WIRELESS WEEKLY

THE HUNDRED PER CENT AUSTRALIAN RADIO JOURNAL

Vol. 3
No. 14

Jan. 11th 1924

3D

REGISTERED AT THE GENERAL POST OFFICE SYDNEY
FOR TRANSMISSION BY POST AS A NEWSPAPER

SPECIAL FEATURE THIS WEEK

PIONEER WIRELESS WORK

"Radiovox" Receiving Sets

In refinement of tone and simplicity of control, we are confident that in the RADIOVOX we have attained results yet to be equalled by any other Radio Receiver offering on the World's markets.

Model A—Three Valve

Made in Australia of the finest imported electric parts, and furnished in designs and at prices to suit every locality and purse, the RADIOVOX Series of Sets will reward your attention at the Exhibition and at our Showrooms.

Write for our Catalogue explaining in detail the patented features and advantages of our self-contained loud speaker construction.

Quality Parts Make Quality Sets

In your Sets use UNITED Transformers and Condensers for results. The UNITED and SIGNAL line of Radio parts are for sale at all up-to-date Dealers. Ask for them

Remler Parts

We announce to all dealers that we have stocked the well-known line of REMLER Parts and Coils at most attractive prices. Our new Price List of REMLER Goods is now ready for dealers and manufacturers. Get it before you place your next Radio order

Try a
United
Transformer

Clear, Sweet, No Distortion

Sold by all Up-to-date Dealers

United Distributing Company Ltd.

Wholesale Only

Distributors of REMLER, "UNITED" and "SIGNAL" Radio Parts

28 CLARENCE STREET, SYDNEY ::: and at 592 BOURKE STREET, MELBOURNE

OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 3. January 11, 1924. No. 14

TELEVISION

"Television is a practical possibility. It will be proved in 1924."

This definite announcement was made by Colonel Malone, Chairman of the Radio Association of Great Britain, and bears out what was hinted in these columns recently, that probable extensive progress would be made in Wireless during the present year.

Whether Colonel Malone's time is right or wrong is a matter for conjecture, the fact remains however that television must come.

It's possibilities are too great to ignore.

The imagination runs riot in a field as yet unexplored.

The man in Bourke may watch a football match between Balmain and North Sydney.

Television may be an established fact sooner than expected.

Roster for Week ending 16th January, 1924

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9 to 9.30	9.30 to 10
Thur, Jan. 10	2 DS 2 GR	2 IJ 2 UW	2 ZZ 2 JM	2 YI 2 JM 2 ZN	2 YG
Friday, ...11	2 IJ 2 GR	2 DS „	„ 2 RA 2 JM	2 UR 2 YI 2 ZN	„
Saturday, ..12	2 DS 2 GR	2 IJ „	2 ZZ	2 YI 2 ZN	„
Sunday, ...13	2 GR	2 DS „	2 UW	„ „	2 JM
Mon., ...14	2 DS 2 GR	2 IJ „	2 ZZ 2 ZN	„ „	2 YG
Tues., ...15	2 IJ „	2 DS „	„ 2 RA	2 UR 2 YI 2 ZN	„
Wednes., ...16	2 DS 2 GR	2 IJ „	„ „	2 YI „	„

EARLY WIRELESS

It's Growth In Australia

By F. C. Jones, late Instructor A.M.F.

In the last issue of Wireless Weekly, reference was made to the valuable work of our amateurs. Mr. F. C. Jones, in the following article, details some of the difficulties experienced in pioneer wireless work.

In a recent issue of one of U.S.A's. leading wireless journals comment was made on the early work done by amateurs in the U.S.A., and the Government recognition accorded to them, emphasising the fact that had there been no amateur experimenters, there would have been no wireless corps to take the field in the late war. The U.S. Government admitted this, and the result was that many concessions were granted amateurs.

The Australian amateur has been responsible for the rapid growth of Wireless in this country; but our Government ignores this fact and panders to the interests of big companies.

The wireless corps of both the A.I.F. and citizen forces were formed from experimenters and enthusiasts, and trained by voluntary instructors with borrowed apparatus.

After some twelve years' service in the Permanent Military Forces as an instructor, and holding a responsible position, I am able to speak with authority and propose to briefly outline the history of wireless telegraphy as applied to our wireless corps from its inception. It was in 1912 that the formation of wireless troops took place—on paper—and our Minister was regaled at periods with schedules and tables showing what a great organisation we possessed. I was then experimenting a great deal, particularly with portable sets, as shown in accompanying illustration, but was not invited to join the wireless troops then forming. These units consisted of two field wireless troops, 16th and 17th, and were commanded by Lt. Marr, now Major Marr, D.S.O., M.C., M.H.R. This officer was then engineer at Pennant Hills' wireless station, and to the best of my knowledge the only person in the service who had a practical training in wireless. He acted in an honorary capacity only, being a citizen officer, and like many others devoted his spare time to the training of Australian youth, without remuneration or even thanks.

One of Australia's First Field Wireless Sets, built by Sergt. Major F. C. Jones, at Parramatta, 1913

The First Camp.

The organisation of the wireless troops was left to the signal engineer and Major Farrow, our present director of signalling units, who was then a sergeant-major.

These officers did yeoman service in gathering together lads who had experimenters' licenses, and many who had no licenses but experimented nevertheless, for the purpose of forming a nucleus of an Australian Wireless Corps. Its name will ever live in Australian wireless history for the splendid work done both in Europe and the East.

The first mobilisation camp of the 16th and 17th wireless troops took place at Parramatta Park during Easter, 1913, and lasted about a fortnight. The camp consisted of all signal units, and everything looked very promising for wireless training. At this period the Commonwealth did not possess a paid instructor, neither were any of the Permanent Force Signal Personnel qualified to give instruction in wireless. Headquarters in N.S.W., having heard of my experiments, detailed me for duty at the camp, although my work at the time was of an administrative character.

My appointment was made in a rather unorthodox manner for the military. It appears that the camp commandant, Captain Mackworth, D.S.O., an Imperial Army officer, requested an instructor to be procured to superintend the training of the 16th and 17th troops. The latter, after passing through many hands, finally bore this minute pencilled scrawl: "Jones is a wireless crank; send him."

I reported immediately, and discovered the wireless troop well organised and disciplined and a credit to any service, but of wireless equipment there was nil. After a good deal of discussion, I applied for permission to furnish the camp with two (2) complete wireless sets of my own manufacture. This was approved by the State Commandant, and wireless appeared at Parramatta Park. I might mention here that a small receiving set was also brought in by poor S.-M. Masters, who afterwards paid the great price at Gallipoli.

Sceptical Officer.

Captain Mackworth, our Commandant, was a most capable signaller, and possessed in addition to a lovable disposition, a good fund of wit. He didn't altogether love wireless, and many were the sly digs he gave. For instance, when the mobile field troops

Continued on page 18

The Danger of Over-Insulation

In this brief article it is intended to take up what, for lack of a better name, may be termed "over insulation," writes A. Reisner, in December Radio. The entire subject of insulation is too much ignored by radio fans who are always trying to get more and more out of their sets by making new coils, trying out new fangled circuits, etc. In this way they defeat their own purpose, for very frequently an improvement in insulation yields much improved results.

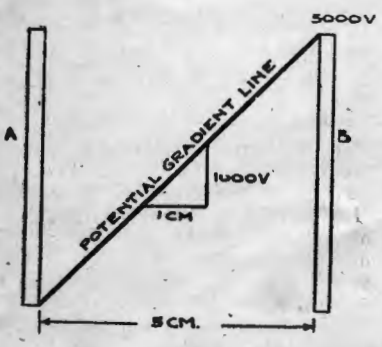


Fig. 1. Voltage Distribution Through Homogeneous Insulation

What is here called "over-insulation" is more concerned with the question of breakdowns due to high voltage. Wherever there is a high voltage there is always danger of arcing over between the points at which the voltage exists. Whether a breakdown in the insulation occurs depends upon the nature of the insulation and the distribution of voltage across it. Thus one form of insulation will withstand a greater voltage per centimeter thickness than another. By making the insulation thick enough almost any insulating material may be made to withstand any voltage.

In any insulation, however, what actually determines its power to withstand high voltages is the actual voltage distribution through it. In Fig. 1 we have assumed that a high voltage is applied betwen two terminals A and B, between which we have an insulating medium, let us say air. The discussion is valid for any type of insulating material. Let us also assume that the high voltage is 5,000 volts. The total voltage is then distributed uniformly through the insulation, that is across each centimeter of the insulation the same voltage is applied, this being equal to 5000/d, where d is the thickness of the insulation. If the insulation is 5 cm. thick then the distribution of voltage, or field intensity will be 5000/5, or 1000 volts per cm. If the insulation is ½ cm. thick, then the electric field intensity is 5,000/½, or 10,000 volts per cm. Each insulation material has a certain dielectric strength which may be given in volts per centimeter, and if the voltage distribution through the insulator exceeds the dielectric strength a break down occurs. The insulation design is simply a matter of using enough thickness to decrease the voltage distribution below the dielectric strength so that no break down occurs. A safety factor should be allowed to take care of possible surge voltages and radio frequenoy. Thus the distribution of voltage may be made so that it is 1/3 of the dielectric strength so that the insulation will withstand three times the rated breakdown voltage of the insulation .

Where a homogeneous insulation is used the question of insulation is quite simple. The voltage distributes itself uniformly throughout the dielectric. But frequently inexperienced experimenters feel that they can improve the insulating qualities of a circuit by employing two dielectrics between the high potential points. To make this clear suppose that we have air insulation present between the two high potential points as in Fig. 2. What is frequently done by the inexpert, then, to improve the insulation between these points, is to insert in half the space a stronger dielectric than air, for instance, glass or bakelite. The impression is that since glass or bakelite will withstand greater voltages than air a little glass or bakelite will improve the insulation qualities. This is what the writer calls "over-insulation," and as will now be shown, this method is entirely wrong and will result in worse insulation than if only the original air insulation were used alone.

To illustrate the problem simply, suppose we have in Fig. 1 a voltage of 5000 volts distributed across 5 cm. of air space. Then the field intensity is 5000/5 or 1000 volts per centimeter of air insulation. Suppose now that we insert a slab of glass between the two electrodes A and B, as in Fig. 2, this slab being 2½ cm. thick. We now have half air insulation and half glass.. Let us assume that the quality of the glass is such that its specific inductive capacity is 6. This means that for a given electrical charge the glass requires 1-6th the voltage that air requires, since voltage is inversely proportional to specific capacity. Now, in the case of Fig. 2 the capacity current flowing through the air dielectric is the same as that flowing through the glass dielectric, since they both comprise part of the same circuit. But since glass has a specific capacity six times greater than air only 1-6th the voltage is required to supply this capacity current through glass that is required to drive it through air. Con-

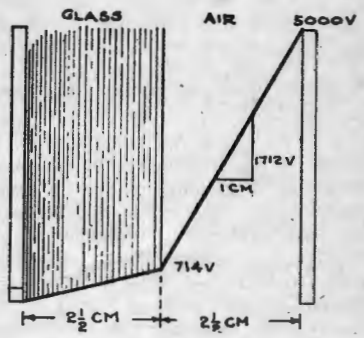


Fig. 2. Voltage Distribution Through Non-Homogeneous Insulation

sequently the total voltage of 5000 volts distributes itself in the following proportions: 6 parts across the air and 1 part across the glass, or, 1-7th of 5000 volts across glass, namely 714 volts, and the balance 4286 volts across the air. But there is now only 2½ cm. of air insulation, hence the electric field intensity across air is 4286/2½, or 1712 volts per centimeter, or 712 volts more than when only air insulation was used.

The conclusion to be drawn from the above is that non-homogeneous insulation is worse than homogeneous insulation. The effect of inserting some additional insulation of greater dielectric strength than the original insulation present, is always to throw an increased burden on the weaker dielectric, more of the voltage being distributed across the weaker insulation. Thus possibility of breakdown increases. This occurs whenever two different types of insulating material are used in series. No improvement of insulation results by thus "over-insulating" or adding some better insulating material. The weaker insulation suffers the more. Either change the entire insulation or not at all.

Guidance for the First Steps of the Beginner

Below will be found a very much condensed account of the principles of wireless and broadcasting, together with some sound advice for the absolute beginner. For a fuller account reference should be made to "Wireless for All" (6d.) and "Simplified Wireless" (1/-), which may be obtained from the publishers of this journal.

Published in Modern Wireless

It is not intended in this limited space to attempt to tell the beginner all that he needs to know before setting out upon his wireless way, but rather to show him where he may obtain the information and help which he will need; being unable to give him a complete map of his route, we must content ourselves with telling him where to look for sign-posts.

One of the first things to be noted by anyone beginning to take an interest in wireless matters is that non-professional wireless enthusiasts are divided into two classes; there are those who are only interested in broadcasting and the reception of music, lectures, concerts, news items and entertainment generally, distributed by the various stations. Then there is a second class whose chief interest is in the technicalities of the subject of wireless. This latter class is interested, not only in broadcasting, but in the thousands of other kinds of messages and signals which are being sent by wireless, such as messages from high-power trans-atlantic stations, from ships and aeroplanes, and so on. They are interested, too, in intercommunication work between amateur stations, and of course take much joy in the construction of apparatus, experimenting with new ideas, and so forth. The members of this second class are commonly referred to as "experimenters," while the former class are often described as "broadcasters," which is obviously incorrect, but must serve until someone coins a better word.

To whichever class you intend to belong you must know something about the subject, or you will miss half its pleasure, and, moreover, run the risk of being frequently held up by trifling difficulties in the use of your apparatus. The best way of acquiring the needful knowledge is to buy, in the first place, the two very simple and helpful little books mentioned in the sub-heading of this page. Then you should try to get in touch with someone who has already installed a wireless receiver in your neighbourhood, since in this way you will have the great advantage of being able to profit by someone else's mistakes. If possible, get acquainted with a member of the local wireless society, and preferably join the society yourself. The fees are small, no technical qualifications are necessary, and you will become thereby a member of the corporate body of wireless men, and as such will be able to play your part in the future development of the science.

Having got some general ideas on the subject you may then ask your friend's advice as to purchasing a wireless receiver. If you are only interested in broadcasting you might, if you preferred, go straight to a wireless dealer of standing and ask his advice, telling him your needs and the amount you desire to pay for your set. If you desire to take up wireless experimenting, or to make your own wireless receiver, you should most certainly get in touch with another wireless experimenter. Your first real step will be to apply for an experimental license.

While waiting for your license you cannot do better than make up one of the sets described in "Simplified Wireless," or "Wireless Weekly." You had better begin on the crystal receiver before attempting anything more ambitious. The golden rule for experimenters is to join a wireless society. The golden rule for the would-be broadcast receiver is to talk to an experimenter who already has a set installed. We hope that our advice will not be considered interested if we advise you to take in a good wireless periodical, and to buy good authoritative books on wireless.

Having made, or bought, your set, the next thing to do is to fix up your wireless aerial, and this will only call for a little common sense and a little time in reading the aerial section of the two little books mentioned above.

It may, perhaps, be helpful to give at this point a superficial idea of the general modus operandi of wireless and broadcasting, as a preliminary to a more exact study.

A wireless transmitting station consists of special apparatus, which sets up electric currents in a length of wire slung up at as great a height as possible—usually between two masts. The currents in this aerial, as it is called, set up invisible wireless waves, which travel in all directions. The distance these waves travel depends upon the power of the transmitting station. The waves may be received by the receiving station, which consists of very much simpler apparatus, and an aerial wire slung up, usually, between the house and a tree, or between two poles, or, in fact, in any other way. The receiving aerial for broadcasting and experimental work is usually about 100ft. long. When the receiving station is being operated, the wireless waves from the transmitting station are caught by the aerial wire, producing electrical currents which operate the receiving gear and cause buzzing noises, speech or music, according to the nature of the transmissions from the transmitting station. These noises come from telephone receivers, or what is known as a loud speaker, which is somewhat similar to a gramophone horn. The telephone receivers are somewhat similar to the telephone receiver ear-piece on the ordinary telephone. Any num-

Who Is Right?

"Tele-Vision is a practical possibility," says Colonel Malone, chairman of the Radio Association.

"It will be proved in 1924."

But Professor Bangay (of the Marconi Co.) and Sir Oliver Lodge contend that twenty years may elapse before tele-vision could be accomplished.

ber of wireless receiving stations within a certain range of the transmitting station may be able to pick up the messages from that transmitting station, since the wireless waves radiated from the transmitting aerial spread out in all directions, just as do the sound waves from, say, the explosion of a gun; just as in the case of sound waves, the wireless waves become more and more attentuated the further they travel, until finally they become imperceptible to even the most sensitive apparatus.

It may be asked whether, as so many wireless transmitting stations are working in the world, there is not a jumble. The reason why there is not a jumble is that the transmitting stations send out different kinds of waves, and at your receiver you pick out the particular kind that you want to receive.

So long as the waves differ from each other by a certain amount, you can adjust your apparatus, so that you only hear desired signals, but if as sometimes happens, two or more stations happen to be sending on the same or nearly the same "wave length," as it is called, they will all be heard together, and you get the state of affairs known as "jamming."

Wireless waves are somewhat similar to the ripples produced on the surface of a pond when a stone is thrown into it. These ripples travel outwards in all directions, as do wireless waves. The wireless waves, however, are invisible. When one person speaks to another, the speech is communicated by waves in the air—sound waves. When a wireless station transmits, somewhat similar waves are set up; but they are not heard by an ordinary person in the ordinary way, they require a special receiving apparatus to make them audible.

Different transmitting stations send out their messages with different kinds of waves. These waves differ from each other in their length; the length of a wive is the distance from the crest of one wave to the crest of the next wave. The receiving apparatus may be tuned, that is to say, adjusted, so as to pick up only the waves of a certain station. When different strings on a piano are struck different notes are sent out. Perhaps one note will be high and another low. The difference between these notes is that the sound waves, in the case of one note, differ from the sound waves produced in the case of the other note, the difference being in their wavelength. The human ear can distinguish between the one and the other.

In the same way, a transmitting station may be arranged to send its signals on one "note" or on another. The wireless receiver is also able to distinguish between the different wireless waves, and it is possible so to adjust apparatus that only the desired waves will be received, the others not being made audible at all. By giving different stations different wavelengths to work on, it is possible to be able to pick up at a receiving station waves from hundreds of different wireless stations.

Most ordinary wireless business messages are sent in the Morse code, which consists of short and long buzzes, known as dots and dashes. These are arranged in a special manner to represent different letters of the alphabet. The serious experimenter should preferably learn the Morse alphabet, while the broadcast receiver will not need to learn the Morse code at all, but if he hears buzzing noises in his receiver these will probably be due to his hearing messages being sent in Morse code. The ordinary music and speech comes through just as if one were in the same room as the artist.

"Burginphone" Broadcast Receiver

These receivers range in size from 2 valves up to 7 and in price from £33/10/- up to £150 for Complete instruments. NOTE THAT THE PRICE IS "COMPLETE" WITH THE EXCEPTION OF A LOUD SPEAKER.

We will be pleased to give you a practical demonstration on any of our receivers at our Demonstration Rooms, 1st Floor, 391 George St.

We are Sole N.S.W. Agents for "Kellogg" Radio Equipment which is considered the most efficient and most attractive apparatus yet put on the market.

We are also Agents for Farmer's Broadcasting Service and are licensed to issue their Broadcasting license together with the Government Broadcast license.

Experimental Receiving and Transmitting equipment specially catered for. Send for New Price list and Illustrated Pamphlet.

BURGIN ELECTRIC CO.

WIRELESS ENGINEERS & SUPPLIERS

Show Rooms and Sales Dept., 1st Floor, Callaghan House,

391 GEORGE ST.. SYDNEY

THE USES OF WIRELESS

By Michael Egan

An interesting description of the present powers of wireless, which should prove very suggestive of its future possibilities.

The idea of despatching messages from one place to another without the use of wires was entertained in bygone days by numerous observers who were familiar with the moving magnetic needle. Reports of elaborate systems are on record whereby one fluctuating magnetic needle might, under certain conditions, be used to actuate a distant needle in a manner which would permit of intelligible signals being transmitted. It was not until many years later, however, that the discovery was made which led to the development of wireless as we know it to-day.

In 1888 Hertz demonstrated for the first time that it was possible to produce electromagnetic waves which obeyed the same general laws as heat waves and light waves. This momentous discovery gave rise to numerous attempts to transmit messages over short distances. At first it was a question of a few yards. Later on it became possible to signal over a distance of a few miles. To-day we can carry on a wireless telephonic conversation over thousands of miles. The wireless telephone is, of course, a comparatively recent product; long before it became possible to reproduce the human voice by wireless the great value of the wireless telegraph had been repeatedly demonstrated in many fields of commercial and industrial activity.

One of the earliest applications of wireless telegraphy was made in the British Mercantile Marine. Throughout the last century there was no means of communicating between ships at sea other than by visual signalling, whilst th e same applied with reference to ship and shore authorities. One result of this was that shipowners were frequently without news of their ships for months at a time. A sailing-ship, for instance, might leave an Australian port some time in January, and not be heard of again until, after weathering many storms in different parts of the world, she was sighted in the Channel towards the end of April. There are cases on record, in fact, of ships which were reported as "missing" for the best part of a year, and which eventually staggered up under the grey cliffs of Dover one foggy morning when they were least expected.

The most familiar and most important aspect of wireless at sea is, of course, in connection with the saving of life in moments of distress. Everyone will remember the tragic fate of the s.s. Titanic, and the part that wireless played in summoning a dozen ships to the rescue of her passengers and crew on that cold winter's night, when she slipped quickly to the bottom of the Atlantic. Never was the value of this new branch of science more staggeringly and poignantly illustrated than on that tragic occasion, although history holds many other similar records of the triumph of wireless over the perils that beset those who go down to the sea in ships.

Apart from its supreme importance in saving life at sea, however, there are many other useful applications of wireless to the needs of seafaring folk. It is often a matter of extreme urgency for a captain of a ship to acquaint the shore authorities with his time of arrival at a certain port some days before his vessel actually makes that port. This gives the shore authorities ample time to prepare a berth for the ship, and also to arrange for the necessary labour to unload and reload her cargo. By means of wireless the shore supervisors are thus constantly informed with reference to the movements of ships, and the risks of delay and confusion consequent upon a number of ships arriving at a port together are considerably minimised.

Wireless has also been of great service on many occasions in saving the lives of people who became dangerously ill on board ship. It is only on the larger passenger-ships that a qualified doctor is carried, and it has often been necessary to despatch medical advice by wireless to a passenger who suddenly developed some serious illness on board a ship which carried no doctor. First aid treatment has been applied before now over a distance of some hundreds of miles! In some cases the patient was treated daily for a number of weeks. Each morning the shore medical authorities were given an account of the symptoms by wireless, from which a diagnosis was made. Instructions for treatment during the ensuing day were then wirelessed back to the ship.

There is something strangely fascinating about this idea of curing from a distance. Somehow or other it seems to epitomise the gradual triumph of man's ingenuity over the obstacles of the material world. The same suggestion is made to the imagination—although from a somewhat different angle! — by the records of the many instances in which wireless has extended the already elongated arm of the law by some thousands of miles. The famous Crippen case will not be forgotten in this connection for many years to come. The captain of the ship on which this clever criminal endeavoured to escape to America, noticed that an eyebrow of one of his passengers assumed rather too rakish an angle at times!

Investigation satisfied the worthy captain that the eyebrow in question was a false one, whilst further observation left little doubt as to the identity of the amiable passenger who wore it. Within a comparatively short time after this important discovery had been

Special Note

Full details of the Wireless Weekly Cup Competition will be published in the next issue.

The competition is open to amateurs residing in Australia and New Zealand.

Two cups will be presented, one for the best Crystal Set and one for the best Valve Set.

made, the police authorities on both sides of the Atlantic were aware of the facts, and, when the ship arrived at New York, the first people to mount the gangway were a couple of plain clothes detectives.

For no commercial purpose has wireless been more useful than for the navigation of ships at sea. Previously mariners had to find their way across the oceans of the world by bearings taken from the sun and the stars. On a cloudy day, or a starless night, the only means of ascertaining the position of a ship was by calculating the distance it had gone in a particular direction since its position was last found by solar or astronomical readings. This was by no means an accurate process, and very often entailed a considerable loss of time in the ship's passage. By means of wireless beacon stations it is possible to-day to navigate a ship at any time of the day or night, irrespective of weather conditions.

There are two general methods of navigating a ship by wireless. By one system the ship's operator takes a bearing on two or more shore transmitting stations with the position of which he is acquainted. The point of intersection of these bearings represents the position of the ship. With the other method the direction-finding instrument are situated ashore and the shore operators take individual bearings on the ship when the latter transmits a prearranged signal. The shore direction finding stations are in communication with each other, and the operator at the chief station of the group ascertains the resultant position and communicates it by wireless to the ship.

Wireless is also successfully employed to-day for the navigation of aircraft. With certain technical alterations, the two systems outlined above are in daily use. Dozens of machines are flying daily between this country and the continent, and the high standard of efficiency maintained by the various aerial services during the past year is in no small measure due to the practical assistance rendered by wireless. Needless to say, in certain circumstances wireless can be of supreme importance to commercial aircraft, of far more importance, in fact, than to any other form of transport vehicle. A ship, for instance, can remain afloat on the sea in a dense fog and, by using her siren vigorously, remain safe from collision with neighbouring ships. With aircraft, however, it is quite different. An aeroplane must keep on the move in order to remain "afloat" in the air, and for this reason would be in particular danger when surrounded by a fog in traffic areas if it were not for the valuable assistance which wireless affords. An aeroplane can be guided through the thickest fog to a safe landing-plane by means of modern wireless instruments.

Practically all of the machines flying on the continental air transport services from England are equipped with wireless telephony. These instruments are remarkably efficient and are in constant use; they are invaluable for enabling the pilot to keep in touch with the authorities at either of the terminal aerodromes. If "engine trouble," for instance, occurs en route, involving delay or even a "forced landing," the ground authorities are informed at once and considerable saving in time and money is thereby effected.

Apart from these more or less special uses of wireless there is practically unlimited scope for the application of different systems of wireless telegraphy and telephony to the needs of modern commercial and social life. In the commercial world hundreds of thousands of messages are being flashed across the earth by wireless each day, whilst "broadcasting" bids fair to become one of the most popular forms of entertainment in the home of to-morrow.

In the very near future it is probable that great things will be achieved with wireless photography. Already certain governments have sanctioned the transmission of signatures by this method. What a world it will be when one can write a letter in New York whilst sitting in a London office. And if wireless photography, why not wireless cinematography?

Of Course!

According to a report in an evening paper, an American visitor to Sydney was rather amused at the various restrictions placed upon wireless reception by the authorities in this country. He contends that wireless in America is well ordered and broadcasting entirely successful.

"I was amazed," he said, "when I spoke to wireless amateurs in Australia, to learn that conditions in my country were chaotic, as far as wireless was concerned. It is an absolutely absurd idea that has got about.

"As to broadcasting, our people are better served than those of any other country.

"I have listened in in many places and was never able to detect anything beyond an occasional faint whistle that could be construed into interference."

HINTS ON MOUNTING CRYSTALS.

Upon the way in which a crystal is mounted depends very largely the efficiency of the set of which it forms a part. If the contact which it makes with its cup is poor or of varying quality reception will not be good; but if it is firmly seated in a mounting which does not allow it to move, then signals will come in at their full strength, provided always that the cat-whisker or the crystal is properly adjusted.

The most usual method of mounting a crystal is to heat it in molten metal, which on cooling sets hard and keeps it securely in position. The disadvantage of fixing the crystal in this way is that the sensitivity of many kinds—particularly the various types of fused galena, such as hertzite, permanite and others of that class—is adversely affected by heat. The older text-books recommend the use of solder, whose melting point is far too high to be good for most crystals. To-day Wood's metal is commonly used. This has a much lower melting point, but at the same time it is rather too high to agree with delicate crystals.

An alloy with a melting point so low that it can do little harm is easily made. The constituents are:—

Tin	2 parts.
Lead	3 parts.
Bismuth..	5 parts.

As this combination flows at a temperature of 15 degrees Fahr. below that of boiling water, it is not likely to harm even the most delicate of crystals. If one part of mercury is added, and alloy does not solidify until it has cooled something less than 150 degrees Fahr., it can be made to run quite easily by immersing the cup in hot water.

R. W. H.

WHO'S TO BLAME?

Wireless Wrangle.
London Cable.

"As the date of my departure is approaching, I cannot longer remain silent on the question of Empire wireless, whereon there should be no real difficulty in coming to a definite conclusion," runs the opening passage of a statement, issued by Mr. Bruce.

He points out that one station in Britain is utterly inadequate to meet the demands of a service which the Dominions desire to see installed. But owing to a dispute between the British Post Office and the Marconi Company, there is no prospect of more than one station being erected, which means that Empire wireless will be seriously handicapped. Mr. Bruce contends that either the Post Office should reach an agreement with the Marconi Company, permitting the latter to erect further stations, or a definite statement to be published, showing why negotiations failed, thus enabling the public to allocate the blame.

Should be told.

"If a license is not granted to the Marconi Company," he said, "then the people of Britain and certainly the people of the rest of the Empire, who are dependent on wireless communication, should be told what policy is to be pursued, in order to provide further stations which are imperatively required."

Australia, he added, would welcome the erection of any stations in addition to the Government station, for competition would not be a disadvantage to the public, especially if it helped to reduce rates.

It was a matter for the British Government and the British Parliament to say how the necessary reciprocal wireless facilities are to be provided for Britain. But for the British Government to refrain from either terminating the present dispute or announcing what its policy was going to be, can hardly be regarded as fair treatment of the Empire.

OUTBACK

CHAIN OF WIRELESS.

Attempts are being made to revive a project for the establishment of a chain of wireless stations in Northern Australia.

Some time ago the Postmaster-General's Department proposed to erect wireless stations at Camooweal and Powell's Creek. This, however, was contingent upon a number of settlers equipping their homesteads with small sending and receiving sets, so that communication could be established over the greater part of the north.

The pastoralists failed to display any enthusiasm, and the project was dropped. Since then some pastoralists have offered to instal three wireless plants in the Northern Territory and East Kimberley, provided the Government completes the chain of communication, but the department has so far hesitated to declare whether it is prepared to co-operate.

Seek the Advice of
MR. F. BASIL COOKE, F.R.A.S.

David Jones' have been fortunate in securing the services of Mr. F. Basil Cooke, F.R.A.S., and all interested in Wireless or Broadcasting should take advantage of his expert advice and knowledge before purchasing a Broadcasting Service. Advice will be freely given on any subject, large or small, relative to Wireless.

EXPERIMENTERS AND AMATEURS
Secure your Accessories at David Jones'

Complete stocks of vario-couplers, variometers, basket-wound variometers, etc., are now available at the keenest prices.
For Selectivity—use a wave-trap and reduce interference to a minimum. Prices on application.

DAVID JONES'
Radio Department, 22 York Street, Sydney

What is the Range of My Receiver?

Probably the hardest question to answer is the one most commonly asked, what is the range of the different types of receivers? The reason the answer is so hard to give is because there is no answer, at least no definite one.

It would be hard indeed to give an intelligent reply to anyone asking, "How far can one go in a day by automobile?" Obviously, it depends on the condition of the roads; on the make of car; and finally on the expertness of the driver. But the answer to the radio question depends on many more factors than three. First, and most important, is the location of the receiving station. If it happens to be in a locality where the ground conditions are good, that is one very important factor in its favour. If again there are no metal buildings, or trees, in the immediate vicinity, that also helps greatly. Then comes the matter of an antenna, a rather minor factor at that, but it enters in. The condition of the atmosphere between you and the station you want to receive is an enormously important matter, and one that is entirely out of your control. Lastly, of course, you want a reliably built set, and you need to know how to handle it.

From the standpoint of the antenna and ground conditions, we can say that if you live in the country you are likely to have a very great receiving range; if you live in the suburbs of a city you will have a good range, and if you live in the heart of a city itself you will find that your receiving distance is cut down considerably. For this reason, the only fair way to estimate the range of a receiving set, without knowing the location of its use, is to give the range that can conservatively be expected under the worst conditions. Then, if the questioner has conditions better than these, he will be gratified by getting distances greater than he anticipated Much harm is done to radio by irresponsible salesmen blithely guaranteeing reception of Cuba or Los Angeles when perhaps the prospective purchaser lives in the city in the shadow of a number of steel apartment buildings.

We know little of the question of ground conditions, meaning by this not the local ground for your set, but the "density" of radio energy in your particular locality. As the waves sweep over the surface of the earth, any particularly good conducting stretch will cause the waves to crowd over and take advantage of this, leaving the land nearby comparatively free. Thus a lake or river improves local conditions and robs the adjacent territory. An important test was made some time ago at Oil City, Pa., where signals from KDKA were very weak indeed, whereas many miles farther away signals were picked up very loud. Investigation showed that the city was entirely surrounded by ore deposits, which diverted practically all the waves so that they actually passed the town by on their way. In much the same way, one of the German high power stations has never been able to get its anticipated distance of transmission, because, although its local ground is excellent, it has been found that the region as a whole is set in a huge stone "bowl," which prevents good contact with the surface of the earth in general. The fact that certain stations work excellently in one direction and poorly in others may be due to particularly good ground conditions which stretch out in one particular direction. This may explain why owners of crystal sets in Pittsburgh report common reception from Schenectady,

The PACIFIC RADIO COMPANY

SYDNEY

COMPLETE SETS

for

Reception of Broadcasted Programmes from £7/7/-

PACIFIC De Luxe Model Four Valve Receivers, housed in floor model, highly polished cabinets, complete with loud speaker, Willard storage batteries, H.T. batteries, aerial wires, insulators, and flagpoles, installed free within 50 miles of Sydney

Price £105 : 0 : 0

EXPERIMENTAL STOCK includes New System Telephones, Headsets, Magnavox Loud Speakers, Western Electric Co's. Apparatus, and all makes of high-class Apparatus used in experimental Receivers.

The attention of the trade is called to the fact that we are now prepared to receive enquiries for the supply of sets tuned to the various broadcast stations.

COUNTRY AGENTS REQUIRED *LIBERAL DISCOUNTS TO LICENSED DEALERS*

TEMPORARY CITY ADDDRESS:

C/o Mr. Henry, Architect, 2nd Floor, 121 Pitt Street

Trade enquiries to F. THOMPSON, Manager, PACIFIC RADIO COMPANY
Works and Experimental Station: 38 DONNELLY STREET, BALMAIN

station WGY, a truly remarkable record.

As to your own ground conditions, a water pipe ground is ideal. If this cannot be obtained, approach it as nearly as you can by driving galvanised iron rods in the earth.

The antenna that you should use for long distance work should be a single wire, well-insulated, as high as you can get it at both ends, and with a total length (both vertical and horizontal) of about one hundred and fifty feet. The direction of the antenna makes no difference at all, except that if you cross electric light wires you would do well to cross them at right angles.

It will be found excellent to instal two antennas, one the long distance type described above, and another short one, say, twenty feet or so in length, for local work. The latter may be an indoor antenna if you so desire. On this antenna you will get plenty of signals from your nearby broadcasting stations, and you will find the occasional interference problem greatly helped by this simple device. A switch for throwing to either antenna at will completes your installation. Do not forget to have a reliable and approved lightning arrester on both antennas, if both are out of doors.

Keeping in mind that the ranges given are those which almost every set can attain, no matter how poor its location, the following general principles can be given. If your home is situated in the suburbs, you will do much better than the figures given, in all probability, and if you are a country dweller your chances are still better.

A crystal set, that is, a receiver with crystal detector, will cover a range of twenty-five to fifty miles.

A receiver with a vacuum tube detector and with the regenerative or tickler circuit will be good for two hundred miles. This is partly due to the better action of the vacuum tube as detector compared with the crystal detector, but the greater increase in the range is due to the regenerative circuit. This acts to increase the sensitiveness of the detector, and also serves another useful purpose, namely, to reduce the antenna resistance and make the set sharply tuned.

A receiver with a vacuum tube detector and two stages of audio amplification will bring the range of your set up to about eight hundred miles. Where the conditions are favourable, such a set will bring in stations almost over the entire American continent, but the conservative range of eight hundred miles gives the lower limit which is almost certain to be obtained by anyone. Another advantage of the amplifier is that with it loud speaker operation is possible, a factor greatly desired by most listeners.

Tell your friends about
"Wireless Weekly"

Radio Company
Limited
15 LOFTUS STREET
Circular Quay
SYDNEY

Of importance to Experimenters and to those about to enter the field of Wireless

DURING the month of January LARGE REDUCTIONS will be made of our stocks of *EXPERIMENTAL SETS and PARTS at COST and under COST PRICES*, all of which will carry our guarantee to give satisfaction.
A Small Transmitter with Tube Modulation complete with Valves and Batteries ready for use at £25 is just one of our many bargains.
Stocks limited. Send your Order as early as possible

NEWS IN BRIEF

Mr. J. W. Robinson, whose resignation as Honorary Radio Inspector in Sydney, was announced recently.

For use in schools, the Broadcasting Company is inaugurating special weekly half-hour broadcasts of educational subjects, including musical items, by the greatest authorities, and how to speak correctly in English and French.

Wireless "listeners' in" at London, equipped with simple crystal sets, recently were delighted to hear quite clearly operatic selections, organ, and pianoforte solos, and a series of addresses broadcasted from the Pittsburg (Pennsylvania) station. This was accomplished by successful picking up on the high ground outside the metropolis, and re-transmission from the London broadcasting station.—Reuter.

WIRELESS APPARATUS

New or Second-hand, Bought, Sold or Exchanged

HOWELL'S

19 Barlow Street

Amateurs tempted to use complicated "hook ups" should remember that the commercial stations which operate continuously and "always get through" are worked with a simple wiring system.

Wireless is in itself a remarkable and wonderful branch of science, and progress made during the past quarter of a century has been, indeed, remarkable, and it is almost impossible to try and foretell just what another 25 years will bring forth.

It is doubtful whether any branch of science may be said to be more wonderful than wireless, and it is just as doubtful whether any science has made such remarkable progress and has, within so short a time appealed so strongly to popular imagination.

The wonderful possibilities of wireless were demonstrated in 1899, when a steamer collided with the East Goodwin lightship, which had been fitted with wireless for experimental purposes. The accident was reported by radio, and assistance was promptly despatched to the damaged vessel.

During the past few years much progress has been made in connection with wireless research and wireless developments. The whole of the earth has been spanned, and large stations in England have flashed messages which, one-fifteenth of a second later, have been received directly by Australian stations.

Change Essential.

"Marry my daughter! Why, sir, you are supported by your father!"

"Yes, sir, I admit that. But my father is tired of doing it, and I thought I'd get into another family."

"Sang Gene" (France)

"What kind of a fellow is that efficiency expert?"

"Well, he never enjoys an ocean voyage because there is so much salt going to waste."

—"Dry Goods Economist" (U.S.A.)

The Australian Press Association learns that the Indian and British Governments have decided to allow private enterprise to erect a plant and conduct a wireless service between England and India. The latter's Government will have the right to one representative on any board selected to operate the service. Tenders will be called immediately.

Tell your friends about Our Big Competition

Come in and see our

Radio Display

Information Freely Supplied

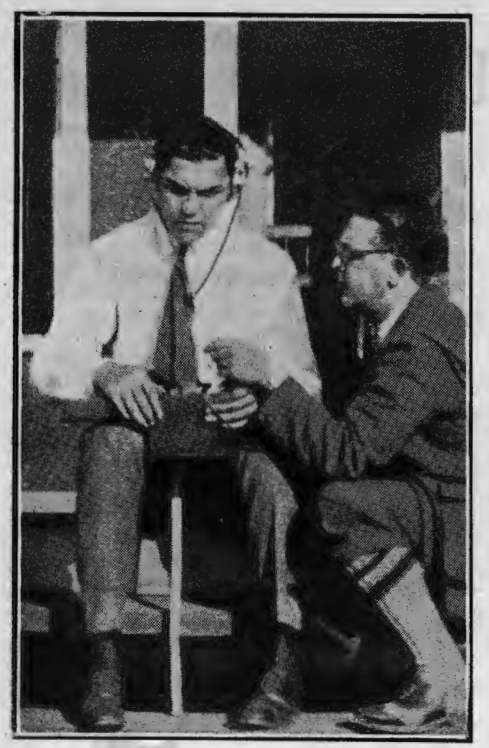
We are Sole Agents for the World Famous

FEDERAL RADIO APPARATUS

Moderate Cost
Highest Efficiency

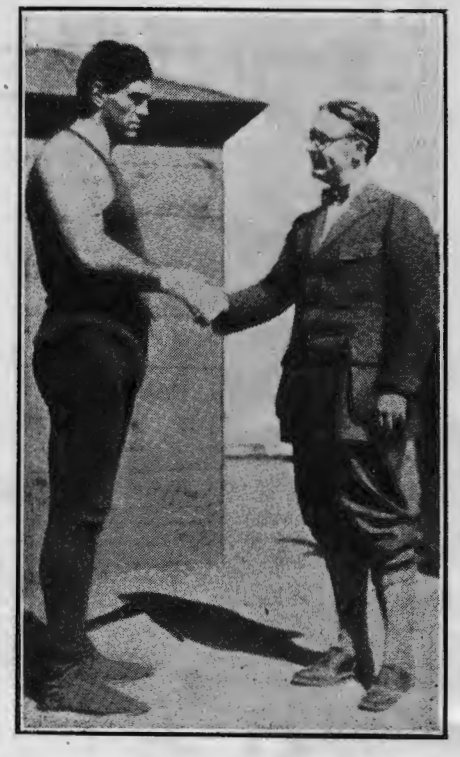
The
Home Electric
106a King Street, Sydney

Phone B 5565



DEMPSEY AND FIRPO

Two of the World's most famous boxers, the description of whose fight was broadcasted to thousands. Dempsey, on the left, is being instructed in the use of a set.



THE JEFFERSON

TRANSFORMER

AMPLIFYING

World's Leading Transformers stocked by Colville-Moore, Wireless Supplies, Radio House, Radio Co., A. Hordern and Sons, Ramsay Sharp, Universal Electric, Wireless Supplies Ltd., Harry Wiles and all Leading Wireless Stores

Sole Agents for Australia

FOX & MacGILLYCUDDY

DAILY TELEGRAPH BUILDINGS

KING ST., SYDNEY PHONE CITY 3062

Wireless Cabinets

Radio Cabinets and Boxes
Base Boards, Aerials, and
all Wireless Woodwork

WHOLESALE ONLY

Harding's Limited

87-101 York Street North
Sydney
Over Argylle Cut

2 Minutes from Circular Quay : Phone 3773 City

RADIOCULOUS

Anticipated Applause.

Speaking of vanity, the story is told of a politician who the day before he was to make a certain speech sent a forty-page report of it to all the papers. On page 30 appeared this paragraph: "But the hour grows late, and I must close." (Cries of "No, No; Go on, Go on.")

And That's—

Novice: "I want to build my own set, please pick out a good hook-up."

Clerk: "Ever build a set before?"

Novice: "No, never even used one."

Clerk: "Ah! Here's just the hook-up for you. It's never been tried before. You can start out together."

* * *

Angry Wife to Radio-mad Husband: "Are all men fools like you?"

Husband, sadly: "No, some buy their sets instead of trying to make them."

* * *

Calling a man a liar over the telephone was the zenith of vicarious courage until it became possible to say, when a man is making a tedious speech over the radio, "Shut up, you big stiff!"—N.Y. World.

* * *

Little Girl (as the doctor adjusts stethoscope: "Mummy, can I listen in to the wireless when the gentleman has finished?"

* * *

Of Course.

Angry Diner: Hallo! you waiter; where is that ox-tail soup?

Waiter: Coming, sir—half a minute.

Diner: Confound you; how slow you are!

Waiter: Fault of the soup, sir. Ox-tail is always behind.

"Lloyd's Weekly" (Eng.)

* * *

"Dangerous thing, electricity."

"What now?"

"Hear about the girl in the Electric Bakery. She got a roll with a current in it, and the shock killed her."

"Sun Dodger" (U.S.A.)

* * *

Passenger: And where shall I put this bag?

Porter: Up on the rack.

But it's a black bag.

What of it?

Well, you see, that notice distinctly says 'For light articles only.'

"Ideas" (Eng.)

Farmer (to applicant for dairyman's position): D'yer drink beer?

Noa.

"Or whisky, perhaps?

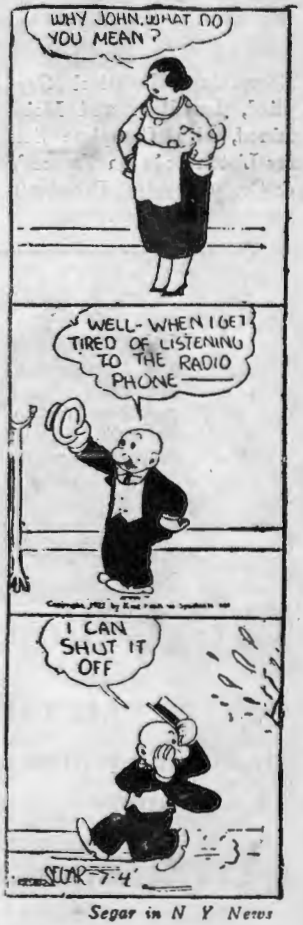
Noa.

Maybe wine?

Noa.

Then ye'll be drinking milk. No job for you here.

"The Star" (Eng.)



Segar in N Y News

—That.

Electrical Supply Shop

E. R. Cullen's

Everything Electrical Supplied, Installed. and Maintained, also Complete Sets for Listening-in on Farmer's & Co., and also Broadcasters (Sydney) Ltd. Stations.

A splendid range of Globes and Electric Fittings.

Call and Inspect our Stock of Useful Gifts.

E. R. Cullen

Late A.I.F.

96 Bathurst Street Sydney

Phones: City 869 and 2596

Popular Misconceptions of Radio

(By G. H. Clark.)

I had an intense interest in medical matters during one of the boyish crazes that I went through in common with all other youngsters. Whenever I had a chance, I asked questions of my physician friends, and I read every book I could find on physiology and materia medica. I thought, of course, that I knew a lot about the matter, but I remember now how my ostentatious use of technical terms brought a smile to the lips of those who really knew the subject. I remember that smile of my doctor friends. It comes in very handy these days to remember it, when eager beginners in radio ask me the same kind of questions that I used to ask.

Now, it is an obvious fact that the body can be used fairly well without the knowledge that the physician has. You and I walk quite naturally without appreciating or knowing the wonderful series of muscles and controls that we are using. The same is true of radio. The beginners—both amateurs and novices—who operate receivers and get wonderful results out of them are often totally ignorant of what they are doing. Many of them know little more than that there are several dials to adjust, but what these dials do is a complete mystery. Sometimes it seems as if the less one knows about radio the better results one can get.

There are a few popular misconceptions about radio, however, which actually do harm. The first, and most common one, is that the receiving antenna has to point in a certain direction to receive a given station best. This is not true at all of the antennas used in broadcast reception. To have the quality of "directivity" referred to, an antenna must have very great length compared to the height, such as the antenna used by the Radio Corporation of America at Riverhead, L. I., which is thirty feet high and nine miles long. But the ordinary broadcast antenna, with its length of a hundred feet or so, will receive your favourite broadcast stations equally well, whether the wire be pointing north, south, east or west.

Others, misled, doubtless by the analogy of a violin string, think that an antenna will not receive unless it is stretched tight. I recall a classic case where an old-time Naval officer refused permission to tune up a set on board ship because the antenna wires were not stretched taut. Others go still farther, and think that if one were to tie an insulator to some point along the middle of the horizontal wire—as might be done to keep it away from a tree near its path—this would stop the antenna from vibrating and prevent signals from being received. There is no truth in these beliefs at all. They are due to confusion of mechanical vibration and electrical vibration, which are two entirely different things. The former means actual physical movement of the wire, the latter means that electric currents are set up in it from a distant station. One action has no relation to the other. The antenna may be humming away like a telegraph wire on a cold night, or it may be guyed at twenty different places, and it will receive equally well in both cases.

People have funny ideas about ground connections, too. One man complained about poor reception from his receiver, and when the wiring was examined it was found that he had run his ground wire down to a tack driven through the carpet.

A very common and incorrect idea is that the larger the physical size of a coil the greater distances can be covered. A customer in a store the other day brought in a honeycomb coil, size 50, saying that she wanted instead one of the big size 1500 coils, so she could pick up Chicago on her broadcast receiver. Now such a large coil as she desired could only be used for long waves, such as the 15,000 meter wave used between Radio Central and Europe, and had she used it for broadcast reception, she would have received nothing at all, rather than an increased signal.

Another customer, a man this time, asked me to advise him on the way to connect up a set he was building. He carefully explained that he was using honeycomb coils and a forty-three-plate condenser and a variocoupler, and he wanted to connect up a radio frequency amplifier. I handed him a little circuit diagram that was at hand, and he replied, "Oh, I have that already, but it won't do. It shows cylindrical coils whereas I am using honeycombs." Undoubtedly there are many beginners who think that there is some especial kind of inductance in a honeycomb coil or a spider web compared with an ordinary cylindrical one! There isn't. A coil is a coil. What counts most is its inductance, and this depends greatly on how many

feet of wire there are in the coil. The method of winding is a minor matter.

Incorrect ideas such as these greatly hinder the progress of radio. The whole trend is toward the idea that radio is complicated and mysterious, whereas if the few elementary circuits and laws are studied, it is simple and quite ordinary. Too much stress cannot be laid on clearing up the confusing ideas that are so prevalent and so undesirable.

ORCHESTRAS SOLD BY RADIO.

J. E. Horn, president of the Consolidated Orchestras Booking Exchange, of N.Y. City, has perfected a novel method of demonstrating concert and dance orchestras to clients via the radio. Heretofore a cafe, hotel or club in need of the services of an orchestra has insisted upon a demonstration of the musical organisation, with the result that considerable expense has been involved. Now it has been arranged with radio stations all over the United States to demonstrate the various orchestras via broadcasting.

Handy Hints on Radio

(By D. B. McGown.)

In making lead plate storage B batteries, a copper soldering iron can be coated with lead, and used as if it were solder, provided lead is used to fuse the terminals.

Never add water to acid, in mixing acid for storage batteries, as this will result in serious explosions; always add acid to the water.

Although generally no lubricant is needed on a motor or generator commutator, a trifle of paraffin will often help, or the carbon brushes may be boiled in paraffin.

When making storage B batteries, always use low gravity acid—not to exceed 1220 specific gravity—and the battery will last about three times as long. True, it will have to be larger to give the same amount of current but this is made up for by the increased life.

Don't try to see how fast you can send when working with the other fellow; just take a speed that is comfortable, and don't try to hurry. You will get your business through just as soon, and probably sooner, if you consider the time you use up making and correcting errors.

Don't try to force your tubes by the addition of more filament current, when they refuse to oscillate. Usually something else is wrong, and remember that if you increase the normal filament current, by even a slight amount you seriously decrease the life of the filament.

Don't forget that an Edison battery has a normal voltage on load of 1.2 volts, so it takes 5 cells of Edison battery to give 6 volts, while only 3 cells of lead are needed for this same voltage.

One afternoon pugilistic little Jimmy came home with a black eye.

"Been fighting again," snapped his father. "Still," he continued, "I suppose you gave one in return."

"I don't know, dad," responded Jimmy sadly.

"You don't know?"

"No. You see I was fighting a black boy."

—"Life" (U.S.A.)

GET A GOOD PAIR OF HEADPHONES

FOR

BROADCAST RECEPTION

	£	s.	d.
TRIMM, 2000 ohm - - -	1	12	6
,, 3000 ohm - - -	2	5	0
NEW SYSTEM, 2000 and 4000 -	2	0	0
WESTERN ELECTRIC - -	2	5	0

MEMBER OF BSL BROADCASTERS "SYDNEY" LTD

RADIO HOUSE

619 George Street, Sydney

BUY FROM THE BROADCASTERS

SEND FOR NEW PRICE LIST

Illawarra Radio Club

The 37th meeting held on 19th December drew a fair attendance.

A discussion was opened on the various matters which were to be considered by the Radio Association at its meeting on the following evening (chiefly on the question of a Federal Council of experimenters for which Mr. Malone was calling, and also as to the position of experimenters in connection with broadcasting) in order that the club's delegate (Mr. Hewett) might have the views of the members to present to the Association.

With regard to the question of a Federal Council, several members spoke and made some useful suggestions, and all were unanimous in the opinion that definite action should be taken, and without delay, to inaugurate a representative Federal Council of experimenters for the Commonwealth. Mr. Hewett was accordingly instructed to support any practicable scheme which might be put forward by the Association for bringing this very desirable result about.

The question of experimenters listening in to broadcasting and as to whether or not they should subscribe to broadcasting services was the subject of a great deal of warm discussion and argument. It was the general opinion that, provided experimenters kept within the terms of their licenses, and tuned-in broadcasting stations only in the course of experimental operations, they—as experimenters—were quite within their right in so doing. An assurance to this effect had been given to experimenters by those in authority on more than one occasion recently, and it lay with the experimenters themselves to see that they did not abuse that privilege. Provided they did not, they should have nothing to fear, and no qualms of conscience as regards listening in on broadcasting wave lengths.

Mr. Graham (Hon. Sec) spoke deprecatingly in reference to a noticeable falling off in attendance which had manifested itself at recent meetings. Although this tendency to stay home coincided to some extent with the recent initiation of broadcasting, he trusted that this was not the reason for the depleted attendances at club meetings, or that broadcasting was such an attraction as to prevent members putting in an appearance at the Club once a fortnight. He thought the reason could be looked for in other directions; perhaps members had become a little disinterested owing to recent proceedings not being as attractive as usual, or to the absence of a working set in the Club, or to the apparent inactivity of the committee. On the latter point, however, he wished members to understand that their executive were by no means asleep. The committee were continually watching the club's interests; they had on several occasions of late met and dealt with questions of direct concern to the members, such as with regard to receiving and transmitting sets, lectures, demonstrations and various other matters of club interest, none of which are being lost sight of, and one result of these deliberations was the fine receiving set which the club now possessed. The task of the committee in arranging continually attractive programmes was by no means an easy one, and while club progress depended largely on the activities of these gentlemen, it also depended in no less a measure on the amount of practical co-operation and support accorded the Club by each individual member. Members should feel that they had a duty to perform —one which called for regular attendance at meetings and the display of a interest in club affairs and proceedings at all times, to introduce new members into the club, and to further the club's interests in every possible way. He hoped that members would in the future be stimulated by this spirit and evince a new and greater interest. If this were done, members could be assured that the results of their personal efforts would we well worth while.

Mr. Graham then called attention to the club's new three valve receiving set which had been before the club members for the first time that evening. He described the general layout and principal features of the set, which had been constructed on the unit panel system, comprising a tuning panel, one stage r.f. amplification, detector and one stage a.f. amplification, the whole being contained in a maple cabinet. and the panels being mounted in a frame which opened out on to the table allowing of easy access to the wiring. It had been so arranged as to make all panels interchangeable, and to enable any panel to be replaced by or used in conjunction with any outside unit, and the placing of the terminals permitted the trying out of innumerable circuits so that on the whole it represented a fine combination which should prove an attraction and of great value to members. It was a set worthy of the club, and of which they could feel well proud.

Mr. Graham explained that the fact that the club now possessed this fine set was due to the work and energy of Mr. V. Greenup, one of their members, who had been responsible for the whole of the designing and construction of the set, as the result of an offer he had made to the Technical Committee (which had been accepted) to reconstruct and enlarge the club's receiving set. It had been decided by the Club only shortly before the Wireless Exhibition, that the set when completed should be exhibited, and this had left a very limited time in which to complete the great amount of detail work involved. However, Mr. Greenup, having determined that the club should have an efficient as well as attractive set which would prove worthy of the club, no time or trouble or energy was spared on the job. That he accomplished the desired result is evidenced by the fact that the Illawarra Club's set was highly commended at the Exhibition, and more than held its own among the splendid collection of experimental exhibits which were to be seen there.

The cabinet containing the set was presented to the Club by Mr. Graham, who stated he was pleased to have been able to assist the Club in this way, but, he explained, the thanks for the work were due to Mr. Greenup, who, he considered, had done the club a real and valuable service, and was deserving of the club's warn appreciation, it was a fine thing that they had amongst them men who were ready and willing to be of such practical assistance to the Club.

Mr. Hewett also spoke in similarly appreciative terms with reference to Mr. Greenup's work, which, he said, reflected great credit on that gentleman.

A hearty vote of thanks was accorded Mr. Greenup for his work on the Club's new set, and also to Mr. Graham for his part in the matter.

Mr. Graham, in responding, apologised for Mr. Greenup's absence, but stated that he thought that gentleman would feel ample reward in the club's appreciation of his efforts and also in the fact that he had been able to build them a neat and efficient set. As for himself, Mr. Graham thanked the

members, and said he had done very little, but was always glad to be of any service at all to the club.

For the remainder of the evening, the members were entertained by music from Broadcasters Ltd. with the new set, which was operated by Mr. Graham. With two valves and a small Brown loud speaker, the music was heard very strongly and clearly all round the large room.

The executive wish all members the Compliments of the Season.

Inquiries concerning the club are invited from prospective members or others interested, to the Hon. Secretary, Mr. W. D. Graham, 44 Cameron St., Rockdale.

Northern Suburbs Radio Society

The third meeting was held of the above at Gordon Public School, on Thursday, December 20th, Although this was the beginning of the holiday season the meeting was well attended; new members were enrolled and a very pleasant evening was spent. Several items dealing with the society were attended to, and some short discussions were held. This society will be having an exhibition and demonstration shortly, all exhibits will be constructed by its members; the idea is to get the general public interested in this new and wonderful science. A committee has been formed, and they are not letting the grass grow under their feet. At this third meeting, Mr. D. McIntyre, the Society's President, gave a very interesting lecture on what "The Amateurs of the World are doing both in the way of transmitting and receiving." Mr. R. Primmer also gave a short talk in "Wireless in the Antarctic."

The meeting closed at 10.15. The next meeting will be held at Gordon Public School on Thursday, January 3rd, 1924, at 8 p.m.

Subscribers are asked to notify Wireless Weekly of any change of address. Communications should be addressed to "WIRELESS WEEKLY," 33 Regent Street City.

TELEVISION. Is It Possible?

London Cable.

Colonel Lestrange Malone, chairman of the Radio Association, interviewed in regard to the recent transmission of American broadcasting by the British Broadcasting Company, forecasted that in 1924 television, or seeing by wireless, would be made a practical possibility.

Colonel Malone emphasised that it would be possible for one individual to address simultaneously people in Europe, Africa and America.

Nobody, he said, could foretell the ultimate development of international Broadcasting.

He urged that an international agreement to control and co-ordinate these transmissions should give a fair share of "ether space" to all the stations of any country which had first class programmes or news.

The Radio Association has communicated with the League of Nations with regard to this question, and a conference has been arranged, to be held in 1924, under the auspices of the League, to consider all the aspects of the problem.

WILES' WONDERFUL WIRELESS

BESIDES Complete Sets for Listening on Farmer & Co., Broadcasters (Sydney) Ltd. Stations, we are still catering for the Amateur and Experimenter, and carry a comprehensive Stock of all component parts

Many New and Interesting Lines

WE PAY CARRIAGE

SEND FOR PRICE LIST POST FREE

W. HARRY WILES

Electrical and Wireless Supplies

60-62 Goulburn Street, Sydney

One Door From Pitt Street

Continued from page 2

moved off in the morning, he would laughingly suggest we took a cable waggon in case the wireless wouldn't work, for our early home made wireless had many faults. He was always always ready to help in any shape or form.

Discussing the wireless sets one day, he was surprised and shocked to learn that the Commonwealth Military Forces did not possess any wireless equipment, and could hardly believe that the whole outfit was designed and owned by me. Later he brought the matter before the Commandant of N. S.W., suggesting I receive some compensation or recognition. The letter is still at Victoria Barracks, Sydney, where military clerks kept all such letters and recommendations. Ministers for Defence are only permitted to see what is good for them.

Sets from England.

Later in 1913, portable wireless sets were sent from England at a most outrageous cost, but as far as I can gather they were no more successful than the Australian built portable sets.

This will serve to show how much any Government is dependent upon its experimenters. Here we see a Field Wireless Unit formed before equipmnt was even secured, and then use made of practically home-made apparatus. However I had the honour of supplying Australia's first wireless equipment for its first wireless corps, and the thanks of the officers and satisfaction of the boys concerned has more than repaid my efforts.

Don't forget to mention "Wireless Weekly," when dealing with our Advertisers.

Editor's Letter Bag

A.H.H. (Victoria): I am building a broadcasting receiving set as described in Wireless Weekly, Vol. 2, No. 4, page 9, with two stage audio frequency amplifier, page 6 in the following issue. Could you let me know the distances this set will operate a loud speaker?

The set you describe would give good results in a radious of 100 miles. —Ed.

JOIN A

RADIO CLUB

"Listen in" to the World

with Volmax Radio Apparatus

WIRELESS SUPPLIES LTD

RADIO & ELECTRICAL ENGINEERS

WIRELESS FOR ALL

21 ROYAL ARCADE SYDNEY.

REDUCTIONS IN VOLMAX APPARATUS

LOUDSPEAKERS The Electro Ampliphone	£6 10s.
VALVES - Myers -	25s.
VALVE DETECTOR Cabinets -	50s.
DIALS For Condensers	2s. 6d., 5s.
VALVES C 300 -	30s.
HEADSETS "Bestone" 2,200 ohms	32s. 6d.

Send for Catalogues

PHONE M 3378

MEMBER OF BSL BROADCASTERS SYDNEY

World Stations

Wireless Weekly has been successful in securing a list of the principal wireless stations in the world, together with the times of operation and the matter broadcasted.

The Sydney mean time is given after the military style.

The figures 0000 represent 12 o'clock midnight; 0340 is 3.40 a.m.; 1640 is 4.40 p.m., etc.

Further lists will be published in each of our succeeding issues

Time. (Sydney)	Name.	Call.	Wave.	Type.	Remarks.
1635	Konigswusterhausen	LP	5,700	CW	European weather report.
1650	Konigswusterhausen	LP	5,700	CW	Weather report.
1700	Bordeaux	LY	34,450	CW	Working with HZH (Brazzaville).
1700	Prague	PRG	4,600	CW	Working with FF (Sofia).
1715	Paris	FL	6,500	CW	Working with HFB (Belgrade).
1730	Gibraltar	BWW	4,000	CW	Naval weather report.
1730	Malta	BYG	4,500	CW	Naval weather report.
1730	Nantes	UA	9,000	CW	Calls FRI (General French naval call).
1740	Belgrade	HFB	4,600	CW	Weather report.
1740	Karlsborg	SAJ	4,200	CW	Weather report.
1750	Christiania	LCH	8,000	CW	Weather report.
1750	Bucharest	BUC	7,500	CW	Weather report.
1800	Air Ministry	GFA	4,100	CW	Weather report.
1800	Lyons	YN	15,500	CW	Scientific time signals.
1800	Rome	IDO	11,000	CW	Press in French.
1800	Gibraltar	BWW	4,800	CW	Weather report.
1800	Aranjuez	EAA	6,700	CW	Working with POZ (Nauen).
1820	Vienna	OHD	5,600	CW	Austrian weather report.
1820	Paris	FL	7,300	CW	French weather report.
1830	Lyons	YN	15,100	CW	Press to Central Africa.
1830	Prague	PRG	4,600	CW	Working with WAR (Warsaw).
1840	Konigswusterhausen	LP	5,700	CW	German weather report.
1845	Mediouna	CNM	5,000	CW	Moroccan weather report.
1845	Bucharest	BUC	7,500	CW	Roumanian weather report.
1850	Air Ministry	GFA	4,100	CW	European weather report.
1850	Konigswusterhausen	LP	5,700	CW	European weather report.
1850	Lyons	YN	15,100	CW	Times for the 1800 signal.
1850	Christiania	LCH	8,000	CW	Norwegian weather report.
1855	Helsingfors-Sandham	OJA	5,700	CW	Finnish weather report.
1857	Lyons	YN	15,500	CW	Time signals (old system).
1900	Wellington	VLW	600	Spk.	Time signals.
1900	Malta	BYZ	4,200	CW	Weather report.
1904	Lyons	YN	15,100	CW	Working with FRU.
1905	Konigswusterhausen	LP	5,150	CW	Aviation weather
1905	Paris	FL	6,500	CW	Press in German freport.
2100	Lyngby	OXE	5,600	CW	Press in English.
2100	Prague	PRG	4,100	CW	Working with NSS (Annapolis).
2100	Melbourne	VIM	600	Spk.	Weather report.
2130	Adelaide	VIA	600	Spk.	Weather report.
2155	Nauen	POZ	12,000	CW	Time signal.
2200	Guglielmo-Marconi (Coltano)	ICI	5,900	CW	Working with EAB (Barcelona).
			4,200	Spk.	Alternative to above.
2200	Brisbane	VIB	600	Spk.	Weather report.
2200	Prague	PRG	4,100	CW	Press in French.
2220	Nauen	POZ	9,400	CW	Press in German.
2230	Lyons	YN	4,700	ICW	Repeats Press.
2230	Sydney	VIS	15,100	CW	Press in English o NSS (Annapolis).
2300	Rangoon	VTR	1,800	Spk.	Press.
2300	Bombay	VWB	1,200	Spk.	Weather report.
2300	Madras	VWM	2,000	Spk.	Weather report.
2300	Vienna	OHD	2,000	Spk.	Weather report.
2300	Moscow	MSP	5,600	CW	Working with HFC (Sarajevo).

Before you Expend Money on Radio Equipment Consult Anthony Horderns' Wireless Experts.

Your inspection of the big display of everything that is new in the world of Wireless, is invited.

(Wireless -- Second Floor)

Anthony Hordern & Sons Limited,

Brickfield Hill, Sydney

Phone City 9440. Box 2712 G.P.O.

Broadcasters (Sydney) Ltd.

PROGRAMME.

The following was the programme of a concert given by Broadcasters (Sydney) Ltd., on Monday night:

Part 1.—7.45-8.—Broadcasters' No. 2 Orchestra will play selections; 8, Prayer from "La Tosca," and "Lilac Tree," Miss Bertha Warren (soprano); 8.14, "Bemande et Retonse" and "Minuet," Miss Corbett (violinist); 8.24, "The Irish Agitator," Mr. Truman Neilson (singing actor); 8.32, selection by the Orchestra; 8.39, "Loving Smile of Sister Kind," and "I Pitch My Lonely Caravan," Mr. Leonard Mars (bass); 8.45, "Hindu Song," and "Keep on Hopin'," Miss May Stokes (contralto); 8.[illegible], "One Fine Day" and "Piper of Love," Miss A. Sparks (mezzo-soprano). Interval of three minutes.

Part 2.—9.—Selection by Orchestra 9.10, "What's in the Air To-day?" and "Yellow Hammer," Miss Bertha Warren (soprano); 9.18, "Berceuse de Jocelyn," Miss Corbett (violinist); 9.24, "A Cloud came o'er his Brow," and "Why Don't They All Go Home?" Mr. Truman Neilson (singing actor); 9.30, "Long Ago, Alcala" and "Dear Old Pal of Mine," Mr. Leonard Mars (bass); 9.38, Selection by Orchestra: 9.40, "The Bond Maid" and "Timothy," Miss May Stokes (contralto); 9.50 "Ave Maria" and "Love's a Merchant" Miss A. Sparkes (mezzo soprano); 9.57 Selection by Orchestra and the National Anthem.

Wireless communication is then the primitive form, but its limits depended upon the muscular force of the sender's vocal organs. The Indians would place their heads upon the ground to hear the approach of beasts or foe. The ground was the medium to vibrate. Very early man noticed that if some medium could be made to vibrate, distance transmission would be increased.

He Knows Now.

Young Wife: Before we were married, Percy, you never smoked in my presence.

Young Husband: I know it, my dear, and you never wore curl papers in mine.

—"Yale Record" (U.S.A.)

FOR SALE—Twenty Yard Aerial, complete with fifteen feet masts and Telephone Head Set. Apply, Frank Smith, Box 2234, G.P.O., or City 9148.

MEMBER OF BSL BROADCASTERS SYDNEY LTD

Broadcast License Forms

May be obtained from the following firms:—

L. P. R. Bean and Co., 229 Castlereagh Street.
Continental Radio Co., Equitable Buildings, George St.
Colville-Moore Wireless Supplies 10 Rowe Street,
Electricity House, 387 George Street.
Home Electrics, 106a King St., Sydney.
N. P. Olsen, 18 Hunter St., Newcastle.
O. H. O'Brien and Nicholl, 37-39 Pitt Street.
Pitt, Vickery, Ltd., 335 Pitt St.
Pacific Radio Co., c/o Edgar A. Henry, 121 Pitt St., Sydney.
Radio House, 619 George St.
Radio Company Ltd., 15 Loftus Street.
Ramsay Sharp and Co., Ltd., George St.
Universal Electric Co., 244 Pitt Street.
United Distributing Co., Ltd., 28 Clarence St.
Wireless Supplies Ltd., 21 Royal Arcade.
W. Harry Wiles, 62 Goulburn Street.

Further Lists will appear each week as Agents are appointed.

Published by W. J. Maclardy, of 58 Murdoch St., Cremorne, for the Proprietors and Printers, Publicity Press Ltd., 33/37 Regent St., Sydney.

Natural Production

"ATLAS" AMPLITONE LOUD SPEAKER

PRICE £8-0-0

THE prime distinction between the *Atlas Amplitone* and other loud speakers is that the *Amplitone* is first of all a musical instrument. It rePRODUCES, not a semblance,. but the full, clear, natural tones of the music as actually sung or played. It is the same distinction as that between the old fashioned wax cylinder tin horn, scratchy phonographs of a few years ago and the finest phonographs of to-day, whose reproductions deceive even the trained ear.

The rich mellowness of the violin, the brilliance of flutes and piccolos and the various toned notes of the voice are re-PRODUCED *naturally* on the Amplitone. Musical critics and radio enthusiasts who have heard the Amplitone, agree that, at last, the musical superiority of even the finest phonographs has been surpassed.

The Amplitone re-PRODUCES with truly amazing fidelity and naturalness the music and speech of broadcasted programmes. It is non-distorting and will not blast.

THE DOUBLE DIAPHRAGM.

This astonishing faithful re-PRODUCTION is largely due to a patented construction known as "the double composition diaphragm"—the exclusive feature of the ATLAS AMPLITONE, Loud Speaker. It compensates for the shortcomings of broadcasting and receiving conditions and gives you the programmes clear, sweet and natural.

OTHER ADVANTAGES.

The Atlas Amplitone is unbelievably sensitive, responding as readily to very weak as to the stronger impulses. Requires no storage battery to energise the magnets and gives splendid results, even with a single stage set.

Trade enquiries invited
Sole Distributors for N.S.W.

BOOK YOUR ORDERS EARLY
Only a Limited Number Arriving

COLVILLE-MOORE WIRELESS SUPPLIES

10 ROWE STREET
SYDNEY
Telephone B2261

BROADCAST RECEIVING SETS AND LICENSE FORMS

Together with the FREE SERVICE of Broadcasters (Sydney) Limited may be obtained from the following

L. P. R. Bean & Co.
229 Castlereagh St., Sydney.
Telephone: City 353.

Ramsay, Sharp & Co. Ltd.
217 George Street, Sydney.
Telephone: City 3176.

United Distributing Company Ltd.
(Wholesalers)
28 Clarence Street, Sydney.
Telephone: City 3566.

W. Harry Wiles
60-62 Goulburn Street Sydney.
Telephone City 3688 1 door from Pitt St.

Wireless Supplies Ltd.
21 Royal Arcade, Sydney
Telephone: M 3378.

Pitt, Vickery Ltd.
335 Pitt Street, Sydney
Telephone: City 6053.

E. R. Cullen
96 Bathurst Street
Telephones: City 869, 2596.

Radio Company Limited.
15 Loftus Street, Sydney.
Telephone: B 5586.

Radio House
619 George Street Sydney
Telephone: City 1487.

Colville-Moore Wireless Supplies
10 Rowe Street Sydney.
Telephone: B2261.

Continental Radio & Electric Company
Equitable Buildings, George St., Sydney
Telephone: B 2467.

The Home Electric
106a King Street, Sydney.
Telephone: B 5565.

Pacific Radio Co.
Temporary City Address:
2nd Floor, 121 Pitt St.. Sydney.
And 38 Donnelly St., Balmain.

O'Sullivan's Electric Shop
(Frank E. O'Sullivan)
296 Pitt Street, Sydney.
Telephone: City 8070.

Swains
119-123 Pitt Street, Sydney.

N. P. Olsen,
18 Hunter Street, Newcastle.