An Artist's Impressions
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IS THE GOVERNMENT GOING TO ALLOW A COMPANY IN WHICH THEY HOLD A MAJORITY VOTE TO CREATE WHAT WE CONSIDER IS A BAREFOOT MONOPOLY?

"The Licensee will sell only such valves as are manufactured or supplied by the company or by other manufacturers or suppliers licensed by the company, etc."

The above is an extract from a document, the wireless trader is asked to sign before he can safely sell a wireless set containing a valve.

VALVES ARE BEING MADE IN AUSTRALIA BY AUSTRALIANS (and can, we believe, be sold cheaper than the imported article), but these particular valves cannot be sold by the bona fide trader, should he sign the document above referred to. If this is not a restriction of trade, we don’t know what is.

IS THE FEDERAL GOVERNMENT GOING TO SANCTION SUCH AN UNSCRUPULOUS ACTION?

Mr. Gibson, the Postmaster-General, said at the recent Conference, that the public must be looked after. Is he then going to allow an essential part of the Wireless Industry in Australia to be wiped out?

If such an unjust action is legally allowable, then the sooner our laws are amended the better for the community.

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Roster for Week ending 12th Sept., 1923

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Owing to a number of stations altering their wave length to the 250 band they are not yet ready to transmit at regular periods, and will not appear in the roster at present, but can be heard testing every evening.
Impressions of an Artist During his First Radio Concert.

By Leon Alfred Dutheroy, in "Radio Broadcast."

September 14, 1923.

What were my impressions when I sang, for the first time, over the wireless? What were they and I registered the gazes of known musicians and those who had willingness to evaluate.

Concert singers are all familiar with the complaint known to phonograph record makers as "hard reverberation," which means a bad case of nerves. That was it with me. It was a blue funk of the deepest kind. If any nerves had had evidences attached to them, I should have been a whole brand. Ask any music lover who has faced the concert for the first time.

It has been my privilege to appear before 7,000 people at the New York Hippodrome, the Chattanooga Assembly grounds, and the Chicago Auditorium, and I thought I was fairly untouchable with such psychoses; but when I realised that there were hundreds wireless outlets said in this country, and that possibly ten per cent of them were being tuned on me, the roof of my mouth pocketed up, my tongue felt paralysed, and my lips were blanched. Conser may have had his thousands, but I was to have my two of tweedledee.

The thought went to my head, my feet, and my stomach at one and the same time. There was I, alone in the wireless world. except for an impassive and impersonal commentator and the radio representatives standing over three at the side, a model of discretion and a bit interested in my own small doings, attending strictly to his knitting, said knitting being the case of some electric light bulbs, in front of me was a studio screen, or screenboard frame, and from that frame there hung the transmitter. It was a silk-covered little instrument, about the size and shape of a ten-cent boxed-barva.

When I realised that that wrinkled little box was all that stood between me and the world, his wife, and his family, there was no palpitation, round the heart, and a dry buttery feeling in the mouth. I could think of nothing but that line of Henry's "It's a merry day!"

Then I remembered the Night that Changes Me," except that I was far from being "the outcome of my fate," and "the master of my soul." I

The wireless world was a realm of about forty feet square, and it was perfectly clear that no musician had had a hand in its design. It was furnished for utility, not beauty. Chairs were pushed in a row against the wall which was hung with thousands of yards of yellow bunting. All the potato sacks in the city must have been draped from that ceiling. "Our accounts," said the attendant, "are deducting all sound." I would have judged it the mark of the office boy. To think that all this had been "con-" and "stolent," by a peddler great-grandson with four years behind him in some seminary to cultivate education in certain a wonderful. It looked exactly like a jive factory, although the smell was lacking.

Later I was to find that the broadcast precisely what was expected of it, mumble out extravagant sounds.

Here in the corner was what appeared to be a telephone switch-board minus the gang-screwing central. At the side was a handsome grand piano. The room was carefully fitted to write home to one's mother about, although undoubtedly it was practical and of value. Quiet reigned here.

Presently the attendant stepped bustling over with inestimable bulbs and looked up and said, "Sir, it is 3:20. Shall we begin?" He then stepped over to the transmitter and announced in a voice so beautifully modulated that it was almost what artists call "nichihotomy," that "Mr. Dutheroy will begin the evening's concert with "Vesti la giubba," from "II Pigmalione."" He then led me to within three feet of the transmitter, told me to withdraw my head for evermore, and to step nearer for the instant, and abandoned me to the mercy of the wireless service and the broadcasting.

I sang the arias to the tiny black men. When I had finished, the room seemed a little more reverberating, and there was not the slightest sound.

As that was, "Nothing more to it," I asked the engineer to look into the microphone, and the "piece" was set adrift. "Rabbi," had heard that, and the heart of his knowledge he furnished they had.

The conductor then went over to the transmitter and commanded that I should sing two songs, René's "Ange du Defilé," and Veyl's "Who? From the open, "Alleluia!" This I then proceeded to do. At the end of the same song, I asked him, should I have given any indication of applause. It was my most and
The Operating Room of a Broadcast Station.

Such a Station will be Operating at Sydney in a few weeks.

I felt like a bell ticking in a vacuum—you knew the example we used to have in high school in physics. I saw myself that all the stupid experiences, sliding through a tin can was the most stupid. While I was catching my breath, the telephone jangled. The attendant picked up the receiver, and said: "Yes, I will try." He then came over to me with the information that "A family up in Logan's Ferry, forty miles away, had just phoned in to ask if you wouldn't please repeat that last song again. They said it was the finest thing they had ever heard." So there was my applause—my encore! Oh, gosh, that was a moment of realization! Would I repeat that song? No power on earth, unless the electric jubes gave out, could prevent me. That telephone call was better than a salvo of applause, all the choppers in the world couldn't make the notes that one telephone call did in my head. When someone takes the trouble to phone in from forty miles away, it means that you scored a hit, that you shot a bull's eye. No deadheads in that audience. No "paper" in that house. These people knew what they wanted. Talk about Battery satisfaction, appealing to man's vanity—it was all rolled up in one telephone call.

I stepped over to the linky transmitter, and from time to time it looked at large up the Union Station. I repeated the "Aline" song. Later on in the evening, when I sang "Deep River" and "Swing Low, Sweet Chariot," the telephone rang again and asked me to repeat both of them, and then someone called up to convey that the singer wouldn't sing "Amelia Laurie." I knew that all the "press great staff" and the three-shirtlings wore as nothing. These people didn't know whether I was blonde or brunette, whether I wore my hair parted in the middle, side, or in fact if I had any at all. Whether I went through my "attractive personality" and all the other ridiculous prattle of the profession. Furthermore, they didn't give a thinker's pronunciation. What they liked was the singing, and they wanted more of it. You may believe that they got it.

When unseen and unknown people clamour to hear you sing, it is far more to be desired than the roaring applause in the concert hall. I felt like the Boy Scout, who had "done his good deed daily," and had shaken hands with the President.

I never thought much of Benjamin Franklin and his life-and-day epics, but when I think what he did for mankind by discovering something for little boys and grown men to capture and train, even if they don't know what it is I great-feet; and when I think of what Westlighthouse and Wireless have done and are doing for this country, I shudder. It's your old amuse, to your Uncle Dudley, that wireless is the invention of the age.
PRINCIPLES OF RADIO TELEPHONY.

BY A. MATHeson.

Herein is presented an exceptionally clear explanation of what is meant by the modulation of a transmitting station, with a detailed consideration of the receiving system. It concludes with an analysis of why relatively broad tuning gives distortionless reception.

The problem of radio telephony differs from that of telegraphy in an very important particular. In the case of radio telegraphy it is possible that the receiver may be activated so that the ear can hear the signal, but it is only necessary that the transmitted radio waves be intercepted at an audible rate, say 200 to 1000 times per second. In the case of telephony, however, the transmitted radio waves must be modulated to conform to the actual speech waves in order that the ear shall hear the signal as recognisable speech. It is at once seen that the problem of telephony is ever so much more complex than that of telegraphy. In Fig. 1, are represented the radio waves as emitted by a wireless transmitter. For telephony these waves must only be interrupted periodically as shown in Fig. 2, to be heard at the receiver. But for telephony these waves must be shaped according to the complex speech waves shown in Fig. 3 in order to be heard as intelligible and recognisable speech.

The modification of the modulated radio waves according to speech is called "modulation." The methods by which this modulation is effected are numerous. But since the ultimate result is the same regardless of which system of modulation is employed, we will, in outlining the fundamental principles of radio telephony, consider the simplest system of modulation. Later in the discussion we will take up in detail one of the most important systems.

For the present, therefore, we will consider the microphone transmitters for playing directly in the antenna, as in Fig. 4. The action of the transmitter in this case may be described as follows: The diaphragms of the microphone, when no speech is transmitted, are motionless. In this condition the microphone has its normal resistance and the antenna current will therefore have a definite normal value. Now, assume that the microphone is spoken into. The microphone diaphragms upon which the speech waves are impressed follow every variation of speech and move back and forth in unison with the speech waves. In this way a variation of the resistance of the microphone is effected, this variation being in accordance with the speech. Since the microphone resistance is in the antenna, variations in the resistance will produce corresponding variations in the antenna current. That is, a rise in the microphone resistance will produce a fall in the amplitude of the antenna current. In other words, a speech wave of the form of Fig. 5a will result in corresponding waves of the microphone diaphragm, which result in corresponding variations in antenna resistance producing a radiated current of the form of Fig. 5b. This radiated current has a varying amplitude corresponding identically with the speech wave of Fig. 5a. In this manner the modulating or modulated wave of the r.f. wave in accordance with speech is effected.

Since modulation is effected by varying the amplitude of the radio wave, the greatest or least effect will be obtained when a given speech intensity produces the maximum change in the amplitude of the radiated current. Where this maximum change in amplitude is obtained we say that we have complete modulation. This is the aim of all systems of radio telephony.

Let us now consider the antenna. The antenna current amplitude is regulated for complete modulation. In the first place what must be the value of the microphone resistance to secure most favourable output? This can be demonstrated in a simple and elementary manner as follows: Suppose the antenna resistance is 10 ohms total, including resistance of the microphone. Suppose the microphone resistance is only 1 ohm, normally. Then normally the total antenna resistance will be that of these two, or 11 ohms. Now assume that the microphone resistance varies, for maximum possible, namely from 1 to 220. It cannot ever become more than 220. Hence the antenna current amplitude will also vary by a factor of 20 to 1. This producing only about a 20 per cent variation in the resistance. Hence the antenna current amplitude will also only vary by 2 per cent, which is very small variation. Hence we see that if the microphone resistance is very low compared to the antenna resistance there will be little if any variation in the current amplitude and hence there will be very small modulation. On the other hand, suppose the microphone resistance is 2200 and vary a little, say 100 in the antenna of 100 ohms. In this case most of the antenna energy will be consumed by the microphone at least, leaving only a very small percentage to be radiated. Thus if the antenna resistance is very small compared to the microphone resistance even if complete modulation is had, there will be so little energy left for radiation since the high resistance microphone absorbs most of it, that very little effect will be produced. Thus we see that the microphone resistance must be too low or too high compared to the antenna resistance.

New experiment and mathematical analysis show that maximum results will only be obtained if the microphone had a normal resistance equal to that of the antenna.
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In discussing the question of what change is required in antenna current amplitude for maximum complete modulation, we will therefore assume that the microphone resistance equals the antenna resistance and call the resistance R. The total antenna resistance is therefore 2R, and the antenna current will be same value, i, when the set is modulated. Assume now that the set is modulating. Complete modulation requires maximum possible change in antenna current and this can only be accomplished if a maximum change takes place in the microphone resistance R. For maximum change in microphone resistance R, it must decrease to zero and increase to infinity. In the first case when the microphone resistance decreases from R to zero, the total antenna resistance will decrease from 2R to R, hence the antenna current will rise to twice its normal value, namely from 1 to 2i. In the second case when the microphone resistance increases from R to infinity the antenna current must decrease to zero. For complete modulation, then, the amplitude of the antenna current must drop to zero from its normal value and rise to twice its normal value, as in Fig. 6.

It is obvious that this change in microphone resistance to zero and infinity, to secure complete modulation, is not possible. The best that can happen is that the resistance of the microphone alternates between some value less than R, but not zero, and some value greater than R, but not infinity. Hence modulation with this system can never be complete. In general practice modulators are content to secure, with the system, a percentage of modulation between 50 per cent. and 75 per cent. Naturally, for a given power of the radio frequency transmitter complete modulation will result in a much greater range than incomplete modulation. Consequently other methods of modulation have been developed which are capable of giving complete modulation, regardless of what the system of modulation is; the principle of radio telephony is always the same. Namely, speech is transmitted by the radiophone by modifying or varying the amplitude of the radio waves in such manner that the amplitude variations soundable and are proportional to the speech variations.

There are two serious disadvantages in any system of radio telephony which modulates incompletely. The first is that since the variations in antenna current amplitude are not its maximum, the possible available full power of the set is not utilized, resulting in diminished transmission range. The second disadvantage is that if there is any distortion of speech in the set this distortion will be comparatively greater when modulation is incomplete than when it is complete. The desirability, therefore, of systems which modulate completely becomes evident.

One of the best circuits in this connection is the Helbing modulation system. This is probably the most used circuit of all. Its operation is therefore well worth mentioning.

and L2 is an audio frequency choke coil, both of high inductance, hence the radio frequency choke coil is connected between the plate of the modulator and plate circuit resistance of the modulator tube, it will be understood that no radio frequency currents from the modulated circuit can pass over into the modulator circuit due to the choking action of L1, which is used precisely for this purpose. The resistance of this tube coil is generally very much higher than the resistance of the output circuit of the modulator tube.

The function of the audio frequency choke coil L2 is to make the modulation action of the system. This is accomplished in the following way. When the microphone is spoken into, the speech voltage generated across the secondary of the telephony transformer T is impressed as the grid of the modulator tube. Since this voltage is alternating, the resistance of the plate circuit of the modulator tube will vary correspondingly. Thus when the voltage is positive the resistance decreases and when negative it increases. Consequently the plate current into the modulator tube will vary. However the pressure of the high resistance choke coil L1 prevents much change in the total plate current supplied. Hence any variation in the modulator plate current must be accompanied by an equivalent variation in the plate current of the modulator tube. This imposes the speech voltage across the grid of the modulator tube being highly positive. As a result the modulator and modulated tube are fed by the same generator through two choke coils L1 and L2.

Fig. 5a. Form of Speech Wave

Fig. 5b. Form of Modulated Wave

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when speech is applied. This small audio frequency variation when it takes place in the a.c. choke coil L2 results in the generation of a very high audio frequency potential across the terminals of L2, corresponding with the modulation in current of the microphone. This is shown in Fig. 4.

In order to accomplish this, the normal antenna current amplitudes must be reduced to zero, and the original impressed speech will be restored.

This modulation system is capable of giving complete modulation, which requires that maximum change take place in the antenna current amplitude. In order to accomplish this, the normal antenna current amplitudes must be reduced to zero.

\[ \text{Voltage} = 6.28 \times \Pi \times f \]

where \( f \) is the frequency of the speech, and \( L \) the inductance of L2, and \( i \) the variation of current through L2. Hence we see that even though \( i \) the current variations, may be very small, by making the inductance of L2 very high, the audio voltage generated across L2 may be made very high. This audio voltage across the choke coil L2 is impressed on the plate of the oscillator tube, i.e., superimposed on the d.c. voltage on the oscillator tube. Hence the resultant voltage on the oscillator plate will vary with the speech voltage. But the output of the oscillator tube is proportional to the voltage on the oscillator plate. Hence the output will be proportional to the speech voltage and a wave modulated according to the audio frequency voltage. This means that the plate voltage must drop from normal to zero. Hence the maximum amplitude of the speech voltage applied to the oscillator plate must equal to the plate d.c. voltage supplied by the generator to the oscillator valve.

When this is the case, shown in Fig. 5, the plate voltage on the oscillator tube is reduced to zero on the negative cycle of the speech wave, since the resultant plate voltage equals the sum of the L2 plus the a.c. speech voltages. On the positive cycle the plate voltage rises to twice the d.c. value of voltage for complete modulation. This speech voltage can be obtained by properly designing the telephone transformer T. Fig. 7, so that enough voltage is applied to the modulator grid to produce sufficient change in the plate resistance of the modulator valve, and by designing the choke L2 so that the resultant change in current through it will produce the necess-

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**Splendidly Illustrated**
complete modulations from being obtained.

We then have considered the radiophone transmitter and the modula-
tion of the emitted waves. The radiophone set is, however, not com-
plete without its receiving system, which will now be given its due
consideration. We have seen how, by modulation, it is possible to
transmit via radio frequency waves the true form of speech waves with all
its inflections, variations and complexities. It is not only impor-
tant that speech should be capable of transmission with a minimum
of distortion, but the received speech must likewise be unmodified and
received exactly as transmitted. Certain fundamental principles must
therefore be considered in the design of the receiving system.

Mathematical analysis of the form of the received wave shows that the
modulated current is composed of three components, one having a fre-
quency of $f$ of the unmodulated radio frequency, the second having
a frequency of $f$ plus $F$, the sum of the radio and audio frequencies, and
the third having a frequency of $f$ minus $F$, the difference of the
radio and audio frequencies. Thus the radiated modulated wave has not a
single frequency, but is a band of frequencies ranging from $f$ minus $F$ to
$f$ plus $F$. This has important consequences in the design of radi-
ophone receivers. One of the most important is that the radiophone re-
ceiver must not be a high selective receiver. Let us see why.

Speech frequency ranges from 300 cycles to 3000 cycles per second, and
in order that the received speech be a faithful copy of the transmitted
speech the receiver must not de-

The wireless weekly : the hundred per cent Australian radio journal

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Radio Frequency Amplification.

To successfully bring in the more distant stations, radio frequency amplification is found to be necessary on account of the very feeble waves and being radiated to through the law of electrons in the detector tube without much amplification. When a reflex circuit in which one vacuum tube performs two duties with crystal detector for rectification, radio frequency transformers as well as tubes are requir-
ed. In the new arrangement circuit, increasing the efficiency of the radio frequency, most of the difficulties previously experienced with this type of amplification are eliminated. The windings of the primary and secondary are equal, the primary being connected in the plate circuit of the grounding tube of the follow-
ing tube. In the case of the reflex circuit the secondary may be too
to be worked through the crystal detector if such is used. Radio frequency transformers of local manufacturers are on the market, comprising very desirable, and being far less costly, we would strongly advise the experimenter to try out this method of amplification, believing the results will be surprising to those who have not actually experimented with this method of amplification.

PHE SALE—Loose Couple Crystal Rectifier. Price complete, Apply 10 Woolen Avenue, Pahl.

PHE SALE—In Vali "AB" Storage Battery, new; no reasonable offer refused. Apply 55 Cossell Street, Dohole Hill.
HINTS FOR AMATEURS.

One of the most annoying features of radio reception is the trouble due to body capacity. If you have to hold your ear near the dials in order to keep a distant station tuned in, you lose most of the pleasure of receiving. And this trouble is not necessary in any case. It can be eliminated in the following way:

Connect the rotary plates of the variable condenser in the grid; if the variable condenser is in the secondary circuit, connect the rotary plate to the filament side of the circuit. If the trouble is experienced with the plate varicer, connect the stator windings to the plate and the rotor windings to the "B" battery.

A small bit of sealing wax dropped on the edge of the winding of a coil will be sufficient to hold the wires from slipping. Never use seals on the windings.

Some beginners have their sets grounded on the water pipes, on the steam radiator system,不准 the fire escapes and some on the gas fixture. It often improves reception to use all of these together, running a wire which connects them all to the ground terminal of the set. The gas pipe should not be used, however, owing to the danger of fire.

Many users of radio sets are not giving all they get out of them because they are not using the correct plate voltage on the detector tube. The testing in a weak and distant station and then changing the tube in the battery until the best results are obtained.

Start out in radio by making a simple crystal set or a simple single-tube receiver. By doing this you will learn what goes into a set and you will understand more clearly what you are doing when you begin to tune in with more complicated instruments.

When putting up your aerials do not expect them to do much if you neglect to do so the joint will corrode and will offer great resistance to the feeble currents that are trying to flow in the antenna. Do not let your antenna get the upper hand and cause you trouble in the end. The correct way to make a length is shown in the accompanying diagram, Figure 1.

Erect your antenna as high as possible and give your radio set a good start. A radio set is no better than its weakest part.

The make-up of equipment which builds the whole or even part of the set should provide himself with a set of tools to work with that will enable him to make a good job of the construction. The following is a list of the tools which he will find are almost indispensable:

1 pair of 6-inch electrician's wire-cutting pliers;
1 pair of 4-inch electrician's wire-cutting pliers;
1 small breast drill capable of holding a 1/8-inch drill;
1 complete set of small drills up to 1/4-inch;
1 brace and bit;
1 set of small files including round and triangular files;
1 countersink drill;
1 1/4-inch screwdriver with 1/4-inch socket;
1 1/4-inch screwdriver with 1/8-inch socket;
1 1/4-inch screwdriver with 1/4-inch socket;
1 electric soldering iron (1/2 pound); 1 can of soldering paste;
1 lb. of strip solder;
1 small centre punch;
1 1/8-inch keyhole rule;
1 1/4-inch square;
2 small metal chisels;
2 small hand grinders;
1 hacksaw and medium sized binders.

If he provides himself with these tools he will never have to dig a hole in his panel with a penknife, or whittle away at a piece of tubing with rising temperature and temper.

He must be sure to use a good condenser and the circuit must properly complete. It is a good plan to sand-paper the ends of the contracts as cautiously, thus keeping them bright and shiny. If you use the small 1 1/2-watt tubes it is extremely important to mount the sockets on a piece of sponge rather when more than one stage of amplification is used. If you neglect to do this you will be troubled by microphones noises when you are tuning.

It is always a question with a beginner as to what kind of insulation to use with his receiving set. Suitable insulation may be obtained by using the ordinary glazed porcelain disk shown in Figure 2. These may be purchased at any electrical store. The cost is slight, but they are just as effective as any of the more expensive kinds. They should not be used for transmitting, however, unless two or three of them are connected in series.

PEACE ONCE MORE.

The Music Publishers Association of the U.S.A. have now decided that they will no longer object to copyright music being broadcasted with out fee. This includes most of the big publishers, and the Producing Managers Association has joined them in this resolution. The recent banning of copyright music by several broadcasting stations unkindly had much to do with this, for the publishers realized that they stood to lose a great deal by a boycott, also that radio had not decreased but slightly increased their sales. But the composers are still protesting, though they do not seem very sure of their ground.

OTHER DAYS, OTHER WAYS.

Back in 1899 an enthusiastic admirer of Wagner's music travelled all the way from Odense to Weimar to hear the opening performance of one of Wagner's operas. Sixty-four years ago travelling was not what it is to-day, but he, Christian Schindl, was a true devotee, and found it well worth while. This year, the same opera was broadcast from Philadelphia, U.S.A., and Schindl, now an old man, listened to it from his own room. He thoroughly appreciated it, and was converted at once from a sceptic to a sincere radio-doiopan.
How to Keep Your Crystal Detector Free From Dust and Grease.

The greatest enemy to the sensitiveness of a crystal detector is dust and grease. The most careful evaporation of the solvents from the hands of the operator, various dust and grease that may collect on the surface of the crystal, and a thin film which seriously affects the detector. Trouble due to dust can be taken care of wholly by enclosing the sensitive crystal in a glass case. This is generally done by the manufacturers of high-grade detectors, but the cheaper detectors do not ordinarily have this feature.

In the early days when the crystal was used by almost every amateur, the cheapest detector was not known. It was up to the user, these fumes to protect his own crystal. He did it in this way. He went to the cellar or the attic and obtained a glass jar of some sort. This he took to the 'wireless room' and inverted it slowly and carefully over the sensitively adjusted detector, where it served as a dust cap. This may still be done by the amateur, whose set is equipped with an exposed detector. When he gets a few hours but the installation, but more and more came in with their fellows until, to the number increased, the volume of sound became smaller and smaller and every body grumbled. Finally the village was divided into four districts, and more powerful batteries were put in at the central stations, which enabled the distributing networks and gave quite satisfactory results. This little community then was at least to adopt this system, which they call Municipal Broadcasting. The set stations tunes in, and fine worse the concert, or whatever entertainment is going, to every subscriber's home. The host speaker does the rest.

FOR TRAINED MINDS.

The practitioner in a Chicago radio center for "suggestions" submitted this bright thought, which he called a "Musical Memory Center." A date was named for the night of the contest, and with a slight proviso the station would broadcast choirs and popular musical programs. On the night about twenty selections, picked at random from any previously played, would be broadcasted, and participants were to send in the names (not the captions) of them. No note left blank, written on the other side of any score or music form so that they would make interesting responses to be broadcasted. The suggestion was carried out, and the response, which was inevitable, received a fine photograph.

FREE RADIO.

On December 24th, St. Louis, U.S.A., there was a new block of flats almost ready for occupation. Their occupants were, knowing that rentals are still high, have equipped the building with radio and advertised free reception always as an inducement for their prospective tenants. There is one central receiving station, with aerial outside, and every floor has its own loud speaker, which can be connected or disconnected by turning a switch or pushing a button. Over forty sets were installed, and picked up Kansas City, Pittsburgh, Waub and several other stations clearly and easily. Some tenants have heard stations clearly and easily. Some tenants have heard stations clearly and easily.
ROUND THE RADIO WORLD.

M. RADIO-HYPNOTIST.

A striking and successful test of transmitting mental suggestion by radio was staged recently at Birmingham, Alabama (U.S.A.). Before a very large audience a young lady was induced to seat herself in an easy chair in front of a local electricalemporium, where a receiving station had been installed, and be hypnotised into a long sleep by "Vishhun," a well-known adept at this. The subject placed headphones over her ears, but a loud speaker was installed so that everybody would hear the voice of Vishhun. The final instructions to "let yourself become quite rigid" were carried out to the letter and Miss Kyle was carried away in an ambulance and placed in a deep window.

THROUGH THE ETHER.

Marlene, "Vishhun," who was operating from a station some distance away, went by automobile to the spot and placed the girl upon a little cot where she was to remain in a state of coma until the following afternoon. When the twenty-four hours had elapsed and Miss Kyle was awakened, she declared that though neither strange or afraid she found the experience a queer one, and remembered nothing except the final "Wake up!" "Vishhun" himself declared that working his subject was the most difficult foot of the two. That hypnotism by radio is possible was clearly demonstrated, for as the "mixed" remarked, "once a subject is controlled, the sound of the human voice is all that is needed and this can be transmitted by radio."

EXTENDING B.B.C. ACTIVITIES.

On August 7 Birmingham's new broadcasting station will be opened. This is its studio in New Street, and its transmitting station in Summer Lane. Manchester B.B. Station will change its existing post office during the same week, and its new location will be in Park Street. The present one is in Truro Park. Batches are rapidly increasing in Great Britain, for, in addition to these, a relay station at Sheffield is in active construction and sites for stations at Bournemouth and Aberdeen have already been selected.

What Our Servants Now Demand.

The New One: Yes, Mum, I'll stay if you've got wireless for picking up concerts.

The Radio Bloodhounds.

During the latter part of July a new sport for radiofans will make its bow. From a London station a full personal description of certain (presumably) suspicious characters will be broadcasted, and a prize given to the first person successfully trapping them. The "wanted" desperadoes will be sent out on bail from a station, and there ought to be some lively results. Radiofans will be able to prove their powers as sleuths, and Scotland Yard may get some new recruits.

Get Your Wireless Gear at Electricity House

387 GEORGE STREET (OP. STRAND). TEL. 296 CITY.

Condenser Plates, 1/6 per doz.; Condenser Spindles, 2/3 per set; Condenser Ends, 1/3 pair; Honeycomb Cells, from 1/6; Honeycomb Mountings, 1/6 each; Film Gate Resistances, 7/6 each; Calibrated Dials, 1/6 each; Keys, 6d., 1/6, 1/2, 2/6 each; Contact Stubs, 1/3 per doz.; Switches, 1/3 each; Phone Condensers, 1/6; Grid Condensers, 1/6; Variable Condensers, 3/6, 3/6, 3/6.

Murdock's "Phones", 35/-; Myers' Valves, 35/-.

Catalogues, 9d. each, including wiring and other diagrams. All makers of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 5/- each; Loose Couplers, 50/-.

Gaskets, Ebonite, Bakelite, and All-round Materials.

Complete Crystal Sets, from 27/6; Valve Sets from £9 to £36, 1, 2, or 3 valve; Radiotron Valves, 37/6; Vacuum Rheostats, 12/6; Bessel Knobs and Dials, Polished Bakelite, 4/6; Condenser Knobs and Dials, 4/6.

INTERVALVE TRANSFORMER, 40/-.

Closed Iron Core.

Under New Management.

Works Manager: Raymond McIntosh.

General Manager: J. B. Marks.

All Communications to the Firm.
Importing American Radio Wireless Equipment.

By N. M. SIMONS

Export Manager of AirWay Electric Appliances Corporation of Toledo, Ohio, U.S.A.

This article might be applied to the purchase of wireless and radio parts and instruments from any country of the universe and is to be regarded primarily as a guide to the radio and wireless buyer when placing his requirements for delivery of these infeasible from countries beyond the Commonwealth.

The radio and wireless merchant, wholesaler or retailer usually places his requirements in the following ways:

1. Directly with the manufacturer.

2. Through an indirect or commission house which usually passes the supplies for his products at the cost of commission and at the time of shipment.

3. Through a direct representative of the manufacturer or a local representative of the same.

The first method is usually slow and inefficient, specially when dealing with a distant country. The average mail transit from and between Sydney and New York is 20 days and then only when mails are specially secured by specific steamers. Then again by air from one manufacturer, batteries from a second, and radio instruments from a third usually means three sets of ocean bills of lading, in fact large sums are tied up in transit and handling. Thus there is always the possibility of misunderstanding or the neglect of details. For or simple as many claims are without much consideration due to haste, will under simple circumstances mean a severe thinking for enough should be specified whether a plate type or grid type transmitter is required. The manufacturer or supplier generally but no business can be very far

In dealing direct, you will often notice that manufacturers are seldom not to submit C.I.F. (cost, insurance and freight) quotations on raw materials. This is the case because a C.I.F. price would be an approximation and when approximations are to be admitted, a manufacturer or supplier always allows a small percentage over materials and shipping costs to cover himself regarding details such as freight and insurance. You may be assured that the C.I.F. quotation is usually always by the actual C.I.F. cost respectively when small and general items are being purchased.

The second method has many main advantages. The importer or commission merchant firstly has an opportunity of dealing personally and directly with the manufacturer. He has an opportunity of effecting comparisons both as to quality and price with competitive manufacturers. If details are lacking, this subject will immediately come up and you can insist on the correct item and the circumstances beyond the Commonwealth.

However, this may lead to the best advantage of the buyer. Many manufacturers on the other hand, know these details but there again there are more than twice as many who are not familiar with the Country's written or unwritten customs and regulations based on the Country's written or unwritten laws and regulations. If firm quotations are made it is the equivalent of submitting the country's regulations to us. The buyer has an opportunity of being familiar with the regulations of each country and can take advantage of these regulations.

There are many details in radio and wireless purchasing that are often overlooked. We will call their attention to the points involved.

Many of these points will support itself in the central market. As to the extent to which failed to specify points noted herein. In ordering radio appliance for
example, a storage battery charger; always specify the voltage and if for alternating current (A.C.) then also specify the number of cycles per period. And do not neglect to add

Voices required for Australia are every-day occurrences with him. He knows it is absolutely advisable to

mount a sailing in order to take a subsequent boat which is a direct sailing and faster vessel. He knows when it is advisable to effect

land running by freights which are slow, and when it is advisable to

effect inland routing by express. These seemingly unimportant
details all tend to reduce a buyer's costs and yet effec-
delivery at the earliest possible
time. This is just what the Australian importer of radio materials
requires and he should insist upon this sort of service and attention.

In ordering "B" batteries from one manufacturer, radio parts from a second and head-phones from a third; strive to have your foremost supplier in the country of expor-
tion effect a consolidation of these materials at the port in order to

ship on one ocean bill of lading. This cannot always be achieved, but

when possible, it always results in a

very considerable saving to the buyer.

For example, if you are buying

steadily from one manufacturer; he

usually will be glad to assist you in

these details. He will either con-
solidate these materials at his plant

or at his warehouse in the port of

exportation. This immediately does

away with the costs of minimum

bills of lading, duplicate trucking

charges, etc. Then again, one set of documents are

merely easier to handle by

a batch than three sets and are also

far more economical. In dealing

through an Indent House, these con-
solidations are always affected un-

less through unavoidable reasons.

De Forest

Ask your Radio Dealer to show you DE FOREST Radio Appar-
s, the Standard of the World.

BRANDER'S RECEIVERS are guaranteed the best made. Buy a pair; if you are not satisfied your money will be refunded in full.

Radio, Pads, Knobs and Diads.

If your Radio Dealer has not these lines to show you, write to us for Catalogues and Price List.

International Radio Co., Ltd.
P.O. Box 2541, Sydney, N.S.W.

N.Z. Office: 91-93 Courtenay Place, Wellington, N.Z.
WAR IN THE FUTURE

Experts confidently and cheerfully inform us that the next war will be a radio war. In battleships, machine guns, tanks, especially the latter, the new science has been called into cooperation, making deadly weapons ten times more deadly since they will be more difficult to put out of action. In the past two or three years experiments with tanks have been carefully made, and the newest development in these monsters are some without any opening for vision on the part of the operator, and some needing no Spencer inside at all. In the first experiments the man inside was not armored and from head to foot, and wore and worked according to radio directions given from without, and well hidden, tank. In the latest, though, radio, controlled from a safe distance, operates both the driving gear and the machine guns. The men are the same as were demonstrated upon the same basis in the recent maneuvers.

PASTORS ARE ADOPTING IT

A survey conducted recently by the United States Agricultural Department shows how greatly the farmers appreciate radio and how rapidly it is becoming part of their daily routine. Almost half of the reports that a broad-cast inquiry were from farmers owning receiving sets. There were also farmers borrowing sets from dealers, etc., which receive the bulletins and distribute the news in various ways amongst other groups of farmers. Greatest interest was universally found to be taken in reports of the grain market, by those who produce commodities knew the prices fetched by them at the markets. Wheat, corn, and oats are exhaustively commented upon in these reports.

Triimm "Professional" Head Set 3000 Ohms
A QUALITY PHONE AT A QUANTITY PRICE

Compare those specifications with any head set on the market at any price, and see why the TRIMM "Professional" is the biggest value in the Head Set Field. Mounted Bakelite cases and ear cups which will not warp like cheap composition; no exposed metal parts to become tarnished; Single bar Trebleten metal magnets forced to shape to insure uniform magnetism and magnetizing; Collar wound with maximum number of turns of No. 40 enameled wire to full resistance of 3000 ohms; Reinforced terminals of stranded wire brought out from coil windings to solder clips; Enamel covered with insulating cloth — fine wires exposed; Armour top across cord terminals; Improved type head band covered with resilient tubing — comfortable, light weight, and distinctive in appearance.


PRICE 45/- EACH

Sole Australian Agents • O. H. O'BRIEN & NICOLL (Sydney)

Telephone: City 3502, 2592.
Round the Clubs?

WESTERN SUBURBS AMATEUR WIRELESS ASSOCIATION.

It may be interesting to know that Mr. Geo. R. Challenger and R. S. Burnam, the two members of the W.S.A.W.A. who conducted the N.Z. tests for this association, were successful in getting the New Zealanders on every occasion they listened in on a single V.T.V. valve, at a remarkable strength.

Arrangements are now almost finalised for the second annual function, to be held on 29th inst., in the Auburn Town Hall, in the form of a wireless concert, with permission of the Controller of Telegraphs and Wireless, and under temporary patent permit of the Amalgamated Wireless Ltd.

WIRELESS WEEKLY

GRENFELL LEADS IN WIRELESS.

The first radio exhibition to be reported, was held at Greewnell during show week, when over 200 enthusiasts had the pleasure of listening in and having the progress of wireless explained.

The exhibition was held under the auspices of the local branch of the Returned Soldiers and Sailors’ League, organised by Digger G. Proctor and Digger F. Walton.

A three valve set, fitted with a loud speaker was kindly loaned by the Radio Co., also some local made apparatus was on exhibition.

A number of text books were sold, with the object of getting a number interested to form a Radio Club. The fact of a company already advertising broadcasting at an early date has caused quite a number to become interested. Radio is going to become very popular with the men on the land, and Greewnell is fully awake to the fact. Greewnell is a town 372 miles by rail from Sydney, on the south western slopes, it being one of the finest wheat growing districts in the State, once noted for its gold mining and soon to be noted as a progressive wireless town.

CROYDON RADIO CLUB.

On Saturday, September 1st, the Croydon Radio Club held their usual weekly meeting at the club rooms, “Rockleigh,” Long Street, Croydon, at 1.30 p.m.

During the afternoon members assisted Mr. G. W. Stade to erect a new steel mast, and much was learned in neat construction which will be of value when members wish to erect radio masts. Mrs. Stade entertained the members to afternoon tea.

The design for the club’s receiver was discussed, and a suitable one decided upon.

Members hope to be able to conduct some interesting experiments on October 1st.

The usual banner practice was given. The members are still keen about learning to become proficient Morse operators.

Anyone interested in the club should communicate with the Hon. Secretary, G. Maxwell Cutts, “Garwell,” Highbury Street, Croydon, who will be pleased to give information in regard to the club.

PHONES

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RADIO HOUSE

The Quality Radio Store. Members of Broadcasters Sydney Limited

619 George Street, Sydney
Phone City 1147
MARRICKVILLE AND DISTRICT RADIO CLUB.

At the School of Arts Hall, in Blaxland Road, Marrickville, on Monday, 6th inst., the weekly meeting of the above club was held.

The report from the Technical Committee was received, and it was agreed that the club’s transmitting and receiving licence be taken out in the name of the President, Mr. H. L. Hamilton.

Mr. R. Turingham reaffirmed his decision to present the club with two miles, one 76 feet and one 50 feet, and declared that they would be available any time the Technical Committee required them.

The club next went into the discussion on “What constitutes a genuine experimenter.” This discussion was initiated by the club’s patron, Mr. H. G. Cooper. Many and varied were the definitions put forward, but unanimous were the declarations that being worthy of mention.

(a) A genuine experimenter is one who is being asked for a panel shield from his pocket such things as cut whistles, crystals, valve sets, etc.

(b) A genuine experimenter is one who endeavours to operate a loud speaker from a crystal set an electric bath.

On the 17th inst., Mr. Migney, of Berrin Electric Company will deliver a lecture to this club on “Short Wave Non-regenerative Receivers.”

Secretary A. N. Thomson, of Central Avenue, Marrickville, would like to hear from local experimenters. Only those holding experimental licences are entered for.

RADIO ASSOCIATION OF SOUTH AUSTRALIA.

On Monday evening last a meeting of the Radio Association of South Australia was held at the offices of Messrs. Newton Mackabens Ltd., Adelaide, to receive the report of a special committee which had been formed for the purpose of recommending a system to be adapted for broadcasting in Adelaide.

COMPLETE SINGLE VALVE SET

£11/10/0

Just Landed!

“Radak” Apparatus

A large shipment of this highly efficient apparatus just to hand including Variometers, Variocouplers, Variable Condensers and Complete Receiving Sets.

Ask to see them or write for particulars to

WIRELESS SUPPLIES LTD.

RADIO & ELECTRICAL ENGINEERS.

21 ROYAL ARCADE

SYDNEY.

Sale Sale Sale

LAST WEEK OF BARGAINS

There are still a few lots left

Head Phones at Cost

Brownlee’s Adjustable 2000 ohm . . . 37 6 each
Western Electric 1000 ohm . . . . . . . 35 0 each

Hosts of other Goods for Amateurs

O’Sullivan’s Electric Shop

296 PITT STREET, SYDNEY.
September 14, 1923.

The committee by the report they presented publicly stated that they were in complete accord, every detail of the scheme they recommended had been worked out thoroughly.

The Chairman, Mr. R. E. MacKinnon, commended the committee which consisted of Messrs. E. C. Jones, W. A. Miller, Randle and F. J. Williamson, on the manner in which they had carried out their duties.

After having adopted the report it was decided that a license should be applied for, and that when that was obtained a company would be formed to carry out broadcasting.

WESTERN SUBURBS AMATEUR WIRELESS ASSOCIATION.

During the last quarter the association has listed two new members, Mr. H. C. Calvert, of Balcatta, and Mr. Needle, of Ashfield. Racer practice and lectures have now been postponed 10th after the association's second annual function is held. It is to take the form of a wireless concert, in the Ashfield Town Hall, on 25th inst. The association being almost bankrupt, they are now considering a loan of about £25 to carry on, and they hope to gain something from their concert.

There is still plenty of room for new members, who may apply to the Secretary, 170 Club room, 77 Park Road, Ashfield.

WADSWORTH AMATEUR RADIO CLUB.

The meeting of the Wadsworth Amateur Radio Club, held on the 18th September, was marked by a good attendance of members. After the minutes had been read 23 and voted towards a three valve set. The committee, consisting of Messrs. Bowman, Bowman and Thomson, would begin the construction of the set immedi-
ately. The committee which was making the club's needing set, Messrs. Bowman and Bowman, reported progress, but was in doubt as to the best circuit to use the construction of the set immediately. The committee, consisting of Messrs. Bowman, Bowman and Thomson, would begin the construction of the set immediately.

Communications from Mr. Crawford, one in connection with the restrictions on regenerative circuits, and a more complete and the club to choose a wavelength within the limit of 300 metres. It was stated by a member that the wave length of 250 metres would be more suitable for club work, and, on Mr. Howard's motion it was decided that this be applied for, with 210 metres as an alternative in the event of the other being refused. Mr. Bowman stated that the Wadsworth Club was anxious to meet the Wadsworth Club in a debate, and after discussion it was decided to ask the Mainly Club to issue a challenge, thus giving them the choice of subject. The meeting closed after consideration of the new rules, the club's part in the forthcoming exhibition, and the programme for the making fortnight.

IRELAND CONGREGATES.

It is rumoured that Dublin is to have a radio station soon. Memorised upon the Eiffel Tower, Paris, it will be under Government control, and its first duties will be to broadcast weather forecasts, meteor reports and news for the delecta-
tion of the small country towns. Political speeches are not included in the programme so far, but they dolesters will have something to say for themselves at election time.

The wireless weekly : the hundred per cent Australian radio journal
At the twelfth monthly business meeting of the society, held at the club room, 176 Johnstone Street, Annandale, on Tuesday, September 10th, three new members were elected, bringing the total to 52. Several important matters were discussed, including a proposal to alter the society’s meeting night. This motion was passed by a very large majority, and, after much discussion, it was finally decided to change the meeting night to Thursday, commencing with the usual general meeting, to be held on October 9th. Until then, all meetings will be held on Tuesdays as heretofore.

On Thursday, August 30th, the Society gave a demonstration at the Annandale Theatre, by special permission of the P.M., and an audience of about 1500 thoroughly enjoyed a number of musical items transmitted by GDR (Mr. Marks, of Rose Bay). The arrangements were in the capable hands of Messrs. Thompson and Hassell, two of the Society’s oldest members, and the signal strength was so strong that those who were not able to see the performance could still hear it quite distinctly. On the long wave

most of the big stations in the world can be received, WJZ, WIA, WNO, WSH, WFR, WBY, XSF, XDI, and XDI, were copied. It was a very fine evening, and all who attended the meeting were much pleased with the performance, and promised to attend future meetings with the same pleasure.

KILLARA RADIO CLUB.

The eighth general meeting of the above society was held at Killara, on August 1st. After half an hour’s business practice, the meeting was called to order, Mr. Greenwell taking the chair. The minutes of the previous meeting were read and confirmed, and correspondence received.

The cost of the meeting was defrayed by a general subscription among the members.

The club meets fortnightly, in the International Hall, Killara. Enquiries received by the Hon. Sec., Phone 2503.

THE END OF A PIONEER.

One of the first U.S.A. stations, WJZ, Newark, N.J., is now closed down permanently. It commenced operations in 1921, when radio stations were few and far between—there were only about four in all America then. WJZ was the pioneer of many new features in broadcasting—it was the first station to have its nightly program printed in a newspaper. Its radio was two thousand miles away. The station is now closed down permanently.
WIRELESS WEEKLY

The Australasian Radio Relay League

By J. W. Robinson, Publicity Officer, Australasian Radio Relay League

Although very little has been said during the past two or three weeks concerning the Australasian Radio Relay League members of the committee have not been idle, but on the other hand much work which was quite necessary prior to the actual commencement of operations has been carried out.

The most important matter which has been finished has been the setting of the agenda of the Committee of the League and the holding of the first meeting of the same. The letter from the F.M.G. was read and on the motion of Mr. Beattie (E.P. A.S.) the recommendations were adopted, and the rules amended in accordance with them.

VISITOR WELcomed.

A welcome was then extended to Mr. H. F. Marshall, an English scientist, who is visiting Australia in connection with the Pan-Pacific Science Congress, and who is chairman of the Radio Section of that gathering.

Mr. Marshall stated that he was greatly interested in radio communication as a means for the link-up of the Empire, and was surprised at and pleased with the results achieved by Australian experimenters on low power.

The President of the League (Mr. Macdonald) expressed the view that within two or three years Australian experimenters would exchange signals with fellow amateurs in the Old World.

AMERICAN RADIO RELAY LEAGUE.

A letter was received from the American Radio Relay League asking for particulars regarding the Australian movement. The question of affiliation had been mentioned to the American League by Mr. Squires, an American operator who was present at the inaugural meeting, and the request for information was the result of a report from him concerning the formation of a League in Australia. On the motion of Mr. Macdonald, approval was given to proceed with affiliation with the American League and it was decided to forward further information to the American.

RELAYING OF MESSAGES.

A discussion on the immediate relaying of messages was opened by Mr. Chisholm who stated that at the present time it was almost impossible for amateurs to get through to many of the transmitter. He suggested that a time be set apart (for the time being) wherein League traffic should be set up on.

After considerable discussion it was moved by Mr. Fry that League traffic should be concentrated between the hours of 8 to 8.30 and 10 to 10.30 p.m. on a wave length of 250 metres. The motion was carried unanimously.

WIRELESS INSTITUTE MESSAGES.

Mr. Phil. Reesaw, Hon. Secretary of the Wireless Institute, asked if members of the League would relay Wireless Institute experimental messages and was assured by the chairman that it should be done.

WIRELESS EXHIBITION.

On the motion of Mr. Reesaw, it was decided to write to the Secretary of the Wireless Institute and request that a stand be provided for the League at the forthcoming wireless exhibition free of charge. The motion was carried.

MEMBERS WANTED.

The Australasian Radio Relay League is still anxious that amateurs, whether transmitters or receivers should link up with them.

Applications for membership may be forwarded to: The Hon. Secretary, Box 378, General Post Office, Sydney.

FIRST AID TO A SHIP’S ENGINE BY RADIO.

An unusual example of the value of radio in an emergency was furnished by the motor ship Sungaer, which ran out of oil on her way from the Mediterranean to New York. She was obliged to put into Ponta Delgada, where only heavy oil was found to be available. Not knowing how to use this, the captain sent a message by radio to the company’s engineers and first aid—\

In this case, the necessary information was returned via the ether.
WIRELESS WEEKLY

Page 22

September 14, 1923.

Mr. Friends in N.S.W.

The first radio call for cash to help the suffering and homeless went forth over the National Broadcasting Company, Inc., U.S.A. A terrible cyclone shook the town of Columbus, wreaking fearful damage, as only those visible can. The disaster took its full toll of wrecked homes, deaths and injuries and a message broadcasted from Fort Worth to the American public in general stated that fifty thousand dollars were urgently need to offset the interest caused by the cyclone and with a ready response. From the next day onwards contributions and offers of assistance other than monetary came in steadily.

MISS "SABREX"

Sabrex Boy Wireless Telegram is very proud of Miss Jessie Kenney, who has taken the Federation Radio's First Class Certificate of Proficiency in Wireless Telegraphy. This young lady trained at the College and is the first woman to pass the examination operative since January, 1923. This was held at the Ohleys Bay College, and the tests included: (a) working and adjustment of apparatus, (b) transmission and sound reading of not less than twenty words a minute; (c) knowledge of the radio telegraph regulations. The certificate Miss Kenney received enables her, if she wishes, to qualify as a first class wireless operator on board a British ship. For the adjustment tests a ZW Marconi apparatus was used.

WHAT DO YOU SAY?

Which is the most important asset of radio? A correspondent suggests the fact that it is making much of all kinds practically safe. It is, however, such a many-sided weapon that it seems to be not impossible to become entirely given to it.

The following have removed to the addresses indicated:

S. J. Martin, W. K., 32 York St., Sydney.
S. M. Smith, J. E., 37, Argyle St., Melbourne.
T. P. Jones, J. M., 22, York St., Adelaide.

The following have removed to the addresses indicated:

A. W. Campbell, T., 37, York St., Sydney.
W. J. Martin, J. H., 32, York St., Melbourne.
T. D. Smith, J. E., 22, York St., Adelaide.
J. P. Jones, J. M., 37, Argyle St., New South Wales.

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W. J. Martin, J. H., 22, York St., Adelaide.
T. D. Smith, J. E., 37, York St., Sydney.
J. P. Jones, J. M., 32, York St., Melbourne.
DON'T BE DISAPPOINTED!

If you are building your own set and not getting the best results, perhaps the material is defective. Only apparatus that has been well tested and approved by us is stocked. We are manufacturing a large range of receiving sets to conform with Government Regulations. These range from Crystal Sets to large Cabinets, and all carry our well-known brand “Radico.” Have you tried our Radio Frequency Transformers? Perfect reception of those distant stations is assured by using these. A high grade transformer at a very small cost.

RADIO COMPANY LIMITED
15 LOFTUS STREET, SYDNEY
Agents and Distributors of Radio Apparatus Appliances and Literature

The Jefferson
Amplifying Transformer

World’s Leading Transformers
STOCKED BY

Quality Radio Supplies

- Big Reductions in all Radio Material:
  - Mullard Dra Valves, each ................................ 22.6
  - Royal Ed.Ian, A.R. ........................................ 22.6
  - Royal Ed.Ian, B. ........................................... 35.5
  - Marconi ....................................................... 35.5
  - R.T.H. Transmitting ...................................... 42.6
  - Holders for above ........................................ 2.6
  - Radiotron U.V. 200 ...................................... 16.
  - Radiotron, U.V. 2014 ..................................... 42.6
  - Holders for above ........................................ 4.9
  - Cunningham C299 ........................................ 42.6
  - Holders for same .......................................... 7.6
  - Aerial Wires, Insulators, Head Sets, Crystals, A and B Batteries, etc., etc.

Ask for new List. We carry everything on all Wireless Goods throughout N.S.W., other than aerial wires, accumulators and publications.

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