

RADIO

IN AUSTRALIA
& NEW ZEALAND

Incorporating Sea, Land and Air

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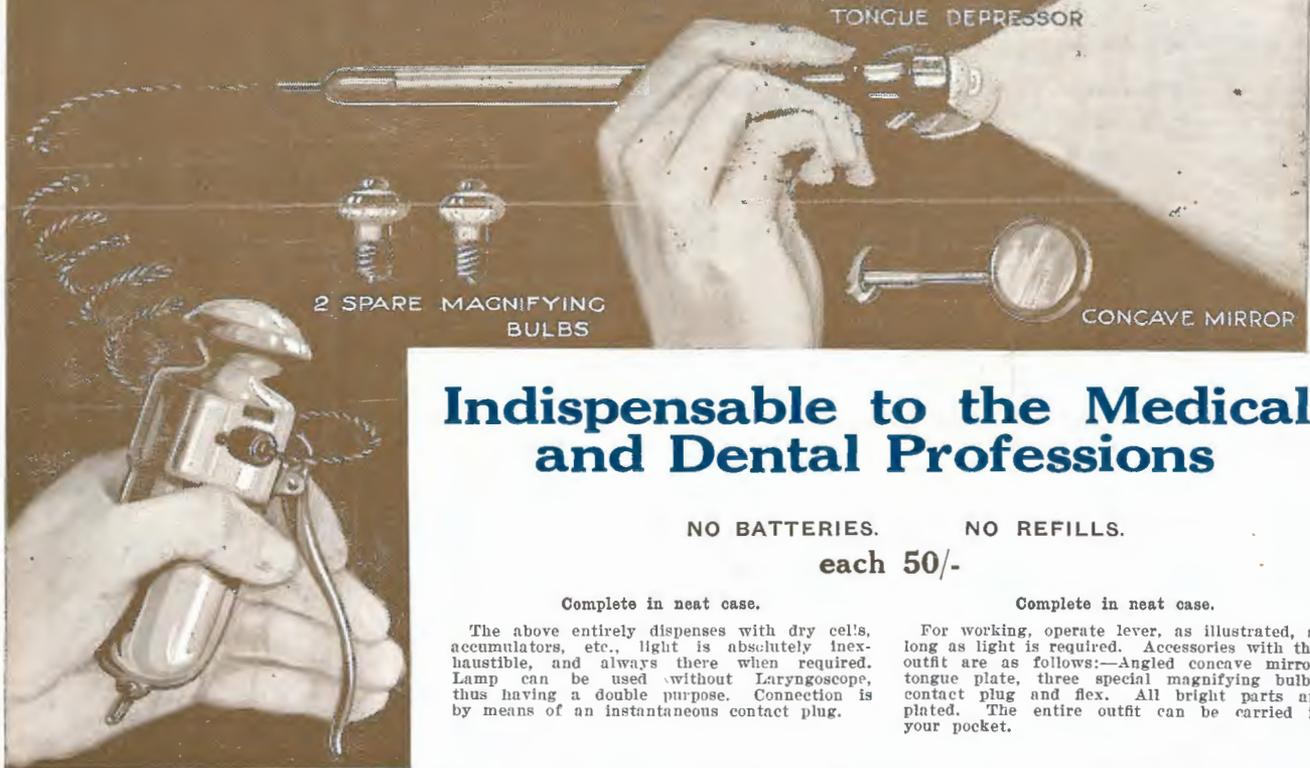


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TONGUE DEPRESSOR

2 SPARE MAGNIFYING BULBS

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Indispensable to the Medical and Dental Professions

NO BATTERIES. NO REFILLS.
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Complete in neat case.

The above entirely dispenses with dry cells, accumulators, etc., light is absolutely inexhaustible, and always there when required. Lamp can be used without Laryngoscope, thus having a double purpose. Connection is by means of an instantaneous contact plug.

Complete in neat case.

For working, operate lever, as illustrated, so long as light is required. Accessories with this outfit are as follows:—Angled concave mirror, tongue plate, three special magnifying bulbs, contact plug and flex. All bright parts are plated. The entire outfit can be carried in your pocket.

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The "Electro-Automate" is a self-generating Electric Pocket Lamp, the construction of which is carefully carried out by specially skilled clock-makers.

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The "Electro-Automate" will everywhere render the utmost service, giving at will a clear white light.

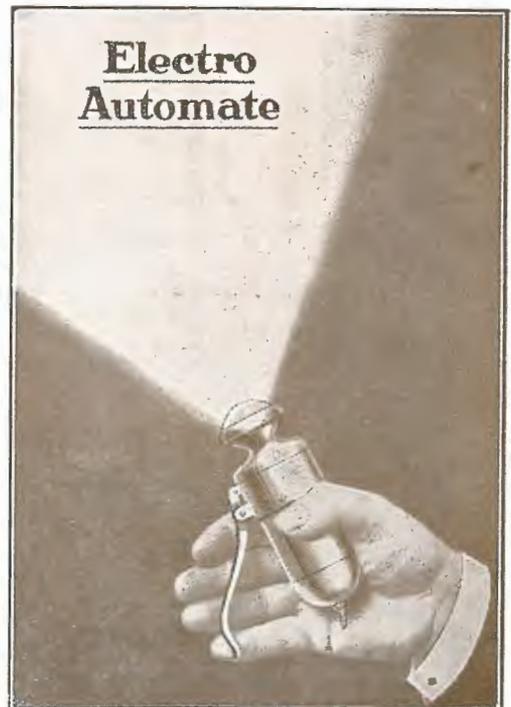
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If your dealer cannot supply RADIOVOX write to us. Prompt deliveries assured.

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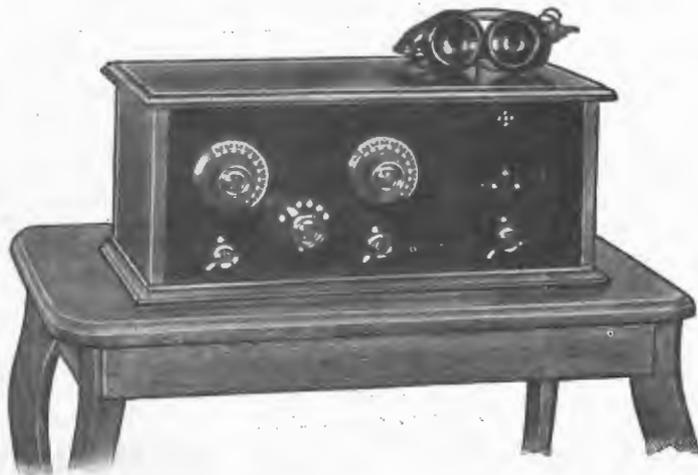


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Furnished complete with batteries, headphone, valve, aerial and all equipment. Retail price £20

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Broadcasting is Here.

IT is many months since the question of broadcasting in Australia was first seriously considered, and in the interval quite a number of people have expressed disappointment at what they considered the unnecessary delay in making a beginning.

ACCEPTING ex-President Wilson's maxim that "discontent is the motive power of progress" as correct such disappointment can only be regarded as a healthy sign.

IF it were not generally recognised that broadcasting is a new and valuable factor in modern life no one would be sufficiently interested to care whether it made a beginning early or late, or not at all.

NOW that two stations in N.S.W. are in operation it may be expected that public interest will soon be at fever-heat, and those who have spent much time and

money in making this new home entertainment available to the great mass of the people will reap a reward commensurate with the service they are rendering.

WE need nothing more than the experiences of America and England to feel assured that broadcasting is not the passing craze some people would have us believe.

IN both countries named it has developed into an institution—something which fills a more important place in the daily life of the people than was thought possible a few years ago.

THERE is far greater need for broadcasting in Australia than in most countries of the world, and that fact, allied to the excellent foundation which has been laid here for the transmission of high-class programmes is a guarantee of success.

A Successful Exhibition.

AT the moment of writing it is impossible to give any final figures regarding the Wireless and Electrical Exhibition which was held in the Sydney Town Hall from December 3 to 8, but it can safely be said that it was a huge success.

FROM the opening session, when sincere good wishes for its success were uttered by the Acting-Prime Minister (Dr. Earle Page), who performed the official ceremony, the public attendance was such as to fill the hearts of the organising body—the Wireless Institute of Australia—with feelings of satisfaction.

IN stressing the educational value of the Exhibition, so far as the general public are concerned, Dr. Page emphasised that the present is "an electrical age."

"**IN** other countries of the world," he said, "the people are daily making more and more use of electrical energy for all forms of industrial and home work, and Australia must follow suit."

TOUCHING on the value of wireless, Dr. Page declared that if it could do no more its existence had been justified by the extent to which it had lessened danger for those who "go down to the sea in ships."

"**BUT**," he continued, "it has evolved a new and infinitely useful characteristic in that it enables us to girdle the earth in one-seventh of a second.

"**ITS** possibilities for speedy, long-distance communication are only now beginning to be realised," he continued, "and the advent of broadcasting means that 'wireless for all' is no longer a dream, but a reality."

IN putting the position so clearly and forcibly, Dr. Page displayed a grasp of his subject which is the best possible evidence that those charged with the government of Australia are fully alive to the value and possibilities of wireless communication and electrical energy.

VIEWING the Exhibition in the light of a display organised to bring the general public into first-hand touch with the tremendous advance in wireless and electrical science in recent years, and the skill and ingenuity of Australian engineers and experimenters, it must be written down as an unparalleled success.

THE liberal public patronage bestowed upon it should leave no doubt in the minds of the organisers that the huge amount of work and worry it involved was well worth-while.

Wireless and Electrical Exhibition

Great Display in Sydney Town Hall

Notable Gathering at Official Opening

This is an electrical age! In other countries of the world, notably America, the greatest possible use is being made of electrical energy, and if Australia is to march step by step with those nations she, too, must utilise more and more this wonderful power which has added so materially to the safety and pleasure of life, and has destroyed so much of its drudgery.

—Earle Page, Acting-Prime Minister of Australia.

MONDAY, December 3, was a proud day for wireless and its ally electricity, in Australia.

On that day a notable gathering headed by Dr. Earle Page, Acting-Prime Minister of the Commonwealth, assembled in the basement of the Sydney Town Hall to officially open the first wireless and electrical exhibition yet held in Australia.

For many months past the N.S.W. Division of the Wireless Institute of Australia—the pioneer radio body in the Commonwealth—had been hard at work organising the Exhibition.

From the very outset a strong measure of support was forthcoming from the various radio and electrical interests in Sydney. Realising that the Exhibition was destined to assume very great dimensions as the work progressed the Council of the Institute decided to appoint an official organiser, Mr. F. H. Daniell, to control the work.

Previously, Mr. O. F. Mingay, of the Institute Council, had filled the role of honorary organiser with conspicuous ability, but pressure of business prevented him from shouldering the huge task which the organisation of the Exhibition involved.

Accordingly, Mr. Daniell took the work in hand, and the success he achieved was more eloquently testified to by the Exhibition itself than any words could convey.

He received valuable assistance from Messrs. C. D. Maclurcan (president), P. Renshaw (secretary), and the whole Council of the Institute. If

all concerned did not feel proud of their efforts from the moment the Exhibition opened they are more modest than they have any right to be.

OFFICIAL OPENING.

Those on the platform for the official opening included Dr. Earle Page (Acting-Prime Minister), Hon. R. T. Ball (N.S.W. Minister for

"On the occasion of the opening of the first Wireless Exhibition in Australasia, I wish to congratulate you all on your enterprise, hoping that the increase in popularity of this recent adaptation of science for general usefulness and popular enjoyment will aid in annihilating distances between ourselves and help to cement better friendships and concord amongst all nations of the world."

GUGLIELMO MARCONI.

Works), Mr. C. D. Maclurcan (President of the N.S.W. Division of the W.I.A.), Mr. Bowden (Minister for Defence), Mr. E. T. Fisk, His Grace Archbishop Kelly, Mr. G. A. Taylor (President of the Association for the Development of Wireless in Australia, N.Z. and Fiji), Mr. P. Renshaw (Secretary Wireless Institute of Australia), and Mr. C. J. Parr (New Zealand Minister for Education).

The hall was comfortably filled with spectators and the greatest possible interest and enthusiasm was displayed.

Before calling on Dr. Page to officially open the Exhibition, Mr. P. Renshaw, Secretary of the Wireless Institute of Australia (N.S.W. Division) paid a tribute to those who had assisted so materially in making the Exhibition a success.

Particular mention was made of the great work done by the Management Committee:—Messrs. R. B. Hungerford, Edward Hirst, E. T. Fisk, C. D. Maclurcan, O. F. Mingay, and Major Newman also Mr. G. A. Taylor, editor of the souvenir booklet.

Mr. Renshaw also paid a tribute to the members of the Experimental Committee, Messrs. C. P. Bartholomew, R. C. Marsden and J. A. Pike, as well as the Town Hall officials.

Included in the list of congratulatory messages which had been received, Mr. Renshaw mentioned those from Hon. S. M. Bruce, Prime Minister of Australia, Hon. W. G. Gibson, Postmaster-General, Sir Geo. Fuller, Premier of N.S.W., Hon. H. S. W. Lawson, Premier of Victoria, Hon. E. G. Theodore, Premier of Queensland, and the Premiers of South Australia, West Australia and Tasmania.

At a later stage Dr. Earle Page, read a cable message which had just come to hand from Senatore Marconi in London. The message appears on this page.

Mr. W. Poole, President of the Institution of Engineers, in accepting the chairman's invitation to speak emphasised the keen interest which is being taken in wireless throughout the country.

In a recent visit to Central Queensland he found the young generation were fully alive to the wonders of wireless, and the whole population was awaiting the commencement of broadcasting.

Hon. R. T. Ball, N.S.W. Minister for Works, in apologising for the absence of Sir George Fuller, said he personally, and the Government as a whole, fully recognised the possibilities of radio broadcasting and would

asked to officially open the Exhibition, Dr. Earle Page said that pleasure was intensified by the fact that it was promoted by an amateur scientific body.

"The discovery and utilisation of wireless," he continued, "is probably the most remarkable achievement of the last 100 years. It was a remarkable thing to have enabled us to girdle the earth in one-seventh (1/7th) of a second, and it gives pro-

the Empire, and the fact that Australia is a huge island reached only by sea, and secondly, because of her own vast spaces and their present sparse population.

"In dealing with the isolation of Australia it must be remembered that wireless has already, to a great extent, annihilated distance. Take the case of *trans-ocean wireless*. One of the greatest benefits that radio communication can offer



Dr. Earle Page (Acting- Prime Minister) officially opening the Exhibition.

do everything possible to help it fulfil its destiny in N.S.W., viz., that of spreading news and entertainment to residents outback.

"It is satisfactory to know," he said, "that when 'listening in' one can always shut out what one does not wish to hear."

Mr. G. A. Taylor, President of the Wireless Development Association, paid a tribute to the Federal Government for the business-like way it had tackled the admittedly difficult task of framing suitable broadcasting regulations.

ACTING-PRIME MINISTER'S SPEECH.

In expressing his pleasure at being

mise of becoming more universal in its effects and consequences than any other single discovery. It has already revolutionised communication and is really the crowning triumph of a series of electrical developments since the discovery of electricity.

"In the case of shipping alone wireless has completely changed the position of those who 'go down to the sea in ships,' and already in the few years since it was first utilised, has been the means of saving many thousands of lives.

"Wireless is of immense importance to Australia, first by reason of our geographical isolation; by the immense distances from other parts of

to Australia is the provision of direct telegraphic communication between Australia and all the other important world centres. Australia needs additional avenues of communication, faster routes and cheaper rates with the heart of the Empire, and also more effective communication with other important world centres, such as North America, South America and the Far East. This offers further great possibilities and advantages to the commercial and social life of the Commonwealth. It will place our primary producers on a better footing than in the past in comparison with such an important competitor as the Argentine Republic.

lie. It will encourage Migration by keeping us in closer touch with the people of the Old World, and it will be invaluable for defence.

"This great scheme has had to overcome much opposition, but that is a phase of all new things in this world, and very often the degree of opposition is a measure of the importance of the proposed innovation and a very good indication that it will be successful.

"We must remember that the laying of the Pacific cable more than 20 years ago was opposed in very much the same manner and

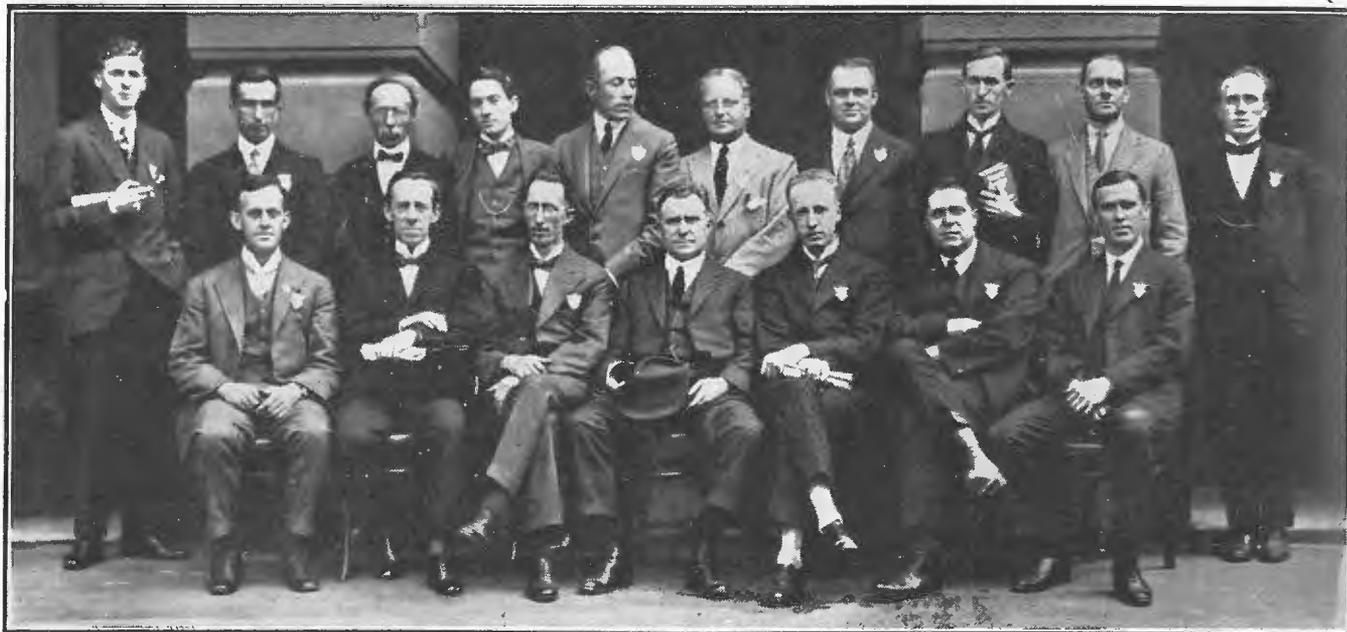
tion for Australia, and has been arguing very consistently for it. The Government has gone on with the arrangement made by the last Parliament for the establishment of the high-power wireless station that will be able to speak direct with all parts of the Empire without any relay stations. Already tenders have been called for the erection of the Australian part, and it is hoped that some finality will be brought about by Mr. Bruce in England that will enable us to secure a station at the other end capable of communicating direct to Australia.

"The Government has a definite policy in this connection which has been elaborated by Mr. Gibson.

BROADCASTING.

"In regard to broadcasting," said Dr. Page, "the Commonwealth Government desires to encourage this phase of wireless to the fullest possible extent, particularly because of its value to out-back settlers.

"If sufficiently powerful stations can be erected at the principal cities to broadcast to the remotest settlement very great benefits will be derived by all sections of the commun-



AT THE OPENING CEREMONY OF THE WIRELESS EXHIBITION.

Seated, left to right: Mr. F. Basil Cooke, F.R.A.S., Mr. G. A. Taylor (President, Association for the Development of Wireless), Mr. C. D. Maclurcan (President of the Wireless Institute), Dr. Earle Page (Acting-Prime Minister), Messrs. P. Renshaw (Hon. Sec. of the Wireless Institute), R. C. Marsden (Experimental Committee), J. H. A. Pike (Experimental Committee). At the back: Messrs. P. D. Charlesworth, H. A. Stowe, E. B. Crocker, S. V. Colville, E. T. Fisk, M.I.R.E. (Management Committee), E. E. Hirst (Management Committee), W. H. Newman, H. R. Gregory, V. C. Bagot and J. Badger.

probably by the same people as is the great Australian Wireless scheme.

"Radio communication is specially important in removing Australia's isolation from other parts of the Empire, and its further development, by assuring continuous connection with other parts of the Empire—and especially with England—will be of great assistance to us in discussing Empire problems and in maintaining a definite, coherent and connected Empire policy.

"Mr. Bruce has shown in England that he is fully seized with the extreme importance of wireless connec-

"The domestic importance of wireless to the Commonwealth can be readily realised if one considers our enormous spaces. We are 2,000 miles from North to South, and 2,500 miles from East to West, and we have 12,000 miles of coastline. All of our great area is sparsely populated with only 1.91 to the square mile. In ordinary circumstances we would be forced to wait many years before telephone lines could be constructed to cover these spaces, which, however, may be brought into communication one with another by means of wireless stations almost at once.

ity. The man who lives outback and produces our primary wealth could receive from those stations weather forecasts and general meteorological information within a few minutes of its being produced by the Meteorological Department. He could get valuable information about the city and oversea markets—not a week old as in some cases at the present day—but as promptly as if he were living in the heart of the city itself. Every morning he would get the same world's news as the city man, and again in the evening, during his spare moments, that lack of contact with his

fellowmen would be overcome by wireless. He could listen to the operas, concerts, orchestras, and the popular addresses in the city as they actually take place.

"These great benefits must be provided on the best possible lines and with every possible assurance of efficiency and permanence.

"The Government has, therefore, realised the importance of launching wireless broadcasting in Australia on the soundest possible basis, both economically and scientifically. We have to provide broadcasting here over an area 35 times greater than that of Great Britain, for a population of approximately 1/10th less. With a population not exceeding 1/20th of that of the United States we have to cover practically the same area.

ELECTRICITY IN THE HOME.

"I notice," continued Dr. Page, "that in addition to wireless apparatus, the Exhibition includes power equipment and domestic electrical apparatus. It would therefore not be inappropriate if I touch briefly upon the question of standardisation of electrical power, and of a comprehensive national scheme for cheap power production in Australia. The vital importance of these matters cannot be too greatly stressed.

"In every other important country in the world definite legislation has been passed aiming at the standardisation of electrical power. The Commonwealth Government is hoping to secure similar legislation in the near future. At the Premiers' Conference we brought forward a definite practical national scheme. The position now is that the matter has been referred to the Commonwealth Engineering Standards Association, and men the most eminent in their professions have been nominated to represent the various States on an Advisory Board throughout the Commonwealth. Next year the Government hopes to be in a position to carry legislation in this regard for the whole of Australia.

"In conclusion," said Dr. Page, "I again desire to emphasise the possibilities of wireless which are so varied, and touch so many avenues of our social, commercial and industrial life, and have such an important bearing on defence.

(Continued on page 460.)

"A Revelation."

Farmer's Broadcasting Service.

Unanimous Chorus of Praise.

THE first of the preliminary tests which were conducted from Farmer's Broadcasting station on Wednesday evening, December 5, gave Australian "listeners-in" their first taste of high-class broadcasting.

Prior to that date there were many scoffers who openly declared that broadcasting might be a utility, but it could never be an entertainment. The revulsion of feeling after hearing the first tests from Farmer's station, working on considerably less than one-tenth of its power was remarkable.

Mr. Chas. Maclurcan, perhaps the best-known of Australian experimenters, "listened-in" to the first part of the programme from the Sydney Observatory, and the last part from his home at Strathfield.

His opinion, which has since been endorsed by such well-known gentlemen as Mr. Phil. Renshaw (Secretary of the Wireless Institute of Australia), Mr. Leslie Holland, Mr. Wallace Best, and numerous others, was brief but to the point.

"It was a revelation to me," said Mr. Maclurcan. "It was not merely **good wireless music**, it was **good music!** The concert items were excellent, and the modulation wonderful. I am satisfied now that broadcasting will prove, not only a great utility but a wonderful home entertainer.

"I think all concerned in the undertaking are deserving of the greatest praise."

Another gentleman, who was in England when broadcasting commenced there, declared that the tests from Farmer's station on the first three nights were much better than the British broadcasting stations during the latter's testing period.

Broadcasting Station 2FC

Farmer & Company Ltd. Commence Operations

An Auspicious Opening

BROADCASTING on an exceptionally large scale has now commenced in Australia. The big high-powered Wireless Station, which has been erected at Willoughby for Farmer & Co., Ltd., for use in connection with the broadcasting service which they have inaugurated, is practically completed, and has reached a stage when it is possible to conduct the necessary tests of apparatus. The initial tests have already commenced and will be continued for a short time preparatory to the regular broadcasting programme being initiated.

The Directors of Farmer & Company, Limited, aim at giving subscribers wireless broadcasting under the best possible conditions and also regular programmes of the highest quality. To ensure this result extensive experiments are being conducted during the preparatory period and the Company is seeking the co-operation of all amateurs who have been asked to communicate by letter with the Company and give reports of the



Mr. B. O. JONES,
Wireless Broadcasting Manager for
Farmer & Company, Ltd., Sydney.

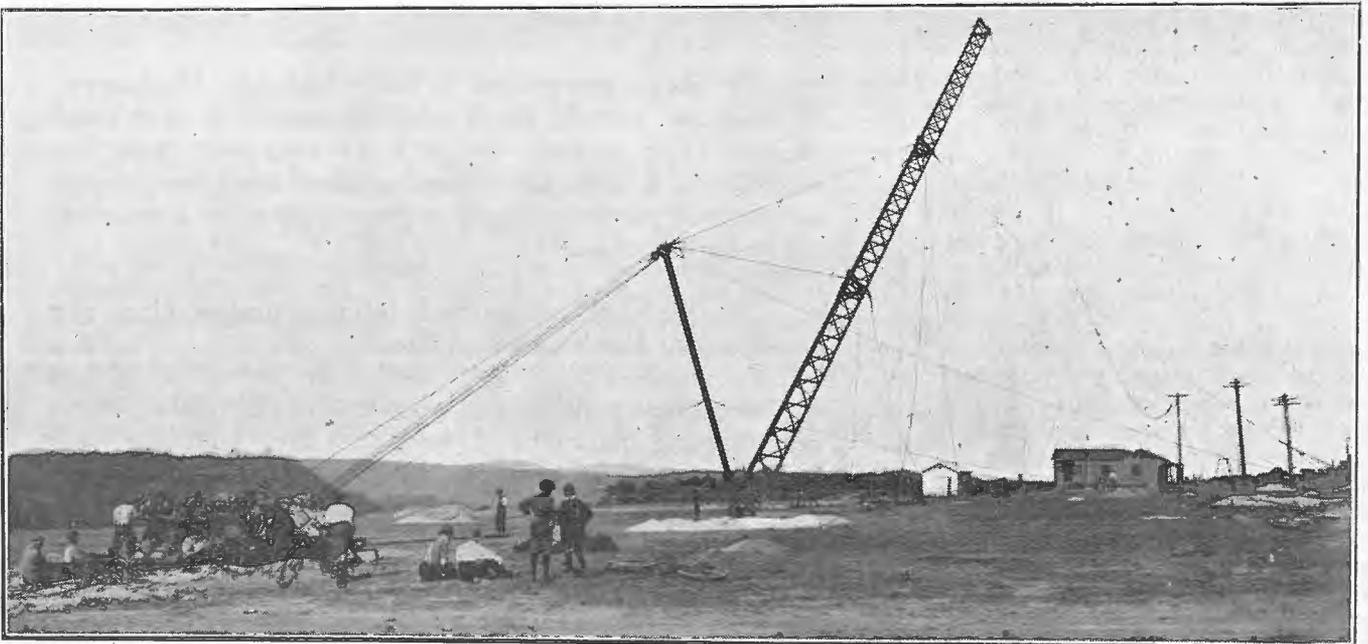
service as they receive it during the testing period. The same broadminded and progressive spirit which has characterised all Farmer & Company's dealings in other branches of the commercial world is now exhibited in this new venture.

Farmer & Company realise the experimenters are in a position to criticise and that their opinion regarding the reception of the broadcast programme counts for a good deal. The Company has asked experimenters to point out what they consider faults, report these, and also make suggestions regarding improvements which might be made.

FARMER'S BIG STATION.

Situated at the highest point of Willoughby, covering a large area of ground and overlooking the upper reaches of Middle Harbour is Farmer & Company's station, which is officially known as "2FC." It is the largest, most powerful and most modern station in the Southern Hemisphere.

The two steel towers which support the aerial system are each two hun-



Hoisting the first huge 200 ft. steel lattice mast at Willoughby.

dred feet high and are built in a lattice fashion. The distance between these towers is 575 feet, and across this space the aerial system is stretched. Situated directly beneath the aerial and almost in the centre of the two towers is the operating house and quarters for the staff. A large room houses the 5,000 watt set which is to be used for the transmission of programmes, and also the smaller 500 watt set.

Adjoining the Instrument Room are the living quarters, bedroom and bathroom for the Operating Staff, and situated some little distance away is a large storehouse.

The aerial is the squirrel-cage type and consists of four wires stretched taut and kept in position by means of huge brass hoops which are secured at regular intervals along the wire, and to which the wire itself is attached. Special attention has been given to the "earth" system which is most elaborate. No direct contact is made with earth, but a complicated earth-screen has been constructed. This comprises a counterpoise arrangement, the wire used in connection with it being supported by small steel masts, each carrying heavy insulators, and holding the earth-screen a distance of about 15 feet from the ground.

A special steel tower, set in concrete, is erected near the side of the operating room and to this tower the lead-in from the aerial is led and a connection is also made with the lead from the earth-screen. This small tower stands upright against the house and from it the various wires are carried by heavy insulators to the actual instruments.

UP-TO-DATE STUDIO.

The actual programmes of speech and music which are being transmitted in connection with Farmer's Service are provided in an elaborate studio which has been constructed on the Roof Garden of the Company's premises in Pitt Street. A land-line conveys the speech and music to Willoughby where it is transmitted. The studio has been constructed at considerable expense from plans and specifications obtained after consultation with representatives of broadcasting interests in all parts of the world. No stone has been left unturned to ensure the very best results

being achieved and the studio itself has been planned accordingly.

Constructed in a special manner so as to be sound-proof, it comprises a

large and a small studio, the Instrument Room and a special Reception Room for the artists. The Instrument Room adjoins both studio rooms and the operator is able to watch the progress of the concerts being broadcast through a special double sound-proof plate-glass window.

Walls and ceilings have been scientifically draped or "damped," so as to deaden all sounds and echoes and the floors have been carpeted with thick felt. All doors are double and have been constructed in a sound-proof manner.

The use of two transmitting rooms should result in there being very little delay, the Director of the service being able to arrange his artists in one room while the item is actually being rendered in the other.

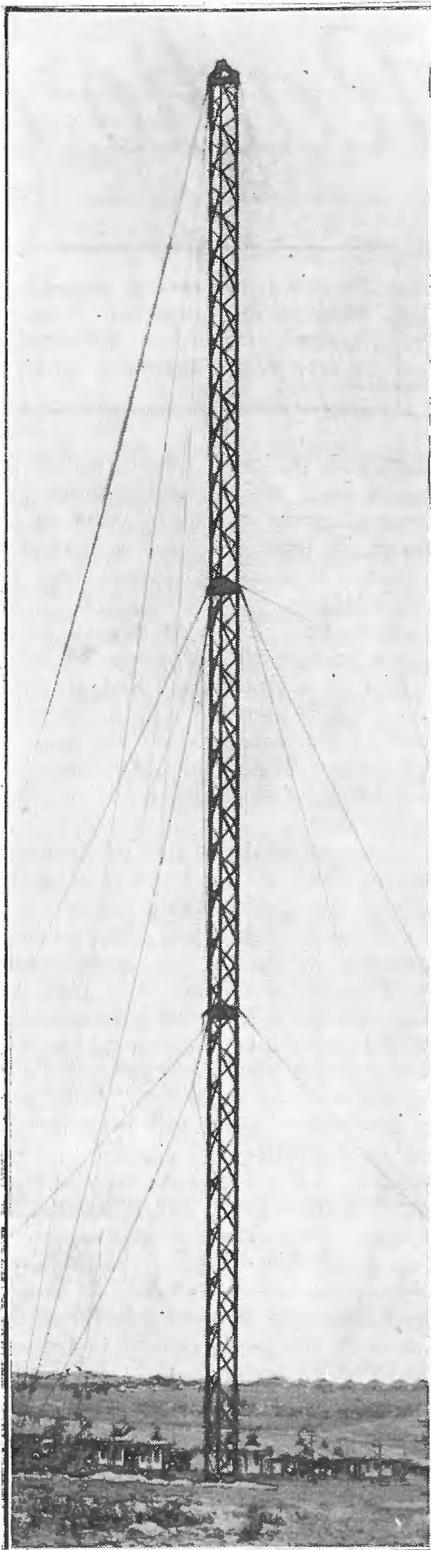
The microphones into which the artists will sing are kept in the studio and the sound is stepped-up before being carried by telephone wire to the station at Willoughby.

A special series of switches enables the operator and studio manager to control the operation of the studio with the utmost simplicity, and a series of signal lamps has been arranged so as to give full warning to artists and staff when the station is in operation.

Much has been said recently regarding the operations of broadcasting companies in other parts of the world and there has been much anticipation of a commencement in Australia. When Farmer's studio and station is in full swing which, it is anticipated, will be the case very shortly, Australia should be in the happy position of being the possessor of the most up-to-date, powerful and complete broadcasting station in the Southern Hemisphere.

Personal

Mr. J. W. Robinson, who is well-known to all wireless experimenters, has resigned from the Literary Staff of the *Sydney Morning Herald*, in order to join Farmer & Company's Wireless Broadcast Service. Mr. Robinson, who has been one of the keenest experimenters in the State, has expressed his intention of still carrying on his amateur activities. He is at present working at high pressure in connection with the re-organisation of the Australasian Radio Relay League.



The first aerial mast (200 ft. high) to be erected at Farmer's Broadcasting Station at Willoughby.



The Radio King

Published by special arrangement with Universal Films. Adapted from the Universal Chapter Play, "The Radio King."



The Characters of the Story.

Marnee—known as the Electrical Wizard, is seeking to gain world dominance by medium of his extraordinary knowledge of radio telegraphy.

Bradley Lane—a young millionaire who is an ardent student of criminology, and an enthusiastic experimenter in radio.

Lane is in love with—

Ruth Leyden—the confidante and right hand assistant of John Leyden, her father, who has perfected a device for recalling radio messages from the air.

Jimmie, known as the Boy Detective, is an orphan who has been rescued from the clutches of Marnee, by Bradley Lane.

Fatty Ewarts, a radio enthusiast of humble parents, who is endeavouring to construct his own radio set, under the guidance of Bradley Lane.

Our last instalment finished when we read of the successful attempt by Lane to set fire to the ship. In the panic which ensued the three unfortunates, Ruth, Jimmie and Lane, were forgotten, but only for a few moments for Marnee returned and locked them in the cabin, leaving them to their fate.

TO be left on a burning ship laden with explosives and with a fighting chance would have been an ordeal, but when the three adventurers found themselves locked in a cabin without the slightest hope of escape and faced with a terrible end, it struck fear into their hearts.

The conspirators had hardly made good their escape in the boat when a deafening roar rent the air. The fire had reached the explosives, but fortunately the full force of the explosion had driven away from the three prisoners and its only effect was to hurl them amidst the debris into the sea. Fortunately all three could swim and by clinging to the wreckage they

managed to keep afloat until the police boat which all the while had been pursuing the ship, came on the scene in time to effect a fortunate rescue. Meanwhile Marnee and his confederates had effected a timely escape, and, knowing of no better place to seek shelter, secluded themselves in Chinatown. But thinking the opportunity too ripe to let slide, two of the conspirators are sent off to shadow Lane and his companions and to advise the Council of their whereabouts.

Lane, reluctant to give up his quest, leaves Ruth at the house and makes off to the underworld, accompanied by Jimmie. Ruth left alone appears an easy victim for the conspirators, who have been shadowing her, and they enter the house and threaten her with sundry dire penalties if she does not disclose the secret of the dictaphone cylinder. Failing in this they make her prisoner and move her to another locality in case Lane might return. Lane has meanwhile arrived at Chinatown and, after many false scents, locates Marnee, just in time to learn that his movement for domination of the world has failed in Europe and that the Wizard places all his hopes in the perfection of the master wave which he has been endeavouring to perfect for months. So absorbed is Lane in the excited conversation of the Brotherhood that he failed to hear the approaching footsteps behind him. Two of the conspirators returning to the meeting place unexpectedly came upon him and bound and gagged him. Thus again he found himself in the hands of his arch

enemy. Further experimenting, Marnee at last succeeds in perfecting the Master Wave and derives great delight in gloating over his success before Ruth and Lane.

But the secret of the cylinder is still unsolved. The diabolical mind of the Wizard of Electrics has conceived a scheme which he immediately commences to put into effect. Lane, bound and gagged as he is, is placed in an iron case in keeping with the scheme. Ruth, the holder of the secret, is addressed by Marnee:

"You are the only person other than your father who has held the secret code of the dictaphone. Under this house is a canal connecting with the bay—a canal from which there is no escape. Your lover, Bradley Lane, imprisoned as he is, will be cast into that canal unless you tell the secret."

Horrified at such a proposal Ruth is overcome and faints away. In the confusion which follows a stranger wearing a black hood and mask, silently approaches from one of the recesses of the room, and smashes the cylinder. His mission finished he returns as mysteriously as he appeared. Ruth not knowing the cylinder has been smashed, decides to tell her secret to save Lane, who is immediately released and stands with her. A search for the cylinder, shows it on the floor in pieces and Ruth and Lane, taking advantage of the ensuing uproar quickly make their escape.

Returning home Lane commences to operate the radio recalling apparatus perfected by Ruth's father and succeeds in learning the moves and jamming all calls of Marnee. He

learns that the conspirators, heartily disgusted with continual failure, have decided to give up their idea of dominating the world and have deserted Marnee, who in his frenzy is sending out appeals for further co-operation from the other branches of the illicit organisation.

But Marnee's day is finished. The fiendish high tension apparatus which he devised to destroy human life is set in motion by one of the deserters of the Brotherhood and the misshapen body and twisted mind of Marnee are hurled into eternity.

Ruth's father, who it will be remembered mysteriously disappeared many weeks before, again appears. He is the mysterious stranger who destroyed the cylinder

He explains that when Marnee entered his laboratory he made his escape by sliding through a trap in the floor, and having once disappeared it was advantageous to his plans to allow the world to believe him dead.

As a happy sequel Ruth and Lane, each finding in the other a life's mate, are quietly married.

THE END.

Lismore "Makes Good"

Radio Clubs Enterprise

An idea well worthy of emulation by country radio clubs was carried out by the Lismore and District Radio Club when they staged an exhibit at the annual show of the Lis-

and telephony. Great interest was shown, especially by farmers and others living outside the urban areas, and it was clearly demonstrated that the interest in wireless is indeed

BRIGHTEN YOUR HOME AT XMAS.

Brighten your home this Xmas by installing a broadcast receiving set. It will minister to the enjoyment of the family circle such as no other gift can possibly do.

The whole family will enjoy it, and the pleasure will not be a fleeting one, but will last the whole year round — and longer.

more Agricultural Society on November 20, 21, and 22 last. A home-built receiving set by one of the members, Mr. G. Wells, was on view and the secretary and other members were present to explain to interested people the various parts, and the why and wherefore of wireless telegraphy

widespread. As a result of this propaganda over fifty new members were enrolled.

Radio offers its congratulations to the Lismore Club on the enterprise displayed in staging an exhibition at the local Show. Such efforts will do a tremendous amount of good in educating country residents to the possibilities of wireless.—Ed.

"Burginphone" Broadcasting Receivers

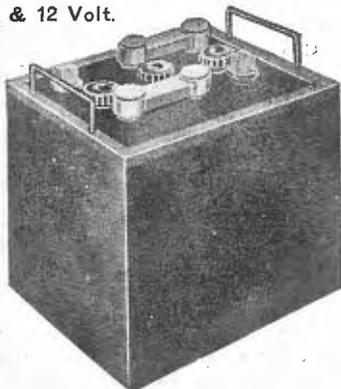
Listen in on the Broadcasting with a "BURGINPHONE," which is designed and manufactured in Australia to suit Australian conditions and regulations. Receivers to suit all conditions such as Suburban Homes, Country Homes, Stations, Farms and every and any place in Australia.

DON'T BE MISLED! WRITE TO US AND WE WILL HELP YOU TO SECURE THE LICENSE AND SERVICE TOGETHER WITH YOUR RECEIVING SET.

We are Agents for Farmers Broadcasting Service and can Collect all Fees.
ONLY THE BEST PARTS USED IN "BURGINPHONE" RECEIVERS.
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(MADE IN ENGLAND).

IF YOU REQUIRE A BATTERY FOR YOUR WIRELESS OUTFIT, INVESTIGATE THE "TUDOR" — BRITAIN'S BEST BATTERY.

Special Concessions to Amateurs.

ELDER SMITH & CO. Limited

4 BRIDGE STREET, SYDNEY.

Tel.: City 7946.

Wireless and Electrical Exhibition

(Continued from Page 455)

"The 'Lonely Bush' has long been a phrase that Australians have not liked. Hence, where we find that by wireless 'the music, song and story' of our city can be spread to the most remote of country homes that word 'lonely' will be eliminated from Australian life, and all who love Australia will welcome the day of the medium, wireless." (Applause.)

GREAT PUBLIC INTEREST.

Long before the hour fixed for the official opening the hall was comfortably filled, and the greatest possible interest was displayed in the various stands with their interesting and well-arranged exhibits.

DAVID JONES' RADIO SECTION.

Directed by
Mr. F. Basil Cooke, F.R.A.S.

Consequent upon the demand for high-grade Wireless Apparatus, David Jones' have installed a special section for the sale of these goods. This presents an opportunity for all interested in wireless to avail themselves of ideal purchasing conditions. Licenses will be issued upon payment of required fee.

Of interest to experimenters — David Jones' have made a special feature of providing all wireless accessories, including the following:—

Accumulators, 2-volt units, priced at	21/- 33/- 40/- and 50/-
Valves, all standard makes, including Cunningham type "300."	
Price	35/-
Type "301A." Price	42/6
Type "299." Price	42/6
Marconi R Valves. Price	25/-
Phillip's Detectors or Amplifiers. Price	22/6
All gauges of Winding Wire kept in stock.	
Silver and Nickel-plated Terminals. Price	6d.
Silver and Nickel-plated Switch Studs. Price	1/6
Transformers, Jefferson type, 45. Price	55/-
Transformers, Jefferson type, 41. Price	37/6
Transformers, Jefferson Star type. Price	37/6

DAVID JONES'
Radio Department,
22 York Street,
SYDNEY.

The section devoted to the display of experimental apparatus attracted a great deal of attention and well merited the many praiseworthy comments made concerning it.

EXPERIMENTERS' SECTION.

The entries numbered 117, and the apparatus ranged from a big valve transmitting set to a tiny receiver nestling snugly in a walnut shell.

The workmanship reflected the greatest credit on those responsible, as well as being a tribute to their skill, initiative and enthusiasm.

As one onlooker remarked, "the future of wireless in Australia is in safe hands when even at this early stage we have experimenters who can turn out such really excellent work."

It must be remembered that up to the present, Australian experimenters have devoted the greater part of their energies to building receiving sets capable of picking up long-wave stations on the other side of the world. Their efforts in this direction have been crowned with success. It is only within recent months that amateurs in America have become sufficiently interested in Australian activities to wish to hear signals from this country. The recent transmission test between Australia and U.S.A. is probably the opening chapter in a series of tests between the two countries and England, leading ultimately to an amateur relay system throughout the world.

All that has ever been said or written concerning the efficiency of Australian experimenters has been well merited, and if there were any unbelievers regarding their ability to combine skilled workmanship with high efficiency the recent exhibition must surely have supplied a convincing answer.

"SEALED SET" FROM WOOP WOOP.

Not the least interesting of the displays was "a sealed set from Woop Woop." The tuner of this set consisted of a beer bottle on which was wound copper wire. To effect tuning an ordinary table fork passes over the wire, the fork being mounted on a piece of wood. One prong only is left and this sometimes makes contact with the wire. The variable condenser consisted of a large jam tin and a

condensed milk tin. To secure variation of capacity an old door knob was fixed on to the condensed milk tin which slides in and out of the jam tin. The crystal detector consisted of a piece of galena mounted in a metal clip from a gentleman's suspender. Many kinds and sizes of wire are used to connect up the set, amongst same being copper, iron and galvanized iron wire. The components of the set were mounted on a 1-inch thick hardwood base which, judging by its weather worn appearance, may at some time have formed part of the keel of an old wind-jammer. Ordinary white tape is used to seal the "tuner" to the base, one end of the tape is sealed on to the neck of the bottle and the other end on to the base. It is claimed that this "set" will actually work.

THE PRIZE-WINNERS.

The judges in the experimental section, Messrs. C. D. Maclurean and R. C. Marsden, had a difficult task in selecting the prize-winners in the various sections.

Eventually the following awards were made: Transmitters, L. Schultz; multi-valve sets, E. W. Cropley 1, A. E. Starkey 2, H. E. Greg 3; single-valve sets, H. Turner 1, G. Blanchard 2, — Ashton 3; crystal sets, A. L. Prince 1, G. Blanchard 2, R. Wyatt 3; amplifiers, R. K. Thomas; isolated apparatus, H. A. Stowe and H. C. Laphorne.

The allocation of ribbons for the most attractive commercial stand provided a stiff proposition for the judges, Major Newman and Mr. H. A. Stowe, and in the first total of points, three firms New System Telephones Pty., Ltd., Amalgamated Wireless (Aust.), Ltd. and David Jones, Ltd., tied. A re-judging then took place and the final result was:—New System Telephones Ltd., 1; Amalgamated Wireless (Australia), Ltd., 2; David Jones, Ltd., 3, and Farmer & Company, Ltd., 4.

In our next issue we propose dealing fully with the individual exhibits, of which a number of special illustrations will be published.

Other interesting particulars concerning the Exhibition, which were not available when this issue went to press, will also be published.

Radio Relay League

New Queensland Society

Considerable enthusiasm is at present being displayed by radio amateurs in Brisbane in the formation of the Queensland Radio Relay League (as distinct from the Australasian Radio Relay League). A branch of the latter body was inaugurated, but for some reason was dissolved, and the new body was constituted to replace it. At a meeting held a few weeks ago an executive was appointed in part, but at a second meeting which was held on November 16, steps were taken which should place the new society on a firm footing.

The attendance was highly gratifying, and those present soon entered with enthusiasm into the scheme as propounded by the President (Mr. J. C. Price). Owing to pressure of private business, however, Mr. Price announced that he was reluctantly com-

TWO THINGS WHICH GO WELL TOGETHER—

a broadcast receiving set and "RADIO" magazine. Both are necessities in every Australian home.

pelled to ask the Society to release him from his appointment. He submitted his resignation in favour of Mr. A. B. Corbett, of the G.P.O. electrical staff, and after an expression of regret had been voiced by the meeting, his resignation was accepted, and Mr. Corbett took the chair.

The inaugural meeting was limited to those amateurs holding transmitting licenses, but at this later meeting all holders of experimental licenses, whether receiving or transmitting, were invited to be present.

The constitution of the New South Wales branch of the Australasian Radio Relay League was outlined by Mr. W. Finney (hon. sec.), and a committee was appointed to thoroughly investigate such constitution, with a view to determining the advisability of its adoption by the younger Society. The committee will report to a further meeting to be held in about three weeks' time.



Quality Radio

We are importers, manufacturers and suppliers of all Wireless and Electrical Apparatus.

Complete sets for all wave lengths.
All parts for amateur constructions.

Allow us to furnish you with quotation for a complete Wireless or Electrical Installation.

Authorised to issue Licenses (both Government and Broadcasting) for Farmer & Co. and Broadcasters (Sydney) Ltd.

Daily Demonstrations at our Showrooms.

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Everything Electrical

60-62 Goulburn Street (one door from Pitt Street),

Sydney

ESTABLISHED 1904

The Experimenters' Corner



A USEFUL PANEL SYSTEM.

WHEN experimenting with new circuits and combinations of apparatus much time is taken up by the wiring of filament leads, etc., which are the same in all receivers.

By means of the following system of panel mounting much valuable time will be saved, and more work accomplished during the periods available for experimentation.

Three separate panels are recommended. The first being specially suited for radio frequency amplification, the second as a regenerative de-

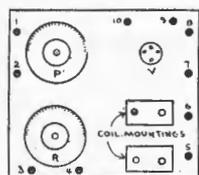


Fig. 1A.

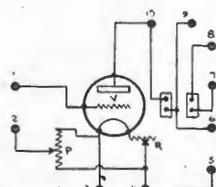


Fig. 1B.

tector, and the third as a simple audio or radio amplifier. Their construction will be dealt with in the above order.

For the baseboards, sheet ebonite one quarter of an inch thick is the best material to use, although well waxed wood of a similar thickness acts very well. The radio amplifier panel is seven by eight inches in dimensions, and is laid out according to Figure 1a. It is wired up according to Figure 1b. Potentiometer control for the bias of the grid is provided, as well as facilities for tuned choke and reaction or straight out transformer coupling to the detector valve. Detailed dimensions are not given for the placing of the various components owing to the fact that the relative sizes of the different items

will vary in individual cases. To support the panel and the apparatus mounted thereon clear of the operating table short legs are fitted to the four corners. These should be of sufficient length to allow for the projecting shafts of the rheostat and potentiometer. Porcelain insulators or three-quarter inch ebonite rod can be used.

The detector panel is of slightly smaller size than that used for the radio frequency amplifier and can be mounted on a piece of similar thickness material seven inches by six.

Beneath the panel, in addition to the filament rheostat, are mounted the grid, and radio frequency by pass telephone condensers. These should preferably be of the Dubilier mica type owing to their compactness and high insulation. The grid leak resistance is mounted on top between two metal clips; although if it is preferred a combination condenser and variable leak can be used in its place. Switch "S" in Fig. 2a and 2b is used to transfer the grid circuit of the de-

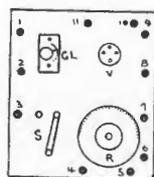


Fig. 2A.

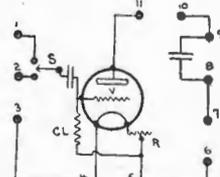


Fig. 2B.

tector from the output of the preceding radio frequency amplifier to the tuner secondary. The grid leak is shown connected through to the positive filament lead. This connection is suitable for "R" and "V24" valves when acting as detectors with 40 volts on the plate, but it may be found necessary to alter the polarity with other valves and voltages, therefore

the best position for this connection should be a subject for experiment.

A simple amplifier panel suitable for both radio or audio purposes completes a set which will be found ample for most experimenters. Space for a valve holder and filament rheostat is all that is necessary on this panel which will require a piece of ebonite four inches by seven. The connections are given in Figures 3a and 3b.

Interval transformers and chokes may be connected between the last panel and the detector according to requirements.

With these three panels it will be found an easy matter to wire up in



Fig. 3A.

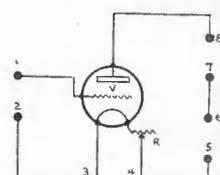


Fig. 3B.

a few minutes any of the many circuits which appear from time to time in this magazine.

INTERVAL AND TELEPHONE TRANSFORMERS.

In connection with the above mentioned panel system of connecting up circuits, an audio frequency interval and telephone transformer will be found very useful.

To match the panels in appearance these also should be mounted on small sheets of ebonite and fitted with small brass terminals and legs of porcelain or ebonite. Any of the commercial forms of interval transformers can be used without the special mounting if desired, but for the experimenter who wishes to build as much apparatus as possible at home the following details will be very useful.

The transformer which gives the least distortion with changing primary currents and consequent magnetic flux density is one with an open core, or what is practically the same, a closed core with a large air gap. The former is the easiest to construct, and can be wound on an old wire bobbin or specially constructed former of the dimensions given in Figure 4.

For the primary winding put on 10,000 turns of No. 44 enamel covered

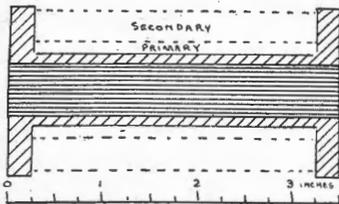


Fig. 4.

copper wire. The resistance of this winding is about 2000 ohms. To prevent an excessive strain on the fine wires a tapered terminal connection is recommended. First of all solder the main winding to a piece of No. 36 double silk about twelve inches long, which in turn is connected to the lead out wire of 4/36 d.s.c. wires. Use only resin cored tube solder for this purpose, owing to the corrosion which is likely if other fluxes are used. After completing the primary winding, cover it with several layers of empire cloth tape.

The secondary consists of 40,000 turns of No. 44 enamel, which will have a resistance of approximately 9500 ohms.

When the windings are completed the core should be filled with lengths

of No. 20 annealed iron wire, and the whole unit sealed inside a small tin of suitable size as in Fig. 5. The lead out wires should be run through bicycle or No. 3 surgical tubing for mechanical protection and additional insulation.

While not indispensable, a telephone transformer is a good investment. It protects the sensitive windings of the head set from the injurious effects of the high tension current which would otherwise flow through them.

The primary winding is the same as that for the intervalve transformer, but to balance with the load created by the telephones or loud speaker, a lower impedance winding is required. Practical experience has shown that a one to one winding gives best all-round results with the high resistance telephones used by experimenters. Ohmic resistance playing no part in the transfer of energy from one circuit should be kept as low as possible,

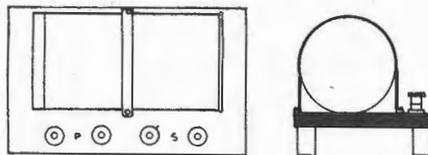


Fig. 5.

therefore the wire for the secondary should be No. 40 enamel, of which 10,000 turns will be required. The mounting is the same as for the intervalve transformer.

A coating of black enamel on the containing tins gives each transformer a neat appearance.

An Efficient Transmitter.

The spark-coil and valve transmitter dealt with in Nos. 11 and 18 issues of *Radio* has an enthusiastic advocate in Mr. Phil Renshaw, the popular secretary of the N.S.W. Division of the Wireless Institute of Australia.

Mr. Renshaw has had this transmitter in use at Mackarel Beach for the past six months, during which he has established regular communication with 2CM, 2JM, 2FA and 2CI and a number of other stations around Sydney. The distance is only about 25 miles, but in view of the

freedom from trouble and certainty of results which are two of the outstanding features of this transmitter, Mr. Renshaw feels that it is entitled to the highest praise.

On Sunday, November 25, a field day was held at Kuring-gai and the set was used to maintain communication with three other field stations throughout the day, and also with 2CM, who transmitted a special programme for the occasion. The demonstration was carried out by permission of the Controller of Wireless.

GOOD NEWS FOR
EXPERIMENTERS.

AMRAD Unit Sets

NOW IN STOCK.

Build up your Set piece by piece by Amrad Unit System. Begin with simple Crystal Set and finish with the Big Amrad 4-Valver.



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SYDNEY,
Melbourne and Wellington.

Support for 4CM

POPULAR BRISBANE STATION.

Great concern was expressed a few weeks ago amongst the amateurs of Brisbane when it was rumoured that Dr. Val McDowall, the popular medico proprietor of Station 4CM, intended to discontinue his Sunday night experimental broadcasts. From the day of the erection of the set—and that was in the very early days of amateur wireless in this State—

Immediately enthusiasts in the city became aware of the position, a meeting was summoned, and when Mr. J. C. Price was voted to the chair in the Y.M.C.A. room, nearly 100 amateurs were present. Certain proposals were agreed to, and it was resolved that Dr. McDowall should be acquainted with the loss which his withdrawal from Sunday night's programme would entail. This was done, and on Friday night last a second meeting was held. At this meeting the great service which Dr. McDowall has ren-



Concert party entertaining "listeners in" from the experimental transmitting station of Mr. J. S. Marks (2GR), Rose Bay, Sydney.

4CM has constituted itself the parent stream from which most of the amateurs in this and other States have drawn experimental knowledge, and, as was only natural, the prospect of such a stream drying up was viewed with considerable alarm.

Queensland was stressed, and as a result of the cause of wireless in result of that meeting it is confidently expected that Dr. McDowall will be prevailed upon to alter his decision, in the face of the anxiety which his projected course of action has caused.

Broadcasting is Here. *We are Ready!*

CRYSTAL SETS—
£3/10/- £5/10/- £7/10/-
VALVE SETS—SINGLE:
£10 £15 £20

VALVE SETS—TWO:
£17/10/- £20 £25
VALVE SETS—THREE:
£27/10/- £30 £35

Complete with Aerial Wire, 'Phones, Batteries, and All Accessories.

We can supply all parts to build your own if required.

ORDER NOW AND AVOID THE RUSH.
Catalogue, 50 Winning Diagrams, 9d.

ELECTRICITY HOUSE

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J. S. MARKS (Radio 2GR), General Manager.

We are the accredited Agents for all Broadcasting Companies. Service fees on application.

Call Signs

October List

N.S.W.

- 2BC Hurl, N. J., "Strathcona," Northcote Avenue, Killara.
- 2CW Beer, J., 42 Thomas Street, Ashfield.
- 2QY Williams, E. A., Crown Street, Wollongong.
- 2RA Vickery, K. J., Kilbridge Street, Hurlstone Park.
- 2ST Tatham, S. E., 6 Stonehenge Flats, Kurraba Road, Neutral Bay.
- 2TS Gill, A. W., Illaroo, Greengate, Killara.
- 2YA Haynes, B. L., Sumarez Station, Armidale.
- 2YB Croydon Radio Club (Cutto), Lang Street, Croydon.
- 2YC Crawford, C. T., 18 Lindsay Street, Burwood.
- 2YD Donne, C. W., "Lansdowne," Manns Avenue, Neutral Bay.
- 2YE Manly and District Radio Club (Swinburne), Wentworth Street, Manly.
- 2YF Clarke, F. P. R., "Winona," Lauderdale Avenue, Manly.
- 2YG Allsop, R. C., "Levershulme," Botany Street, Randwick.
- 2ZV Universal Electric Co. (A. Dixon), 244 Pitt Street, Sydney.
- 2ZW Huggins, D. R., 13 Yeo Street, Neutral Bay.
- 2ZX Olsen, N. P., "Normanhurst," Macquarie Street, Waratah.
- 2XY Sidey, R. L., Highfield Street, Lindfield.
- 2ZZ Smith, C. P., 83 Cabramatta Road, Cremorne.

VICTORIA.

- 3CB Sievers, W. F., 30 Lesney Street, East Richmond.
- 3JD Dane, J. E., Toorak Road, Hawthorn.
- 3RY Wilson, W. A. G., 4 Webster Street, Ballarat.
- 3TU Leckie, R. C., Bamfield Street, Sandringham.
- 3YZ McKeown, A., 54 Yarra Street, Alphington.
- 3ZL New System Telephones, 25-27 Queens Bridge Street, Sth. Melbourne.
- 3ZP George, H. W., 195 Ballarat Road, Footscray.
- 3ZQ Ballarat Radio Club, J. Mathews, 116 Ripon Street, Ballarat.
- 3ZR Snaith, S. L., 1 Byron Street, Footscray.
- 3ZS McMahon, George, Edinburgh St., Diamond Creek.

QUEENSLAND.

- 4GF Fortescue, C., Arthur Street, Toowoomba.

WESTERN AUSTRALIA.

- 6DZ Burrows, E. W., Station House, Eleanor Street, Geraldton.

TASMANIA.

- 7AL Scanlon, W. L., 37 Hill Street, West Hobart.

Radio Engineers

BRISBANE SOCIETY'S REPORT.

According to the report presented by the secretary (Mr. A. E. Dillon) to the first annual meeting of the Queensland Institute of Radio Engineers on November 20, the coming year gives promise of being a particularly fruitful one.

A definite plan has been laid down and provision has been made for lectures to be delivered at least once a month. This should materially assist to bring the members closer together, in addition to providing opportunities for mutual improvement per medium of the lectures and informal discussions which have been arranged.

A pleasing feature of the report concerned the accommodation which has been secured for the Society. At a small rental the old Observatory tower has been secured from the City Council for experimental purposes, and in addition the adjacent cottage has been made available as a club room. The Engineers are to be con-

gratulated upon having secured such fine quarters, which offer every convenience in a most advantageous position.

Owing to the courtesy of several members and electrical firms in loaning and donating apparatus, it has been possible to carry out several experiments in radio telephony, transmission and reception. The Institute has also secured a loud speaker and amplifier of the W.E. type, and this has been satisfactorily used in demonstration work.

The Society has also secured the nucleus of a technical library, and it is hoped that this will eventually be of a most comprehensive nature.

The election of officers resulted as follows:—Patron, His Excellency the Governor (Sir Matthew Nathan); President, Mr. T. W. Bridger, A.M.I.E.E.; Vice-presidents, Messrs. J. Leslie and D. W. Chandler; Hon. Sec., Mr. A. E. Dillon; Hon. Treas., Mr. C. E. Sanderoock; Council, Messrs. C. L. McLaughlin, F. A. Engels, J. F. S. Winton, Capt. J. Craven, W. Engemann, and D. McVey.

WIRELESS TESTS.

U.S.A. TO AUSTRALIA.

A private cable received by the Editor of "Radio" states that the radio station of L. Bamberger & Co., of Newark, New Jersey, U.S.A., will be conducting wireless telephony tests from their radio station WOR to Japan, Australia and New Zealand on a wave-length of 405 metres from December 1 to 15 inclusive between the hours of 7 and 9 p.m., Sydney standard time. All radio experimenters should make a special effort to receive these important tests, and report results to the Editor of "Radio."

Owing to extreme pressure on our space the second of the series of articles on "Hints for Beginners" has been held over until next issue.

[Ed. Radio.]



£2/5/- each.

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BROADCAST RECEIVING SET,

a high-class product, combining first-class design and technical skill, with cabinet work of elegant artistry. — *Made in Australia.*

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STROMBERG CARLSON HEADPHONES.

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229 Castlereagh Street, SYDNEY.

Australian Broadcasting

How it Excels other Systems

AN INTERESTING COMPARISON.

THE essential difference between the Australian and English arrangements for broadcasting lies in the fact that in England only one company is allowed to broadcast, and subscribers have to take that service whether they like it or not. The public does not have the choice of several services of different types as is the case in Australia.

The English broadcasting method, therefore, imposes the most serious restriction that could possibly be imagined in connection with a public news and entertainment business. It is similar to allowing people to have only one newspaper or theatre.

The Australian scheme permits any number of broadcasting services to operate, thus giving the public an opportunity of choosing between them or of listening to all of them if they so wish. The only restriction in Australia is that people cannot listen to one service while paying for another, but anyone wishing to listen to several services can have a receiver capable of picking up all at a very little additional cost. Also, a person subscribing to one service and wishing to enjoy another in addition, can have the wave-length of the second service added to his existing receiver at a comparatively small cost.

In England people who "listen in" have to pay for the broadcasting 7/6 per annum, and for the Government license 2/6 per annum. Since the population of Australia is only one-tenth of that of Great Britain, it would be necessary, if the English scheme were introduced here, to charge ten times the annual fee, viz., £5 per annum, in order to bring in the same proportionate revenue. In view of the fact that a far greater range has to be covered in Australia and the cost of providing programmes is much higher, the charge here if the English scheme were introduced would require to be £7 or £8 per annum. These high charges are avoided by the greater elasticity and freedom allowed to broadcasting companies in Australia and by the competitive system which has been introduced here.

One broadcasting company proposes to offer a service at 10/- per annum, and another at £3/3/-. The £3/3/- service will include practically all the theatrical performances of Sydney, and the total cost to the "listener-in" will be less than 2d. per day.

Already six broadcasting services are being established in Australia, and others are under consideration. It is expected that within twelve months from now a considerable number of stations will be operating. Many of these stations will be in competition with one another, so that the public will be assured of a wide variety of services, and each one will, by reason of the competition, be kept to the highest degree of efficiency.



CLEAR AND TRUE *Western Electric* LOUD SPEAKERS

When used with a correctly designed and adjusted radio receiving set, Western Electric Loud Speakers give a clear and true reproduction of speech and music over the entire musical range, including the low bass notes of a pipe organ and the high tremolo notes of a violin.

Western Electric Radio Equipment can be obtained direct and also from Radio dealers in town & country. We are at all times pleased to give expert advice and help regarding Radio installations and equipment.

Western Electric Company
(Australia) Ltd.

192-194 Castlereagh Street,
SYDNEY.

'Phones: City 336, 356.

HOUSEHOLD EQUIPMENT.

Prior to broadcasting there was very little wireless apparatus sold by retail shops. The equipment sold in the past was exclusively for the wireless experimenter, who likes to purchase various pieces of apparatus and put them together in his own way. Now it will be necessary for the retail traders to realise that they have to cater for an entirely different class of purchaser. Broadcast receivers for the home or for the camp can be made up in a compact and simple form, so that they require no more knowledge or skill to operate than an ordinary gramophone. This is the type of instrument which will be in big demand when broadcasting commences.

The average man wanting a broadcasting service in his home is inclined to be scared when he goes into an establishment which has its shelves or show cases filled with mysterious looking parts labelled with technical names.

A few people who in the past have dealt in the retail side of wireless apparatus have grown so accustomed to the experimenter who likes these mysterious things, that they prompt

ly find it difficult to realise the entirely new field which is opening. However, those who offer a compact and simple instrument which requires no more skill than is required to operate a gramophone or a piano-player are rendering the best service to the public.

BROADCASTING IN AMERICA.

Many of the large number of small broadcasting stations which sprang up like mushrooms in the United States during the past two years are disappearing with almost equal rapidity. The tendency in that country to-day is for broadcasting to become concentrated into the stations of the big wireless companies, who can afford to spend large sums of money in their erection and operation. Also, they are able by continual research to keep the stations thoroughly up-to-date.

A novelty has been introduced in a station at San Francisco, which has recently installed an organ costing £6,000 and employs an accomplished organist to give special recitals. A considerable sum of money had to be

spent in experimenting before the full range of the organ notes could be satisfactorily collected in the studio and radiated.

Another new feature in some parts of America is the broadcasting of the proceedings of certain night clubs. These clubs are a comparatively recent innovation and have been the cause of a conflict of opinion as to whether they should be allowed to exist. One club, which is known as "The Order of the Hoot Owls," meets every Friday from 10.30 p.m. till midnight. The meetings open with a roll-call, after which the officer of each department of the club reads his notes. New members are initiated after a letter of application is read from the member, and the officer of the club says, "Shall we admit him?—No!" and the crowd answers "Yes." The education officer of the club sings out the latest jokes as well as interesting general information presented in a humorous manner. Lady members have recently been admitted to the club, and the whole proceedings are radiated from a broadcasting station.

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Club Notes & News



THE WIRELESS INSTITUTE OF AUSTRALIA.

N.S.W. DIVISION.

AT a general meeting of the N.S.W. Division of the Wireless Institute of Australia held at the Royal Society's Hall, Elizabeth Street, Sydney, on November 15, 1923, some interesting matters were discussed. The Institute's connection with the Radio Relay League was fully stated, and the objects of the League were clearly explained. It is anticipated that the League will form a foundation (with similar bodies in other parts of the world) for an International Council to safeguard the interests and regulate the operations of wireless experimenters. Such action will be essential at some future date.

The effect of broadcasting on the amateur position and experimental work generally was also the subject of discussion. It was clearly shown that the Broadcasting Companies were endeavouring to conserve the rights of the experimenter. Experimenters, however, should respect the rights of the broadcasting stations and confine their efforts more to purely experimental work. Providing the experimenter keeps within his rights he has nothing to fear. It was stated that a scheme by which experimenters would have the right, for a nominal fee, to listen to broadcasted matter for entertainment purposes had been put forward and had been approved by the Broadcasting Advisory Board.

The next meeting of this Division of the Institute will be held at the Royal Society's Hall, 5 Elizabeth Street, Sydney, on Thursday, December 20, 1923, at 7.45 p.m. Members should keep this date free and make a point of attending, as it is expected that a report of the result of the Exhibition will then be available.

P.M.G. PRAISES WIRELESS INSTITUTE.

The following correspondence has passed between the Postmaster-General (Mr. Gibson) and the Hon. Secretary of the N.S.W. Division of the Wireless Institute of Australia:—

30th Oct., 1923.

Dear Sir,—

I desire to take this opportunity of expressing to your Institute my personal appreciation of the results of the work performed by your members

as Honorary Radio Inspectors. This system of voluntary inspection and discipling of the amateurs by gentlemen selected by their own organised bodies has been of considerable assistance in securing the observance of the Regulations. Strict compliance with these Regulations is the only means of guaranteeing to all the interests involved in wireless, harmonious relations generally, and the satisfaction they are entitled to, in developing this young and thriving science of wireless.

I am very pleased also to hear that the experimenters themselves appreciate the work which is being done by their own representatives in endeavouring to maintain that reasonable discipline of the ether which is so necessary, and I am sure that with such sensible enthusiasm existing, the wireless amateurs of Australia will continue to maintain their status.

Yours faithfully,

(Sgd.) W. G. GIBSON,

Postmaster-General.

The Hon. Sec.,

Wireless Institute of Australia,

N.S.W. Division.

13th November, 1923.

W. G. Gibson, Esq., M.H.R.,

Postmaster-General.

Dear Sir,—

I am in receipt of your letter of the 30th October, conveying your appreciation of the excellent work done by the Honorary Radio Inspectors, who, in this State, are all members of this Institute.

It is very gratifying to our Institute that the results from the work done have been such as to merit your commendation, and I can assure you that these gentlemen appreciate fully the seriousness of their task, and possessing the confidence of all the experimenters here, the position is much easier for them than would otherwise be the case.

This Division of the Institute is particularly careful to see that all its regulations and activities are such as to conform to the legislation in force from time to time, and you can be assured of our further co-operation at all times.

Yours faithfully,

(Sgd.) PHIL. RENSHAW,

Hon. Secretary.

COBURG (VIC.) WIRELESS CLUB.

Quite recently a wireless club was formed at Coburg and meetings are held each Thursday evening at the Secretary's home in Reynard Road. An application to the Coburg City Council for permission to erect an aerial at the new Town Hall for experimental purposes was recommended for approval by the Works Committee. This is probably the first Town Hall in Australia in which a wireless set is installed.

MANLY RADIO CLUB.

There was an excellent attendance of members at the annual general meeting of the above Club on November 26.

In the absence of the secretary (Mr. W. J. S. Perdriau), the President (Mr. F. C. Swinburne), delivered a brief report of the Club's activities since the date of its inception.

The Treasurer's statement showed that despite heavy expenditure the Club still retained a credit balance. Both reports were received and adopted.

Nominations to fill the various executive positions resulted in the following being elected:—

President, Mr. W. J. S. Perdriau; Vice-presidents, Messrs. P. S. Nott, F. C. Swinburne and Rawnsley; Secretary, Mr. G. M. Brown; Asst. Sec., Mr. Robinson; Treasurer, Mr. F. C. Clark; Committee, Messrs. Starkey (2), Ingram, Whitfield, and Rawnsley; Hon. Auditor, Mr. Maher.

Messrs. F. C. Swinburne (retiring president) and M. Dixon (V.P.) did not seek re-election for their respective positions. They were accorded a hearty vote of thanks for their services to the Club.

The entrance fee for adult members was raised to 10/- and junior members 5/- and the annual subscription fees were fixed at £1/1/- and 5/- respectively.

The Club is looking forward to renewed activity in the New Year.

WAVERLEY RADIO CLUB.

At the November 20 meeting it was decided that the Club should broadcast a challenge (by letter) to debate any other radio club or clubs. The challenge will also be conveyed through the radio press.

The general feeling was that a series of inter-club debates would do much towards infusing new life into clubs generally. The idea originated with the Waverley Club and it intends to pursue it to a successful issue.

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Broadcasters (Sydney) Ltd. Commence Operations

FREE PROGRAMMES DAILY

K EEN enterprise and enthusiasm and a boundless faith in the future of radio broadcasting in Australia must be credited to Broadcasters (Sydney), Ltd., who, in combination with Smith's Newspapers Ltd., have commenced the daily transmission of free news and entertainment programmes.

The broadcasting station and studio are erected on the roof of the *Daily Guardian* office in Phillip Street, Sydney, and above them towers the aerial, which is of the cage type.

Some weeks ago testing was commenced on a 10-watt set, and the excellent results achieved—proved by the numerous reports received from many distant localities—justified the early installation of the 500 watt transmitting set, the minimum power provided for under the regulations for a broadcasting station.

The daily service extends over twelve hours, and comprises news items, which are radiated each morning, bright talks to women upon subjects of feminine interest, special items of interest to farmers and business men, entertainment and news items as an after-luncheon diversion, more items of interest to women during the afternoon and a full entertainment programme at night.

Three orchestras have been engaged and they will take turns in playing at each of the three daily sessions. Not the least important feature of the programme is the nightly transmission of bedtime stories for

children. The "Storyman," as he is popularly termed, will soon win a warm place in the hearts of his juvenile listeners. What child is there who is not fascinated by the stories beloved of childhood days, and who does not love to live in the land of

EVERY HOME

should, as near as possible, provide suitable means for the education and entertainment of its inmates. This may sound idealistic, but

IN AUSTRALIA

the youngest and potentially greatest of nations, few things are impossible. Our vast distances and scattered settlement constitute a grave difficulty in the pursuit of many of our aims, but we

SHOULD HAVE

a firm determination not to rest content until the whole of our vast Commonwealth is decentralised. This object is nearer attainment now than ever. If

A RADIO SET

were installed in every one of the thousands of homes outback, it would shed a new light and interest on the lives of these sturdy pioneers. The effect would be of immediate value in stopping the drift to the city which now threatens to sap the backbone of our rural industries.

make-believe while listening to wonderful tales which picture things such as his childish mind had never previously conceived.

In order to encourage local talent and perhaps assist in discovering a future Melba, Broadcasters, Ltd. have decided to provide an opportunity for local artists who wish to sing, recite or play over the radiophone to attend at their studio at a specified time each week. It is a well-known fact that some voices and instruments radiate much better than others, and Broadcasters hope that by a process of elimination, such as that referred to, to have available at an early date a long list of artists whose performances will always be worth listening to.

It is confidently anticipated that within the next few months thousands of homes throughout Australia will be equipped with receiving sets, and "listening in" will become the most popular evening pastime, particularly in the country.

Social Cricket

The annual cricket match between the Treasury Guard and the staff of Amalgamated Wireless, played at the St. Kilda ground on November 28 resulted in a win for the Guards, who made 236, to the Dot-Dash men's 109.

Principal scorers for the winners were M. Burns (76), R. Burns (47, retired), and J. McCormack (35, retired); while J. McDonald put up a chanceless 46 for Wireless, S. Falls being next best with 30. In the bowling, R. Tonkin took three for five, and A. V. Halfpenny six for 34.

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**Movements of
Wireless Officers**

Mr. G. B. Fullwood signed off s.s. *Echuca*, at Sydney, on November 1.

Mr. J. H. Hawkins signed off s.s. *Arafura*, as Senior Operator, at Sydney, on November 14, and relieved Mr. A. W. Hooper on s.s. *Manuka* on the same date.

Mr. A. M. Ellison signed off s.s. *Maunganui* as 3rd Operator, at Sydney, on November 15, and signed on s.s. *Arafura* at 2nd Operator, at Sydney, on November 15.

Mr. F. L. Dawes signed off s.s. *Dongarra* as Senior Operator, at Sydney, on November 13.

Mr. D. Lynch signed off s.s. *Dongarra* as 3rd Operator, at Sydney, on November 13, and signed on s.s. *Arafura*, at Sydney, November 15 in same capacity.

Mr. G. Lloyd Jones signed on s.s. *Dongarra* as Senior Operator, at Sydney, on November 13.

Mr. A. C. Olssen signed on s.s. *Junea*, at Sydney, on November 16.

Mr. A. Webster, who was relieved on s.s. *Koromiko* by Mr. O. A. Sutherland at Wellington on November 10, terminated service.

Mr. A. W. Hooper relieved Mr. A. H. Beard on s.s. *Karoola*, at Sydney, on November 16.

Mr. F. L. Dawes signed on s.s. *Arafura* as Senior Operator, at Sydney, on November 16.

Mr. A. C. Torrens signed off s.s. *Jervis Bay* as 3rd Operator, at Sydney, on November 16, and relieved Mr. P. J. Manley on s.s. *Corio*, at Sydney, on the same date.

Mr. A. L. Eichstadt signed on s.s. *Maunganui* as 3rd Operator, at Sydney, on November 22.

Mr. J. E. Cleary relieved Mr. H. K. Wadsworth on s.s. *Goulburn*, at Melbourne, on November 16.

Mr. H. M. Lamb relieved Mr. G. J. Flynn on s.s. *Nairana*, at Melbourne, on November 14.

Mr. G. J. Flynn signed on s.s. *Woolgar*, at Melbourne, on November 14.

Mr. H. K. Wadsworth relieved Mr. E. I. Hyde on s.s. *Alabama*, at Melbourne, November 14.

Mr. B. A. Taylor signed on s.s. *Jervis Bay* as 3rd Operator, at Sydney, on November 22.

Mr. H. S. Chown relieved Mr. J. Lloyd-Jones as Senior Operator on s.s. *Dongarra*, at Sydney, on November 26. Mr. Lloyd-Jones terminated service.

Mr. H. M. Lamb was relieved by Mr. M. H. Stuart on s.s. *Nairana*, at Melbourne, on November 23.

Mr. R. Thompson signed on s.s. *Boonah* as 3rd Operator, at Melbourne, on November 23, and signed on s.s. *Euroa*, at Melbourne, same date.

Mr. L. C. Farnsworth signed on s.s. *Gilgai*, at Melbourne, November 21, and relieved Mr. H. K. Wadsworth on s.s. *Alabama*, at Melbourne, on November 26.

Mr. J. Glennie, who was relieved by Mr. G. R. Hore on s.s. *Wonganella*, at Melbourne, on November 16, signed on s.s. *Marrowah*, at Melbourne, on November 17.

Mr. E. I. Hyde signed on s.s. *Euroa*, at Melbourne, on November 21.

Coastal Radio Service**STAFF CHANGES.**

Mr. A. Longstaff, Radiotelegraphist, Adelaide Radio, has been transferred to the Technical Department of Amalgamated Wireless Ltd., Sydney.

Mr. R. Simons, Radiotelegraphist, Melbourne Radio, has been temporarily transferred to Hobart Radio for relief duties.

Messrs. K. Lawry and J. Lalor left Willis Islets Radio Station on the 14th November, per the s.s. *Melusia*, and are returning to Melbourne via Cairns on completion of the term of service.

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Queries Answered



"Sen Fadeno" (Coburg, Vic.) submits particulars of receiver and aerial and asks: (1) Why he has difficulty in receiving Telephony, although spark signals are picked up quite strongly. (2) How can low wave-lengths be tuned in using condenser plug on electric light mains, what effect has this on wave-length and capacity?

Answer: (1) Your tuning elements are too large to efficiently receive short-wave signals. Use a Primary of 50 turns of 22 D.C.C. on a three-inch tube, adjustable by means of a slider, and a Secondary 50 turns of 30 D.C.C. on a two-inch tube. The latter should be tuned by means of the variable condenser. (2) The effective capacity of the electric light system is reduced to approximately 0.001 microfarads by means of the condenser plug, and tuning is carried out in the usual manner with the variable inductances and capacities.

Thanks for complimentary remarks re *Radio*.—Ed.

Elec. Engineer (Murwillumbah) asks for size of core and windings for Primary and Secondary of a single phase transformer, to step down from 240 volts, 50 cycles to 32 volts, with tappings for 24 and 12 volts.

Answer: Assuming the data required is for a 100 watt output, use a core 1in. x 1in. cross section of 16

mil. laminations, 5in. x 4in. outside, and 3in. x 2in. internal dimensions. Wind on 2,000 turns of No. 24 Enamel for the primary, and 270 turns of No. 16 D.C.C. for the Secondary. Tap the latter at 200 and 100 turns for 24 and 12 volts.

C.L. (Glen Huntly, Vic.) asks: (1) Cause of difficulty in receiving telephony on three-valve "Neutrodyne" receiver (particulars and diagram submitted). (2) How many turns are required on the transformers to bring them up to 1,250 metres, using .0005 condensers?

Answer: (1) The neutralising condensers are critical in their operation. Why not try the circuit described on page 375 of issue *Radio* No. 16? (2) A transformer to operate between 1,000 and 2,000 metres with a .0005 condenser should have 200 turns, with a mean diameter of six centimetres for each winding.

M. F. (Lismore) asks if telephony can be received using a valve and crystal receiving set, with the valve as a high-frequency amplifier, situated about 400 miles from Sydney.

Answer: No definite range for short-wave stations can be estimated, as so much depends upon local conditions, you should, however, be able to receive the commercial broadcasting stations which are shortly opening in Sydney.

Please note—all queries are to be signed with your full name and are answered under initials only, unless otherwise requested.—Ed.

A. T. (Penshurst), referring to article published in issue *Radio* No. 11 on spark coil-valve transmitter, asks: (1) What is approximate value of the grid leak? (2) Could a voltmeter connected across the secondary of the spark coil be used in conjunction with an ammeter to measure the input? (3) Would a tuned counterpoise make any appreciable increase in radiation? (4) What distance would an ordinary shocking coil, instead of the spark coil, transmit? (5) Would the signals be C.W. or I.C.W.? (6) Can this circuit be used to transmit speech?

Answer: (1) About 50,000 ohms, although some valves work satisfactorily without any leak resistance or condenser. (2) An electrostatic voltmeter only could be used to measure with any degree of accuracy the voltage output of the spark coil. (3) Yes. (4) The range will depend upon the intensity of the "kick" which the shocking coil can give. In any case it will be much less than that obtained when using a "Ford" coil. (5) The signals will be I.C.W. with a note corresponding to the frequency of the coil vibrator. (6) This circuit cannot be used for telephony.

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