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The Best Wireless Set

Broadcasting will soon be in full swing. Buy your set now and become an experienced operator before broadcasting actually starts. We are now in a position to quote for complete experimental transmitting and receiving Stations in the Country and will send our Wireless Staff for the installation and operation. All enquiries fully answered by mail.

Send for our Booklet

“ALL ABOUT WIRELESS”
On receipt of 6d. in stamps we post it free.

GRACE BROS. LTD.

Broadway, Sydney
A Talk with Wireless Weekly.

Broadcasting Conference Postponed.

More Delay.

The conference which was to have been held last Monday, the 9th instant, by the Postmaster-General, has been postponed until some time in May; so the public are going to have another few months delay before broadcasting proper comes to Australia.

No official reason has been received so far, but we presume it is on account of Mr. Fisk, of Amalgamated Wireless, Ltd., who will be returning some time in May from Great Britain. It is understood that he has been studying the broadcasting system there with a view of putting a scheme before the authorities for broadcasting in Australia.

We hope that when the conference is called by the Postmaster-General that there will not be the usual red tape delay, but that the commercial men who will attend will speed matters up and finalise a scheme to give the long suffering Australian public the broadcasting they should have had nearly twelve months ago.

The commercial station at Sydney was again interfered with last week by amateurs. This is a very grave matter, and as we have pointed out for some weeks past, it is going to have a serious effect on the issuing of transmitting licenses to amateurs. We make one or two suggestions here to the authorities, that they make it compulsory for every transmitting station to be equipped with an efficient wave-meter (we believe no wave-meter was the cause of interference last week), also that every station shall be able to be called by telephone, and that the telephone number be transmitted at least three times during each 15 minutes transmission, also as regards call singing, that they also should be transmitted at least three
times during each 15 minutes transmission. Luckily last week one interfering amateur did give his telephone number after some hours of interfering. He was immediately rung up by some other amateurs, who were listening-in, and told of his interference. This goes to show the average amateur experimenter is only too anxious to work within the regulations laid down, still, it behoves us all to seek out and report any persistent interferer, who will jeopardise the whole body of amateur experimenters in this country.

"Young Australia Listens In."

The set shown in accompanying photograph was built and installed by Messrs.
Coleville-Moore, Rose Street, City.

What Kind of a Receiving Set Should I Buy?

Pointed Questions that Every Layman is Asked when He Starts out to Select His Equipment: Questions that He Must Decide Before He Makes His Purchase.

The uninformed layman who selects and purchases instruments for his radio receiver is about as likely to make a wise choice as a Hindu post attempting to outfit an Arctic expedition. He is offered the choice of an extensive line of apparatus, each piece of which seems to have certain specified technical merits. Only a few of the instruments are essential, although many others are highly desirable, if the buyer can afford them; but he does not always know this, and after a few minutes of demonstration is lost in a maze of indecision.

Despite the diversity of radio equipment on sale, only a little knowledge is required to make a sensible and economical purchase with due regard to the buyer's financial limitations. The important point is to know exactly what is wanted in the way of results and to watch for defects in construction, which are obvious if they are pointed out.

The answer to the layman's general question, "What kind of set should I buy?" may best be answered by a consideration of what he wants his set to do -- the service he expects from it.

1. "HOW LOUD A SIGNAL DO YOU WANT?"

This is usually the first question to be decided. If the buyer can pay the price he can receive music from a broadcast station more than a thousand miles distant and make it audible for a block or two from his house. On the other hand, a salesman may state truthfully that a certain station can be heard at a certain distance with a particular set, yet that signal may be so
weak that it will be drowned out by the ticking of a watch.

The question of signal strength is not hard to settle. It is determined by four factors—

1. The distance from the transmitting station;
2. The size of the antenna;
3. The type of detector used;
4. The amount of amplification to which the detected signal is subjected.

If the buyer is content to lounge comfortably in a chair with a pair of earphones on his head and is satisfied if but one or two persons may listen in at a time, signal strength of the order obtained on a crystal set or vacuum tube detector set will be sufficient.

But if he wants to dance to radiophone music, or if he wants to make concerts audible to as many persons as he can accommodate in a room, or if the buyer is bothered by the prospect of wearing a receiver on his head for several hours each evening, instruments will be needed which produce greater signal energy. This must be sufficient to operate a loud-speaking horn, and except for short distances an amplifier is necessary. Provided money enough is spent, a signal can be amplified to practically any degree of strength.

Of course, the distance from the transmitting station is a fixed quantity.

The type of receiver essential to obtain signals of sufficient loudness for head telephones and the type for operating loud-speakers for various distances from the transmitting station can be determined after reading further points discussed in this article.

2. "WHAT SIZE OF ANTENNA CAN YOU USE?"

The size and design of the antenna partly determine the amount of energy which is collected to actuate the receiver, just as the distance from the transmitting station determines the amount of energy available.

In general, the longer the antenna the greater the energy received. For receiving purposes many wires are not essential; a single wire is practically as effective as four parallel wires of equal length, and it is easier and simpler to erect. A one-hundred-foot antenna may be considered an average length. In some cases, by increasing the length of a fifty-foot antenna to two hundred feet the signal strength is increased to the same degree as by one stage of amplification. Hence the longer it is practised to make an antenna up to two hundred feet, the louder the signal obtained.

The natural wavelength of an antenna—that is, the wavelength to which it responds without the addition of tuning apparatus—is roughly proportional to its length. For the reception of broadcast music on a wavelength of 360 metres, a one-hundred-foot antenna may be connected directly to the receiving apparatus. A longer antenna requires an artificial means of shortening its

**DE FOREST RADIO EQUIPMENT**

For efficient service, this line of Radio Goods can be thoroughly recommended, being of excellent workmanship, and as it comprehends first-class materials it commands better results. Send for catalogue of receiving sets and accessories.

**Millard Valves.** We have a full range of these Valves, Transmitting, Receiving and Amplifying, made to specification of the British Army and Navy.

**Head Phones.** Our stock includes the following makes: Brown's, Brandson, Millard's, and Stromberg-Carlson.

**Burgin Electric Co.**

Wireless Engineers & Suppliers,

352 Kent Street, Sydney
natural period or wavelength. This is accomplished by means of a variable condenser inserted in the ground connection or lead-in. With such a condenser, the concerts broadcast on 360 metres can be heard on antennas of two hundred feet or longer.

When the lead-in to the receiving set is taken from one end of a single-wire antenna, greater energy is received from stations in the direction from which the lead-in is taken. The single-wire antenna may thus be considered as an arrow, with its head or point at the end where the lead-in is taken. This directional effect is marked and should be taken advantage of by pointing the aerial so that maximum energy is received from the most desirable broadcast station.

Signals received on indoor aerials usually require considerable amplification. First, because the indoor antenna is limited in size; secondly, because some of the energy is absorbed by steel girders or other metal parts of the building in which they are located. For those reasons, outdoor antennas are recommended. Indoor antennas are of two types, loop and flat top. The loop antenna consists of a number of turns of wire mounted on a frame (usually one to three feet square), so arranged that the loop may be rotated on a horizontal axis.

A loop has strong directional characteristics, hence interference from stations in directions other than that at which a desired station is located may be reduced or eliminated. But the loop antenna collects so little energy that many stages of amplification are necessary to make a signal of strength equal to that obtainable from a long single-wire outdoor antenna and amplifiers are easily.

An indoor flat-top antenna consists of one or more wires stretched through the greatest available length. If an indoor antenna is long enough and located high enough in a building, it may approach the efficiency of an outdoor antenna of equal length, provided the absorption from the steel framework of the building is not too great.

3. WHAT DETECTOR WILL YOU CHOOSE?
Receiving sets may be classified thus:
These that employ crystal detectors;
Those that employ a vacuum tube as a detector;
Those that employ a vacuum tube detector with a regenerative circuit.

INTERVALVE TRANSFORMER.
CLOSED CORE—FOR AUDIO FREQUENCY AMPLIFICATION.
This Transformer, which is fully described elsewhere, is of the shell type. It is complete, reliable and compact. Maximum measurements of this Transformer are 4½ x 1½ x 1½ in. It is provided with feet in order that it may be mounted in any desired position.

Price—45s.
Postage—6d.
Wireless Weekly

April 13, 1923

The crystal detector is the least expensive type. For short-distance work it gives a satisfactory signal in the telephones. The vacuum tube detector is expensive but it is a much more stable device and gives a signal approximately twice as loud as a crystal detector.

The vacuum detector tube employed with a revolving set that uses a regenerative circuit is still more sensitive, although it requires greater skill in adjustment. The degree of regeneration is determined by the adjustment of the tickler or regeneration control. If too great a degree of regeneration is employed the quality of the received music will be distorted, and if a still greater degree is used the music will be entirely destroyed. But a set in this condition (it is then acting as an oscillator or transmitter) is capable of receiving C.W. (continuous wave) telegraph signals, which require ability to read the continental code for interpretation.

One stage of amplification makes a faint signal comfortably audible to the receivers. A second stage makes such a signal loud enough to hear all over an average room. Hence, if the antenna does not pick up enough energy to give a comfortably loud signal, an amplifier solves the difficulty. Also, if a signal is received sufficiently loud so as to be heard easily with receivers, and it is desired to have it audible throughout a room, an additional step of amplification is necessary.

4 "How far are you from a station?"
Assuming that the antenna is of average length, say, one hundred feet, the buyer can

Continued on Page 8

NEW RADIO BOOKS.

Radio for Amateurs—How to Use, Make, and Install Wireless Telephone and Telegraph Instruments by A. Verrill, 10/-, posted.

Book of Wireless Telegraph and Telephone, by F. Collin. 8/-, posted.

Oscillation Valve: Elementary Principles of its Application to Wireless Telegraphy, by Fargay 6/-, posted.


Wireless Telephony and Hertzian Waves, by S. Bettonne. 3/6, posted.


Making Wireless Cables. By N. Harrison. 4/-, posted.

Calculations in Telegraphy and Telephony. By H. Fen. 9/-, posted.

Experimental Wireless Construction. By A. Morgan. 2/6, posted.

Wireless Construction and Installation for Beginners. By A. Morgan. 2/6, posted.

A. C. of Wireless: A Popular Explanation. By F. Harris, 10/-, posted.

N.S.W. Bookstall Co. Ltd

JUST LANDED—3 SPECIALS


2. Thordarson Audia—frequency Transformers; totally shielded with aluminium casing. Radio 5 to 1. Price 8/-

3. Westinghouse W.D.—11 Dry Cell Tube—the Valve that every experimenter has been waiting for. Operates from a 1½ volt dry cell—no heavy Storage “A” Battery required. This Valve for portable sets.

Universal Electric Co.
244 Pitt Street, Sydney

MODELS

Model Railways, Steel Points for Gauge 0 at reduced prices. 12/- to 15/- complete with lever.

Just published new illustrated Catalogue. Price 3/-

O. BURNABY BOLTON
Daily Telegraph Building.
1230 Street, Sydney.
MAKE YOUR OWN

Capacities of Condensers Series

MEASUREMENT CHARTS.

One of the most important problems to confront the amateur who designs his own radio set is how to calculate the correct sizes of inductances and the condensers for the various parts of a radio circuit for a given wavelength.

There are several mathematical formulas for determining these "constants" as they are called. But these formulas are usually so complicated that they are not much used by the ordinary amateur. Most amateurs who design their sets resort to the "cut and try" system: that is, they wind a temporary coil with taps, connect it in the circuit, find the correct tap and then build a permanent coil with a corresponding number of turns on it. Sometimes they build a number of coils and try them all out in order to find the best size to use. Fairly good results are often obtained in this way, but this method is obviously unscientific. It entails a waste of time, energy and money. It is better and more practical to use standard formulas that will give the correct size for all parts to be built; further, these standard formulas enable the builder to design his set on paper and then build it according to the recorded specifications; in that way he will know in advance just what the results will be.

For the benefit of the average amateur, some of these standard formulas have been simplified and are represented here in the form of "alignment charts."

These charts offer the most convenient possible way of solving equations, which have three or four variables. They make it possible for the ordinary radio fan to use the formulas without the aid of anything more than common sense and a ruler.

The prime problem to be dealt with in radio is that of "resonance" in the different circuits. In order to have resonant circuits, the wavelengths of the various parts of the set must be such that the frequencies of the various parts of the set will be harmonics of each other.

Figure 2 shows the relationship of wavelength to frequency in the case of one circuit. It shows the wavelengths of the various resonant points of the circuit. The chart is for a set built to resonate at 1000 kilocycles, which is the normal frequency for a set of this type. The chart also shows the frequency of each point on the chart. The chart is for a set built to resonate at 1000 kilocycles, which is the normal frequency for a set of this type. The chart also shows the frequency of each point on the chart.

By RAOUL J. HOFFMANN.
sequence in a circuit, or in other words, in order to tune a
circuit to any particular wave-
length, the circuit must contain
inductance in the form of a coil
and capacity in the form of a
condenser. A certain value of
inductance and certain value of
capacity together in a circuit
give if a certain wavelength;
unless either or both of these
values are varied, the circuit
will absorb energy of no other
wave-length.

The basic formula for the
wave-length (W.L.) follows the
equation:

\[ W.L. = \frac{884}{V \times L \times C} \]

wherein \( L \) is the inductance in
microhenries and \( C \) the capaci-
ty in microfarads. The above
formula is shown in chart form
in Fig. 2.

In order to illustrate the meth-
ods of using this chart, let us
take the following problem: In
Fig. 1 we have a coil connected
in an antenna circuit. This
circuit is equivalent to a coil
with a condenser connected
across it—the condenser in this
case being the capacity between
the antenna and ground.

The example is this:

To find the proper value of
inductance for this coil when
used in an antenna circuit that
has a capacity of 0.0002 micro-
farads, in order to tune up to
400 metres. With a ruler on the
chart in Fig. 2, connect the value of capacity (.0002 mfd.) on
scale 1, with the wavelength
desired (400 metres) on scale 2.
The answer will be found at
the intersection on scale 3; it is
225 microhenries.

This same example applies to
calculations for a secondary cir-

\[ \frac{1}{C} = \frac{1}{C_1} + \frac{1}{C_2} \]

wherein \( C_1 \), \( C_2 \) are the capaci-
ties connected in series and \( C \)
is the resulting capacity. This
formula is plotted on a chart
shown in Fig. 3.

Let us take another example:
Calculations for an antenna
circuit with a coil in series re-

\[ C = \frac{C_1 \times C_2}{C_1 + C_2} \]
solve themselves into a simple formula for a wavelength of a coil with a condenser shunted across it. The condenser in
and read at the intersection with scale No. 3 the resulting
capacity of 0.0032 mfd. Having a
capacity of 0.0072 mfd and a

\[ \text{FIGURE 1} \]

this case represents the capacity between the antenna and the
ground.

To calculate an antenna circuit with a coil and a condenser in series resolves itself into a formula for a coil with two
condensers in series with it. One of these capacities is the
condenser and the other is that between the antenna and the
ground. These are added together by means of the chart in
Figure 3.

Find the correct value of inductance to use in a circuit shown in Figure 3 in which a condenser is placed in series
with the antenna circuit, the antenna having a capacity of
0.0025 mfd and the condenser a capacity of 0.001 mfd. To tune
to 400 metres.

The first step is to find the resulting capacity of the two
condensers with the aid of the chart in Figure 3. Connect 0.001
on scale No. 1 with 0.0025 on scale No. 2 by a straight line
desired wavelength of 400

meters, we find that we will
need an inductance of 225
microhairs, as found in the first
example we have given.

The chart shown in Figure 2
may also be used to find the
wavelength, when the capacity
and inductance are known, or
to find the capacity when the
inductance and wavelength are
known. The general rule is
this: Connect two known val-
ues on any two scales and the
unknown will be found where
the line crosses on the remain-
ing scale.

The amateur is advised to
keep these charts for reference,
to be used along with addi-
tional charts on the design of
circuits necessary to get a certain
value of inductance, and also
with charts that will calculate
the capacity of an antenna.

By the use of these charts
the amateur may design his set
with a definite knowledge of
what wavelength range to ex-
pect when his set is finally put
together and connected up.

April 13, 1924.

What Kind of Receiving Set
Should I Buy?

Continued from Page 3

then decide just what is necessary
for him to purchase to re-

ceive broadcast programmes
from a transmitting station lo-
cated at a given distance.

For distances up to twenty-
five miles, using head tele-
phone receivers, a crystal de-
tector and simple tuner are

sufficient.

A vacuum tube detector in-
stead of a crystal detector per-
mits the use of four or five tele-
phone receivers at the same
time.

A vacuum tube detector with
a receiver of the regenerative

type makes a signal loud

enough to be audible through

a small room, when projected

through an amplifying horn.

The addition of a one-stage

amplifier to this equipment

produces a signal audible

through a room.

For distances up to fifty

miles, a vacuum tube detector

is essential to a clearly audible

signal. A regenerative circuit

increases the range of recep-
tion up to 250 miles. A re-
genative receiver and one-stage

of amplification increases the

range for reception from broad-
icast stations up to 500 miles,

and a second stage of amplifi-
cation brings the range up to

1,000 miles.

In each of these cases an addi-
tional stage of amplification

brings the signal to sufficient

audibility to be heard through-
out a room of average size when

the signal is projected through

a loud-speaking horn. How-

ever, it is not advisable to use

more than three stages of audio

frequency amplification.

Continued on Page 10
Fault Tracing and Maintenance.

By "ELEKTRON." 

If it has been your unhappy lot to have invited some friends to "listen," and then to have found that there's "gone wrong," read these articles so that the inconvenience will not be repeated.

It is the tragic lot of the beginner at wireless that his red hot enthusiasm is liable to be dumped down the drain by something seen "radically wrong with" his receiving instruments. The thing that goes "radically wrong" of course, may be no more than a loose connection: yet the fact remains that in spite of his best efforts his signals are received from the Monday afternoon until the following Wednesday morning, when he happens to come across the loose connection by accident.

EXPERIENCE "THE TUTOR." 

Experience will teach its lessons in time, no doubt, but frequently it does so at the expense of a good deal of time and material and effort which might have been used to much better advantage. A little personal experience (of the unpleasant kind) is, of course, beneficial to the beginner; it develops an alertness of mind and a faculty of observation which are always valuable assets to the pursuer of scientific work of any kind. But it takes a long time to learn all about a subject by oneself, even the practical aspect of it—and the time spent in "learning from bitter experience" can often be spent with much better effect by the beginner in learning from the experience of someone else.

A SPECIAL FEATURE.

 Useful information with regard to the avoidance of failure in practice of faults, the correction of faults, and practical hints on the proper care and maintenance of amateur instruments, is given in the following paragraphs, in which reference is made to the "faults" in the form of warnings. It will be of interest to the reader to learn that the "faults" are neither uncommon nor are they difficult to overcome. The beginner, however, should remember that in order to make sure that the most useful results are obtained, it is necessary to follow the suggestions given in the article carefully. The beginner should be prepared to make a little sacrifice of time and effort to obtain the best possible results.

WORK WITH A SYSTEM.

The first thing I would endeavor to impress upon the practical amateur is the great advantage of working with a system. One is frequently hearing that there are two ways of doing everything: a right way and a wrong way. It would be more correct to say that there are a hundred and two ways of doing everything, a right way and a hundred and one wrong ways. In the case of wireless, at all rates, I'm sure any experienced amateur will agree that this is true. When something goes wrong with your receiving instrument the right way to set about repairing the trouble is to tackle the job systematically.

YOU MAY BE LUCKY—OH.

Another good plan is to keep a notebook and write down the defective instruments on the operating table for the purpose of recording your various experience with faults. In other words, keep a "malfunction log." When you have successfully surmounted some practical difficulty enter up an account of it in your log, with the date on which it occurred. You might make two separate logs:

Continued on page 16.
Free Wireless Sets

or an Order on any Advertiser in "Wireless Weekly"

SEND 5 SUBSCRIBERS and secure a 10/- ORDER

Send us 16 Annual Subscribers—with Names, Addresses and Cash—and we will send you a CRYSTAL SET (without Phases)

Write Subscriber’s Name plainly, and state name of Firm we are to make the Order on.

Wireless Weekly Newspaper
33 Regent Street
Sydney

ANNUAL SUBSCRIPTION 17/- PER ANNUM POST FREE
The Grid, Leak and Condenser

Some hints and suggestions concerning a very small, but highly important unit of radio receiving apparatus.

(By Kenneth Ullyett, in "The Broadcaster.")

Many makers are probably in doubt as to the reason for connecting a small fixed condenser shunted by a high resistance in the lead between the neutral and the grid of the rectifying valve, and the fraction of this little piece of apparatus.

If you have tried the experiment you will have found that, although there is no appreciable difference in the strength of the signals received, there is a marked difference in the quality of the music, etc., and that the control of oscillation is greatly facilitated, a delicate matter in these days.

In some cases signals do come in stronger, while in others a condenser and leak are not required. The whole matter rests on the valve used, which is either a bread subject to disease, or a hard type which gives better results with a condenser and leak, while the "soft" valves, always more difficult to adjust, are improved by the use of a potential diode connected in the lead between the filament battery and earth.

The writer uses the standard Marconi "R" type valves in his set and finds that a combination of condenser and potentiometer method is the best, particularly when receiving distant telephones. A leak of 3 megohms will have quite a small effect in reducing the plate current, for example, but it may be the most important factor in the control of oscillation.

Theoretically the leak should have a different value for every different valve used, but a fixed resistance of 5 megohms (2,000,000 ohms) is found to be quite satisfactory. A small length of slate pencil covered with Indian ink does admirably for this.

The potentiometer should be purchased, as it is difficult to make one with a steady increase of resistance. Two terra batteries would be sufficient to connect across it, but some other form of cell having a longer life would be better.

In short, the action of the grid condenser is this. When the signal becomes positive, a positive charge is induced on the opposite side of the condenser, and losing of the same sign is passed on to the grid of the valve, where it is checked by the stream of electrons passing from the filament to the plate.

At the next cycle the signal becomes negative, charges the condenser, which passes this charge on to the grid, where it is allowed to stay.

The condenser thus has a cumulative effect, and would tend to give the grid a high negative potential. This is advantageous up to a limit, but a very large number of negative electrons would reduce the plate current to practically nil, so it is necessary to have a leak of high resistance across the condenser, or between grid and filament, in order that the unnecessary negative charges may leak away.

The usual position for the leak is across the grid condenser, but when R.F. values are added it is sometimes necessary to connect it between the grid side of the condenser and the filament battery.

By experimenting with different values for the condensers and leaks, the amateur will find it possible to increase the sensitivity and general efficiency of his set by 20 per cent.

A N AUTOMATIC FIRE ALARM—BY RADIO.

A widely known radio engineer, William Bublitz, has devised an apparatus by means of which fire signals may be broadcast by the operation of an automatic switch when water is set in motion by the opening of any valve in the pipes of the sprinkler system that is installed in buildings. A central listening station attended by the Fire Department may thus be enabled to hear the characteristic calls for each building and so locate the danger. The use of this system might conceivably result in substantial savings in fire loss.

Get Your Wireless Gear at Electricity House

387 George Street (op. Strand), Tel. 2861 City

Condenser Plates, 1/9 each doz.; Condenser Spindles, 2/6 per set; Condenser Ends, 1/6 pair; Honeycomb Cells, f from 3/-; Honeycomb Mountings, 5/- each; Filament Resistances, 7/6 each; Calibrated Dials, 1/6 each; Lunch Boxes, 1/6, 3/2, 5/6 each; Contact Rings, 1/9 each doz.; Switchboxes, 3/- 4/6; Terminals, 5d. each; Phone Condensers, 1/8; Grid Condensers, 1/6; Variable Condensers, 2/-, 3/6.

Murdock’s ‘Phonos’, ‘Myers’ Valves, 35/-.

Catalogues, 6d. each, including wiring and other diagrams. All makes of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 6d. each; Loose Couplings, 40/-;

Cabinets, Ebonite, Bakelite, and All-round Materials. Complete Crystal Sets, 15/10/-, 25/10/-, 37/10/-; Valve Sets, from 5/- to £3, 1, 2 or 3 valve; Radiotron Valves, 35/-; Verner Mixtures, 10/-.

INTERVALVE TRANSFORMER, 40/-

Closed Iron Core.

UNDER NEW MANAGEMENT.

Works Manager: Raymond McIntosh.
General Manager: J. B. Marks.

All Communications to the Firm.
Radio Notes.

DO AMATEUR TRANSMITTERS SHOUT ENOUGH!

We have to hand a number of complaints from both suburban and country experimenters, that they cannot get the call signs of a number of amateur transmitting stations. Music they are getting, but they do not know who is sending it. One well-known country amateur writes as follows—

"For the past ten days I have been receiving radiophone every night on low wave length (amateur wavelength). I have identified some of the calls. Whether the following were sending out music, or receiving it, I am not certain: 2AF or 2PA, 3L (21X on Sunday night). The speech is hard to tune to, but is plain one tuned in. Saturday night last there seemed to be about three different ones sending singing, speech and gramaphone very clear. I also received some CW code words, "Werd" and "Morn," and numerous other sentences. Mr. Macleam identified the CW as Melbourne amateurs.

"It is very annoying to be receiving radiophone and not knowing where it is coming from. The trouble is that these radiophone testers do not sign enough. Would you kindly inform anybody you know to sign more often?"

DEMONSTRATION OF WIRELESS AT NARRABEEN.

On Saturday last, Radio College 2LI transmitted for Narrabean Surf Club Concert, held at Narrabeen. The music and speech was clearly heard by the 300 persons present.

The set used for the reception was a four-valve, with a Magnavox Loud Speaker, kindly lent by Mr. Schultz.

During the last 10 days 2LI has been transmitting between the hours of 12.30 and 2 p.m. daily.

SETS FOR EXPORT TO AMERICA.

We hear that one Australian wireless firm has orders for 5,000 receiving sets to be exported to America, and that they are working day and night to execute them. We hope that in the course of the next few months they will be executing orders for double the number for the use of Australians in America.

2BB.

Mr. Crook (2BB) has added another 5 watt tube to his set. He is now using 10 watts, 7-30, in his starting time, and he can be heard nearly every night.

ROUND THE RADIO WORLD.

ALMOST ONE MINUTE.

On board the Liner "Majestic, a week or two back, one of the operators during his four hours watch sent out two hundred messages ranging from eight to sixty-five words each, without the O.K.'s, signatures and "go aheads," which are inseparable from wireless traffic. This rate, therefore, was fifty messages per hour, which seems some having.

HELLO, AMERICA!

Some short while ago, Mr. Theunis B. Tratt, of Wynnum, successfully received the whole of the programme broadcasted from St.

then W2Y, New York, U.S.A. This consisted of music, orchestral and vocal, weather reports, news bulletins, etc. Mr. Tratt's apparatus was a Burdick Ultra IV, fitted with a loud-speaker. This is "Hands across the world," with a vengeance—when one reflects how many pairs of hands are all doing the same thing at the same time, i.e., adjusting radio connections.

Continued from page 19.

primary and secondary circuit is fixed and the tuning of both primary and secondary circuits is affected simultaneously by a single control knob.

More complicated circuits, such as used by the amateur relay stations, have four controls for tuning. One controls the wave-length of the antenna or primary circuit; the second controls the coupling between the primary and secondary circuit; the third controls the wave-length of the secondary circuit; and the fourth the amount of regeneration.

These circuits require skillful adjustment, but with a set so designed interference can usually be eliminated by trying various degrees of coupling and then returning the primary and secondary controls.

WHAT APPARATUS CAN YOU AFFORD?

In selecting receiving equipment, a buyer immersed in the radio art is more or less dependent upon the reputation of the dealer who sells and the manufacturer who builds the apparatus selected.

However, certain mechanical defects that are easily detected if the buyer is forewarned should decide him against an instrument possessing them, despite any claims made by the salesman for its electrical efficiency.

Continued on page 16.
SHIPS YOU SHOULD HEAR THIS WEEK

RAFFENIBRE
CARRANSONO
CORSA DE BRESCIA
ECLIPSE
SYDNEY
KURELBA
BUTKAI
EUGENE MARY
MATARABA
NAPOLEON
NAVARINO MARU
NADADA
NEAPE
SUNDER
VILLE DE METZ
WADDINGTON
MELISSA
TINABARA
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O'Sullivan's Electric Shop
298 Pitt St, Opp W&A Board.
"MAKING RADIO HISTORY." "Acting on a suggestion made to them by this journal, the British National Open Company, the only Institution of its kind (co-operative), broadcast on Monday, January 8, part of Mozart's "Magic Flute.""

This was done direct from the Opera House, Covent Garden, by the British Broadcasting Company, not, as previously, from Marconi House with a special gathering of artists. Seven hundred yards of electric cable and wire, aided and abetted by microphones and a certain apparatus under the stage, carried the sounds to Marconi House. Tests had been made with "Hansel and Gretel" on a preceding occasion, and as successful was the broadcasting that part of every opera given by the company was transmitted. "Ringfriar," "Madame Butterfly," "Marriage of Figaro," were in part,warped into hundreds of houses and clubs, but the event did not take place on Wednesday evening, January 17th. The whole of "La Boheme," with Danny Keane and Melba singing "Mi-mi," was then broadcast. Acting in accordance with the wishes of many listeners-in, a speaker from Marconi House not only told the story of the opera, the cast and conductor, composer, etc., but interposed remarks from time to time during the actual performance.

MELBA'S BROADCAST SUCCESS. Whether it is the quality of her voice, or whether it is due to her wonderful knowledge of voice production, doesn't matter. What does matter is that of any and every voice broadcasted to England, Melba's transmits the best, says "The Broadcaster." Every time, every inflection is perfect—the singer in "Boheme" moves about Covent Garden's huge stage a great deal. There was also a noticeable suggestion of vast spaces, almost as though the singer were alone, in some great lofty cathedral when the famous solos, "Me Chiamano Mimi!" (They call me Mimi) and "Addio!" (Farewell) were sung. It was extremely difficult to refrain from joining in the frantic applause which the radio registered in all its prolonged din.

RADIO COLLEGE

Applications are now being received for the next class.

23 LANG STREET

F. J. COOKE, Principal

working to further develop it. We tremble to think what will happen if they say "No!" Of course, as far as they are concerned, the best speaker is all they are interested in, and certainly this is upon no improvement. Whether wine dealers are the right people to take the matter in hand or not, and just what they can do, is a matter for thought, but undoubtedly someone should come to the rescue. Anyone with musical appreciation will annex this statement, after aIf the remote station by the Arctic shores his observations went forth with due to the institute and its interested parties.

So valuable were they that an observatory has now been established there by the Government of Norway, and scientists are confident that this station will be epoch-making in the history of radio.
Leichhardt and District Radio Society.

At the seventh business meeting of the Leichhardt and District Radio Society, held on Tuesday, April 3rd, four new members were added to the register, making a total to date of 78. Later, the important question of a suggested change of quarters was discussed, and it was unanimously agreed to accept an offer recently made to the Society, whereby members would have the use of more commodious quarters, which would be at their disposal at more frequent intervals than the means of present in use. The new Club room is situated at the rear of 394 Johnston Street, Auckandale (two doors from the electric light sub-station), and it will be formally taken over at the meeting to be held on Tuesday next, April 17th, at 8 p.m. It is expected that there will be a good roll-up of members to celebrate the occasion, and any non-members who are interested in radio work are invited to be present.

At the meeting held on Tuesday last, Mr. W. Bird relinquished the position of Hon. Treasurer, on account of pressure of business, and was accorded a very hearty vote of thanks for the excellent work which he had done on behalf of the Society since its inception in October last. Mr. S. T. Williams was elected to fill the vacancy created by the resignation of Mr. Bird. The Society has every confidence in the ability of the new Treasurer to follow in the footsteps of his predecessor.

The Society’s Hon. Secretary, Mr. W. J. Zech, of 14B Bicheno Street, Auckandale, will be pleased to answer any inquiries from persons interested in its activities.

Radio League of Victoria.

The fortnightly general meeting of the Club was held at the Club rooms, rear of the Presbyterian Church, Box Hill, on 22nd March. The President, Mr. Howden, took the chair. The minutes of the previous meeting were read and confirmed. The Secretary then gave an interesting lecture on “Wireless Construction” for beginners, outlining several circuits, and complete detail of their construction. The Club’s transmitting House has been applied for, and as soon as it has been granted the set will be completed, and set into working order. It was proposed to use the full power, 25 watts, but was decided on the last minute to use 3 watts, and add later. The receiver will be of these valves.

At the next meeting Mr. Lowe, Chairman of the Trans-Pacific Test Committee, will lecture on the “Test” (5th April).

On the 19th April, Mr. Howden will lecture on the construction of a set suitable for short wave work.

All inquiries relative to the Club activities should be addressed to the Hon. Secretary, Mr. H. Howden, No. 3 Wellington Road, Box Hill.

The North Sydney Radio Club.

The usual fortnightly business meeting of the above Club was held on Tuesday, 3rd inst., when various matters were brought forward for discussion. All members are particularly requested to be present next Tuesday night, when a matter of vital importance will be dealt with.

Bondi Radio Club.

Owing to the heavy rain on Tuesday, 20th inst., the first meeting had to be postponed. However, plans have been going ahead, and another meeting is being held on the Tuesday, 10th inst., at the same address as before, viz., 275 Bir- reil Street, Bondi (between Ocean and Watson Streets). Any persons interested are cordially invited to attend.

There are a large number of amateurs in the Bondi district, and a Club to look after their interests and give facilities for broadcasting practice, lectures, transmitting, etc., would be an advantage.

Wireless Weekly.

Round the Club.

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FOR SALE—Leece Naggar Crystal Receiver set, Oak Mounted, $150, or reasonable offer. 200 Old Canterbury Road, Summer Hill.
Continued from page 9

WIRELESS WEEKLY

April 13, 1923.

QUESTIONS

Acompanied by the coupon below will receive a prompt reply. Please understand that 2 questions only can be answered with each coupon.

Editor.

Built Coupon

To the Information Editor

AVAILABLE TIL 10-4-23

NAME:

Address:

FOR 2 QUESTIONS ONLY

QUESTIONS AND ANSWERS

"Sparkle" (Newtown):

A. (2) No objections whatever, there would be no danger to your house. (2) We would require for your particular, are you using a valve or crystal? If a crystal, then your set is working very well. (3) If you tune sharply and if the transmission is strong enough, you will get his telephone. (4) You have obviously made a mistake in your diagram because in shown the primary is short earthed. A variable condenser 0.004 m.f. across your secondary will give you better results unless tuned. (5) Approximately 200 metres. (6) Send id. for each block number wished to "Wireless Weekly," Box 278,സ.ൾ. St. John, Sydney.

"S.H." (Tinwah):

A. A Ford spark plug should not be used under any circumstances as a step down transformer from the mains.

"A. G. H." (Tinwah):

A. (1) The range of such a set will depend entirely on the sensitivity of the crystal and the skill of the operator; you should be able to hear as far as Melbourne and Townsville. (2) The low wave lengths up to 400 metres; you had better use your house amplifier, but should you desire to use long wave ends, use two such coils as suggested. (3) There is no need to take the slider off, as then you cannot vary your inden-
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No technical experience necessary. Parts supplied in knock-down or assembled, as desired.

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