AND BROADCAST NEWS to every person sending this book to

## LOUIS COEN WIRELESS Pty. Ltd.

63 Swanston Street, Melbourne