

Further Notes on the Standard A.C. Four Valve Receiver

Wireless Weekly ^{3^d}

INCORPORATING "RADIO IN AUSTRALIA & NEW ZEALAND"

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FRIDAY, JULY 26, 1929

(Registered at the G.P.O., Sydney, for transmission by post as a newspaper.)

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—
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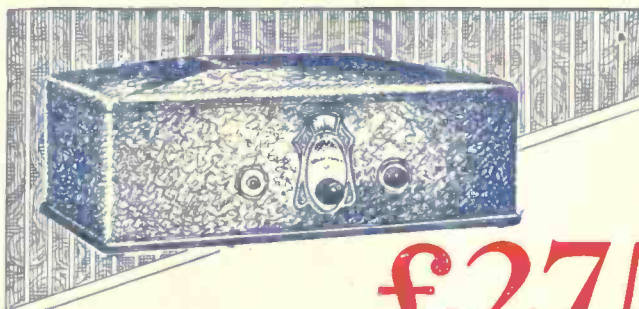


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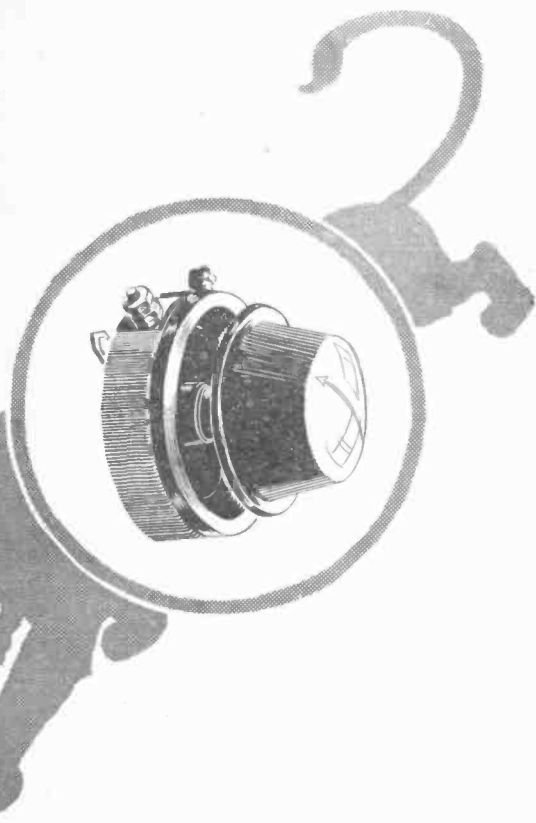
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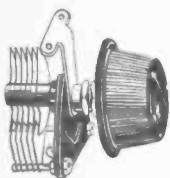


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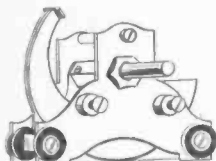
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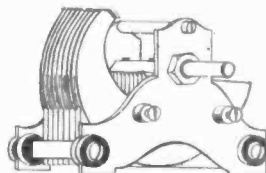
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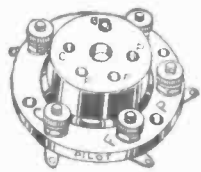
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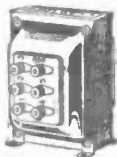


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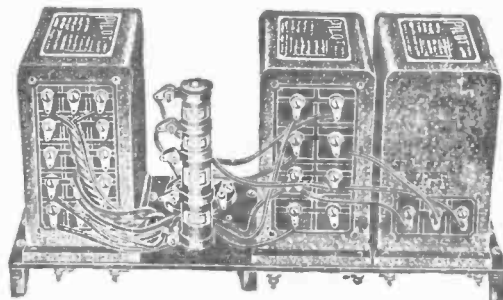
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(described in this issue).

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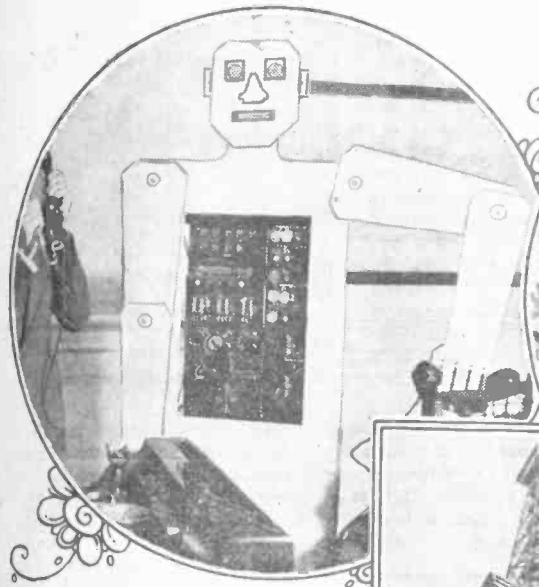
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Address
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Sydney.

RADIO NEWS AND VIEWS IN PICTURE



The fearsome creature pictured above is merely the Televox, the mechanical man about whom so much has been written. By the use of photo-electric cells he is so constituted that he will answer telephone calls and respond to certain questions asked by the speaker at the other end. The Televox is one of the most ingenious of mechanical devices invented by man.



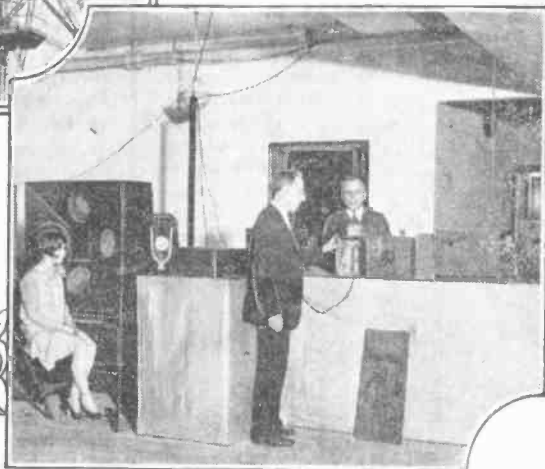
Here is seen the Televox as he appeared when opening a new hospital near New York. Mayor Walker, who actually performed the ceremony, remained in his office, while Televox substituted for him, replying to speeches and acting in an astoundingly life-like manner.



Left: How a Berlin broadcasting station made good use of its aerial tower. A large and comfortably appointed restaurant is situated on the platform shown.



O. FRANCIS JENKINS, well-known inventor, with his radio movie transmitter, with which he transmits regular "television" sessions.



A different kind of television transmitter, which projects images from an actual subject (seen sitting on left). This method is still in an elementary stage.

BETWEEN YOU AND ME AND THE MICROPHONE

IT has been stated often, whether authoritatively we do not know; but the rumor has been in circulation for some time, that a Noisy Noise Annoys an Oyster.

Therefore, an Oyster and Mr. Fisk have two things in common; they can both shut up like anything when they deem such action advisable, and they both hate Noise. Of course, the resemblance goes no further. If you couldn't tell Mr. Fisk from an oyster, you WOULD be a nice one to send out for oysters. A whiskery thought, we know; but imagine anyone going out to buy a bottle of oysters and coming back with Mr. Fisk! After the first few mouthfuls, someone would be sure to detect the error; but then it would be too late, and the whole company would have indigestion for a fortnight. Besides, it wouldn't be fair to Mr. Fisk.

We digress. We were going to tell you about Mr. Fisk's latest manifestation of oysterliness. You see, Mr. Fisk works up in York Street, and Dr. Bradfield is making a frightful noise over a hole he is digging in Wynyard Square, just over the way. When Mr. Fisk opened his window to let in the air, in which, with many other clever men he believes, the sound of Dr. Bradfield's labourings entered into his office and caused him pain. Not that he blamed Dr. Bradfield! Mr. Fisk knows that these doctors WILL have their cut.

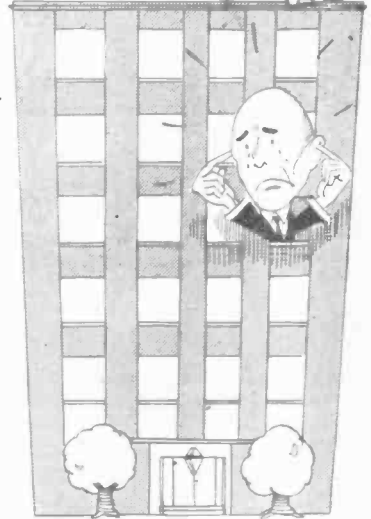
But the noise was horrible. A resourceful, and not unintelligent man, Mr. Fisk built himself a sound trap, which could be used in conjunction with an open window, to keep out the sounds of Dr. Bradfield's labourings.

According to the photograph published by our brother, this contraption resembles the windscreen of the car we are going to buy next Christmas, superimposed on the bathroom grating on which we drip and



shiver every morning (EVERY morning); but our brother's letterpress says it is really two strips of Celotex, built round holes which let the air in, and with a piece of glass on top to stop the sound-waves bending over and smacking Mr. Fisk on the ear. This subtle device, as old Doc Johnson might call it, keeps out eighty per cent. of the street's noises, and gives Mr. Fisk light and fresh air to boot. Exactly why Mr. Fisk should wish to boot light and fresh air is not known; but we suspect he is taking a correspondence course in sorcery, and wishes to teach the witches how to play football during the cold months.

You may wonder how Mr. Fisk determined the exact percentage of street noises his sound trap traps. His calculations were remarkable for their simplicity. He took an ithermionic rod, and placed it in parallel with the line of the street, so that its base



ranged signal, dropped the ithermionic rod on Dr. Bradfield, at the same time shouting down into the hole, "Who designed the Bridge?"

As a result of this simple experiment, Mr. Fisk was able to tell from a

mere glance at his lycometers that, even during peak hours, his sound trap would trap eighty per cent. of the street's noises.

Mr. E. T. Fisk, F.I.R.E., A. M. I. E. (Aust.), may well relax when the long, beaming hours are over, and, regarding his invention,

address it in terms long since used towards an almost equally worthy Object:—

Thou eighty-per-cent-unravished
Bride of Quietness!
Thou foster-child of Silence
and Spare Time!

James

Listeners We All Know—No. 8

THE RACING FAN

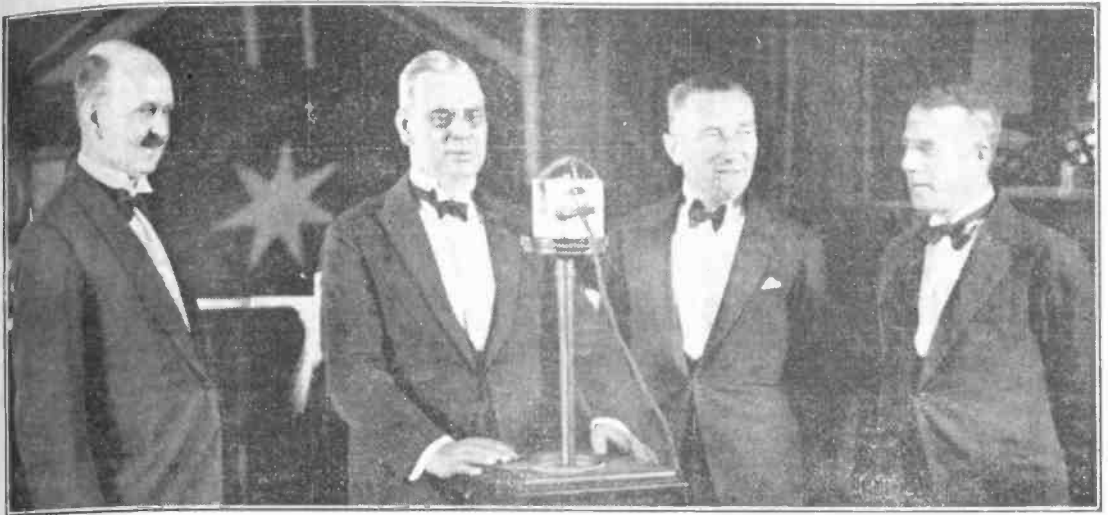


"They're off!" shouts Mr. Ferry with a loud, loud shout,
And the Race-Fan eyes his speaker while the words drop out:—
"They've passed the seven-furlong; they'll soon have done the mile;
And Mungo's leading Jungo in his very best style;

But who's this coming? Bungo! Why, he's passed the post,
And all the little favorites have been and gone and lost!"
Then the Race Fan siccars he'll never, never listen any more.
And makes his voice the promises he's always made before;
While, just around the corner, a Barber grins a grin
As the race results come over, blowing Income in.

(With apologies to the Shade of "Kodak.")

rested on an equilateral diphthong. Then he asked Mr. M'Donald to hold it there while he arranged the remainder of the apparatus. Inside his office he fixed up four lycometers—the latest oscalentic pattern—charging them to four degrees centigrade. These were to measure the sound waves. He hid them under the various tables so the sound waves wouldn't see them and get frightened. Having done this, he undid the terminals from each of the lycometers and placed one in each ear; then whistled to Mr. M'Donald, who, hearing the pre-ar-



Mr. H. P. Brown (left) and the Big Three of Australian Broadcasting—Stuart Doyle, Frank Albert, and Sir Benjamin Fuller—on the night of the opening programme of the A.B.C.

Broadcasting and H. P. Brown

An interview with the man behind Australian Broadcasting in which some information regarding the B stations is disclosed.

OUR broadcasting industry has grown up rapidly in the five years of its existence. Since the Government stepped in on a good thing and issued its wireless regulations, we have seen "A" class licences issued to two stations in Sydney, two in Melbourne, one in Queensland, one in South Australia, one in West Australia, and one in Tasmania; we have seen "B" class licences issued more or less indiscriminately; and we have seen amateur experimental licences issued in greater numbers still. And during these five years we have also watched "the battle of the stations"—the fight for supremacy, for instance, between 2BL and 2FC, ending in amalgamation, at the request of Mr. Bruce; also the merging of 3LO and 3AR in Melbourne, and the inclusion of 5CL, Adelaide, and 7ZL, Hobart, with the Melbourne team; and ultimately the understanding between Sydney and Melbourne groups; all of which formed a pronounced movement towards the national control of broadcasting.

But just before this there was a crisis of sorts, and in the usual manner we were permitted to view the extra special grand presentation of the whole five years in the shape of a Royal Commission, consisting of several gentlemen, who agreed (rather expensively, to be sure) to present a report and suggestions on national broadcasting.

The Commission presented its report, and, finally, after many hesitations and a great deal of delay, the regulations were re-adjusted, and the Postmaster-General issued forms on which enterprising private gentlemen were to tender for the supply of programmes for the whole of Australia. The Australian Broadcasting Company, Limited, got the contract, and we have just witnessed the beginning of what they say is the new era in broadcasting.

No doubt, this chaotic history of

Australian broadcasting is familiar and tiresome enough to the reader, but there is one man to whom it presents itself as a cool and logical plan. To him the past five years have been a necessary stage of adolescence—a kind of teething time in the growth of a healthy and howling infant.

Have you ever met H. P. Brown? Well, so far as broadcasting goes, he is really THE man behind the guns. He is the man who represented Australia at the International Wireless Conference at Washington. He is the man who supervised the compilation of tender forms. He is the man

the Cabinet consulted at the last moment before its decision on who should run national broadcasting. The re-organisation of Australian broadcasting is all under his direction. When he comes over to Sydney he is at home to visitors in an enormous, softly carpeted room on the first floor of the G.P.O. building.

Under a dazzling white dome of unprotected head, fringed with black at the sides and back, a black Glover moustache stands out prominently from small, and not very noticeable features. The eyes twinkle. Beneath these the greater part of Mr. H. P. Brown lies back on a leather chair, throwing itself about restlessly from time to time. A small mouth rounds itself into speech:—

"Well, what do you wish to see me about?"

"You aren't often in Sydney, Mr. Brown. We have a good few questions to ask . . ."

"Shoot."

"We are interested in 'B' class stations. Can you give us any information—"

"None."

"Well, you see, it's rather a big question. We are rather anxious to know . . ."

"Everyone is anxious to know. But I can't tell you anything. I can't tell myself anything. We haven't decided anything yet."

"For instance, we would like to know whether 'B' class licences will be renewed on their expiry?"

"I can't say. We haven't decided. You see, our main business just now is with national broadcasting. We wish to get that well established before we decide on a policy to govern 'B' class stations." Mr. Brown then explains: "That the position is complicated by several factors, the main one being the number of wavelengths workable in Australia without causing interference locally, and the number workable without causing interference with reception of foreign transmission. One has only to study the report of the Royal Commission to discover



The small voice of public opinion whispers in the ear of the "lord and master" of radio.

how much complaint the 'B' class stations caused in Sydney through alleged interference and overlapping. Therefore, to allow 'B' class stations to increase their power of transmission at this juncture would only be to add to their capacity for interference with the Government's main programmes and with international broadcasts. Under the wireless regulations the Government has full control of 'B' class stations' transmitting power, and at present will not allow any increases. No more 'B' class licences will be issued in Sydney just now but that is not to say that no more 'B' class licences will be issued in other parts; on the contrary, the Government will consider the issue of 'B' class licences for any place where, in its opinion, either the density of the population or difficulties of 'A' class reception render it desirable. What the Government might do in the future towards systematising the 'B' class broadcasting; whether old

licences will be renewed on their expiry; whether new licences will be issued, I cannot say. One thing is certain, 'B' class licences will not be issued in the same way as they have been issued in the past; the matter of location will be an important consideration. But it's all in the air," said Mr. Brown, smiling, as though he had heard the phrase before.

"Relay stations, Mr. Brown. We have heard that two out of the proposed sixteen have been ordered."

"Two stations have been ordered; but sixteen are not definitely promised or proposed. We don't know how many we may want; but there will be more orders placed shortly."

"And these two stations—where are they to go?"

"I can only tell you one definitely, and that's Newcastle. It should be there in from six to nine months."

Relay stations, Mr. Brown said, were to

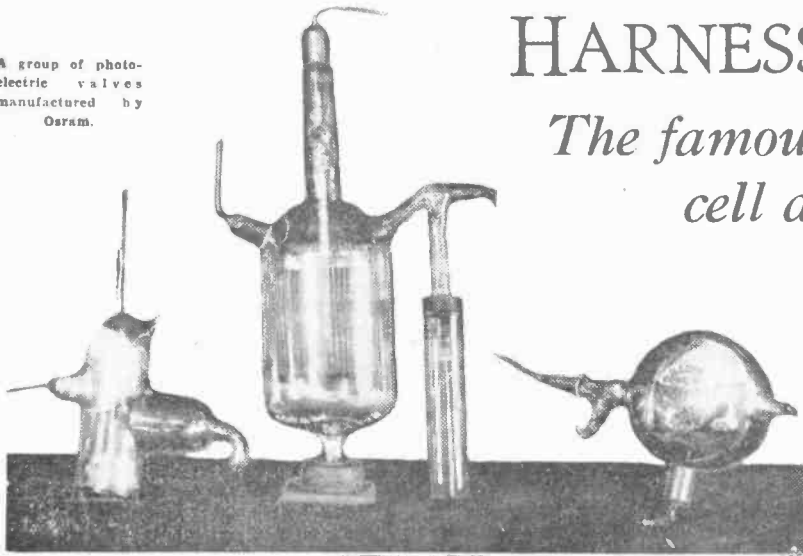
broadcast one hour of purely local entertainment daily. But this was not to say that the hour would be taken only in the morning or night. The remainder of their programmes would be taken by landlines from the "A" stations. Although the cost of the stations themselves, which will be almost as powerful as present "A" class stations, will be high, the cost of the landlines will also be considerable.

"And the new company, Mr. Brown?"

"It has shown itself vigorous up to date, and that I hope for good programmes in the future. I have said it often before—we do not expect all the programmes to please everyone, but there will be something for everyone. Beyond that, I can say nothing until I hear what the new company has in store for us."

That is H. P. Brown, the wet nurse, physician, or what you like, of Australian broadcasting.

A group of photo-electric valves manufactured by Osram.



HARNESSING LIGHT

The famous photo-electric cell described

By F. E. BUCKELL

(Valve Expert of the British General Electric Co.).

THE reader will no doubt have seen much reference recently to the photo-electric cell—which is sometimes described as the "electric eye"—in connection with talkie films, picture transmission by wireless, and television. In the instances referred to above the photo-electric cell is employed for the purpose of converting light variations into electrical changes, which are rendered tangible by the aid of the well-known thermionic valve, which is employed for amplifying the electric currents so that they can be employed for useful purposes.

In the early days the popular type of photo-cell was known as a vacuum cell, and consisted of a glass bulb, one side of which was "gettered" or silvered, upon which was painted sensitised potassium. There was in front of this coating a perforated grid, which was known as the anode. The effect of light being directed on to the sensitised potassium caused a flow of electrons from the coating to the grid when the usual B battery was connected in the circuit. The "gettered" surface was made so that an external connection could be made to the sensitised potassium. The density of light could be accurately measured by the electronic emission of thermionic current formed by the effect of that light on the cell. It was discovered, however, that the current thus produced was so infinitesimal that it was difficult to make use of it, and even thermionic valve amplification was not sufficient to make its application valuable.

Continual development and research work have given us a photo-electric cell to-day which is known as the potassium gas-filled cell. This gas-filled cell produces a very much greater current for any given change in light densities. This is due to the effect of the gas in the cell producing secondary electrons, as in the case of "soft" valves which renders it extremely sensitive and useful for commercial applications. The Osram potassium gas-filled photo-electric cell (see Fig. 1) is filled with an inert gas known as argon. This gas is not expended during the life of the cell. A pressure of the order of 0.15 mm. is maintained.

In the gas-filled photo-electric cell the current very greatly depends upon the difference of potential, which must be adjusted correctly to ensure that the best performance is obtained from the cell. A direct connection exists between the current produced by the photo-electric cell and the difference in potential between the anode and cathode. A curve illustrating the functioning of the photo-electric cell is shown in Fig. 2. When the electrodes of the cell have a constant voltage applied across them the relation between the light falling on the cell and the current is shown on the curve.

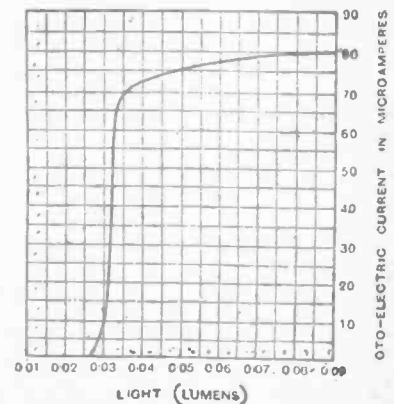
It will be seen upon examining the curve now the best use of the photo-electric cell can be made. Photo-electric cells have also been produced which are responsive to infra-red rays, which will react to light waves that are invisible to the human eye.

There are many applications for which the

photo-electric cell can be put, such as automatic street lighting, recording and projection of sound films, still picture transmission, counting the number of persons which pass a certain spot in a given time, and burglar alarms. In the last-named the photo-electric cell is of the red sensitive type. The arrangement of the cell in this case is such that a beam of invisible rays falls upon it. If these rays should be intercepted by the burglar the photo-electric cell immediately operates a relay, which in turn rings an alarm.

The greatest voltages that can be applied and the maximum photo-electric current obtainable with a given amount of light are indicated by a discharge passing through the cell, which is accompanied by a blue glow, such as was associated with the "soft" thermionic valve of early days, when too much B battery voltage was applied across the filament and plate.

Space will not permit of a detailed description of some of the uses of the photo-electric cell in this issue, but, possibly, these may be forthcoming in subsequent issues.



SPARKS becomes a Radio- Repair Man

(By C. A. REBERGER.)

No longer is the wireless operator a man apart. With portable radios on the increase passengers, crew, and even the skipper besiege him for help.



THE expeditious expansion of broadcasting has had a most amusing bearing upon the daily life of those who go down to the sea in ships. Especially is this true in the case of the radio operator.

As the craze has seeped into every home of those ashore, so has it invaded the humble sanctum of those on ships. Be it a lazy freighter or a fast liner that plies the Pacific or Atlantic lanes. In broadcasting have the hard-working engineers found much recreation; likewise the mates, stewards, and deckhands. To them to-day it means much in their spare moments. Its countless varied programmes amuse them and educate them. In the past crews relied upon books and magazines to contribute to their entertainment and education, but to-day it is the radio that fills the part.

"Life aboard ships has undergone radical changes," an officer aboard one of the big Hawaiian Line boats told me, "and this I may ascribe to broadcasting."

"Everyone aboard ship appears to be suffering from radio mania," another added, "for a radio set of one type or another is to be seen in nearly every room. Broadcasting has done much toward bettering living conditions for those who sail the oceans."

These statements should not be doubted in the least, since the merits of broadcasting are well understood. To-day the majority on land own receiving sets, so why not the sea-goer, whose hours are often lonely and long, with little to break the monotony.

Ashore it is the poor radio repair man who feels the full force of radio's popular-

ity, since he is marked as the one who comes to the aid of those in difficulty. Aboard ship it is the wireless operator who fills this capacity, and in this case his troubles are more and greater, in view of the fact that there is no one else to assist him. On land there are a hundred or more repairmen to come to the rescue and answer the multitude of questions that never cease.

An operator aboard one of the Union passenger steamers tells an interesting and colorful story in reference to this topic.

"The radio operator has very few spare moments, even when he is off watch," he says, "since about 90 per cent. of the passengers and crew are radio fans. All day and all night we are besieged by a mob, who fairly swamp us with questions about one phase of radio or another. Most of them, though, tell us of the troubles they encounter with their receiving sets, and beg us to tell how these obstacles can be overcome. It seems as though a thousand radio questions a day are asked.

"Many of the crew have their own sets, which they bring along every voyage, and, since we are supposed to be well versed in radio technicalities, they invariably expect us to fix or repair their sets whenever any trouble occurs, and this is frequent. In our case, with a crew of several hundred men, we find nearly 100 sets. Those who do not possess sets seek out the radio cabin and beg us to tune to music instead of code. Rigid rules had to be set down to do away with this practice, but if the crowd does not get us while on duty they do not miss us as soon as we are seen on deck. The ship's crew create much annoyance, but, with a full complement of passengers aboard, there is no rest. Broadcasting has certainly changed the everyday life of 'Sparks.'"

I am amazed by the transformation of a certain skipper, who bore all the earmarks

of a veritable grouch, with no indication of a change to a more quiet mood. His opinion of radio operators could never be laid down in print, and their daily life he made as abject as possible. Then came broadcasting. Someone ashore initiated him into the lodge of radio fans, and then the great metamorphosis! The next voyage a radio set was in his cabin, and much of his spare time was in company with the radio operator.

Here is an indication that such changes have been numerous. An old operator recently said:—

"The Old Man used to make things miserable for everyone. Then the chief engineer got a receiving set, and soon the skipper, pleased by the results, followed suit. His greatest pleasure is in listening to the broadcasting station when near and far from the American coast. The set changed him completely, and now we are great pals. He tells me that the skippers on nearly every other ship on the line carry their own private receivers."

The last steamer I was on the Old Man was tougher than a Mexican mountain goat; he had no competitor. A month ago I met him on Cortlandt Street, in New York City, and found him a new man. For more than an hour we talked radio.

"I have a six-valve set on the ship now," he was relating, "and enjoy music from all the stations of the world. There's nothing like it, since we get all the weather reports and news, too. I'm out now to buy a power amplifier to use in conjunction with it when we are off the coast."

From these little episodes it is plain that radio broadcasting has changed life aboard ship. In reality, it is a good thing; it breaks the monotony. But poor "Sparks" has additional labor and troubles heaped upon him. Not only is he the ship's radio man, which

is his legitimate position, but he is also general radio repairman, technical adviser, and set-builder, with unlimited hours.

"It's got me!" a fellow on a White Star Line steamer told me the other day. "Since many of the passengers bring along small sets and half the crew have their own I get no rest. Instead of devoting spare hours to conducting a developing picture business, selling postcards or souvenirs to the passengers, I am taken up with giving radio advice or fixing sets. And try and collect! The passengers are insulted if such a thing is even hinted. A year ago it was easy to make an extra £15 during a voyage, but broadcasting has greatly interfered and cut it way down."

Many of the large passenger ships, their owners realising the part broadcasting plays in the home and elsewhere, are installing elaborate sets in the dining saloons, drawing-rooms, and dance-halls. Repairing and maintaining this equipment naturally falls upon the radio men. Needless to say, this work requires time, but, unfortunately, does not add to their financial benefit. There is good argument, though, that sooner or later this additional work will cause an increase in monthly pay. It cannot be otherwise, since this is not really the duty of the radio operator aboard ship.

But this is not the only change "Sparks" has seen and felt during the last two years.

Broadcasting has opened up a new and lucrative field for the ship operator, if he will but grasp the opportunity.

Foreign radio fans and ship operators are quick to grab any new radio parts available in the ports they call at. Many American ship operators have had the foresight to see this, and, as a result, netted attractive profits. Any radioman will tell you that he could sell an unlimited amount of American radio material to those in the ports of the world he visited.

I am acquainted with an operator who has been taking parts with him aboard ship in Holland for the last five years and disposing of them in America and the East. His income from this has exceeded his regular salary.

"When we are in these ports," he tells me, "operators from ships of other flags literally swamp my cabin for the new Dutch valves, and will pay a good price to get them. In the past this sort of business has been profitable, but now that broadcasting has become so popular everywhere it can be made to be a big thing."

Another one told me: "As many of those aboard my ship carry their personal receiving sets, I always carry a supply of extra valves, batteries, etc., which they purchase when needed. On long trips I sell a fair amount of these items and make a good profit. Repair work also adds to my in-

come, but the best comes from charging A batteries. Since I cannot neglect my regular work and must do these things during spare time, it is only fair that I receive remuneration. Yes, I will say broadcasting has helped me much to better my income each trip. I know, too, that it is helping other ship operators who are doing the same thing as I."

It is plainly understood by ship operators that they must not neglect their own work to do broadcast set repairing, etc., but there is nothing to prevent them from doing this while off watch. One or two ship companies have voiced complaints that broadcasting has greatly interfered with the operators' regular duties, and have ordered their captains to see that such is not the case. But there is much spare time for the radio man, and if he will devote these minutes to work of the character stressed upon, then he will be doing something worth-while, something that will be appreciated, something that is for human benefit.

And so we see how broadcasting is affecting the life of "Sparks" and his companions aboard ship. Those who go down to the sea in ships have recently enjoyed radical changes through the medium of broadcasting. Sea life is not what is used to be, and broadcasting will continue to make it better as the days go by.



GOODIE REEVE.
Women's Talk and
Children's Session, 2FC
and 2BL.



FRANK GROSE.
"Cheer-up" Society,
2BL



ALF LAWRENCE.
song writer, conducts
2BL, Revue.

MELBOURNE FEATURES

Some special programmes to
be broadcast from 3LO

Reginald Bradley Broadcasts

REG BRADLEY

will be heard in violin solos from the new 3LO Studio on August 2. A serious illness compelled Mr. Bradley to lay his violin aside for several months, but his many admirers will be delighted to know that he is now sufficiently recovered to continue his artistic career.

Pavlova's 'Cellist at 3LO

MONS. ZISSERMAN, Continental 'cellist,

will be on the air from the new 3LO Studio on August 1. Before coming to Australia, Mons. Zisserman held successful recitals in the great musical centres of Europe, where he is well and favorably known both as a soloist and in connection with leading orchestras. As a prominent member of Madame Pavlova's orchestra he gave much artistic support.

Child Welfare

THE many listeners who are interested in the subject of Child Welfare should not fail to tune in to the talk to be given by Miss A. Wallis on July 29. For this occasion, Miss Wallis has taken "Children's Activities and Formation of Habits" for her title, and she will broadcast much valuable information on the absorbing subject of training the young mind in the way it should go.

"Cavalleria Rusticana" from 3LO

A STUDIO presentation of the opera "Cavalleria Rusticana" will be given from the new 3LO Studio on July 31. Principals include Saffo Arnav, Gertrude Hutton, Horace White, and J. Alexander Browne, together with a well-trained chorus. The whole production is under the direction of William G. James, the assistant musical director for the Australian Broadcasting Company.

Harold Elvins Broadcasts

HAROLD ELVINS, whose sincere art as a pianist has placed him in the front rank of Melbourne musicians, will be giving a recital from the new 3LO Studios on July 30. It will be remembered that Mr. Elvins studied in Melbourne till 1909, when he went to Europe to complete his musical studies in Germany and Switzerland. He made a most successful concert tour of Norway in 1911, and his recitals include two performances at the Wigmore Hall, London, when he presented, for the first time to an English audience, several works of Fritz Hart.

James Adds a Postscript to the "Mike"

DEAR Editor.—You MUST get this in somewhere. Don't let those barbarians in the composing room touch a line of it. Fact is, Mr. Editor, we were working late on Tuesday night, 2FC's last night under the New South Wales Broadcasting Company; and at eleven o'clock we decided to call it a day (rather early, for us), so we strolled round to 2FC to see if there was anything stirring that might interest our dear readers. We had just arrived at the lift door, and pressed the button which pulls the lift down, when who do you think came in? Three guesses. No; it wasn't King George. Wrong again! It wasn't Harry Lauder. . . . No. You're right off the track—it was Mr. Stuart Doyle, with Mr. Oswald Anderson and Mr. H. P. Brown, and a whole retinue of other very important personages. By that time the lift had arrived, so we gracefully pulled open the doors and waited for the Great Ones to get in.

Well, when they were all in, there didn't seem to be much room for us; so we made the best of it and began to close the doors. "Oh, come in," said Mr. Doyle. "There's plenty of room for you." So we went in, closed the doors, and pressed the button. "Here's the first joke of the evening," said Mr. Anderson, pointing to a card marked, "To hold eight persons." "I'd like to see the

kind of persons," said Mr. Doyle. "Especially musical parties with drums," said Mr. Brown. You see, Mr. Editor? It was a nice little family party. Us and Mr. Doyle!

When we arrived on the third floor, there was Mr. Malone, and Mr. McDonald was in the control room. "What's that playing?" asked Mr. Brown. "That's the Jazz Band," explained Mr. Anderson. "They go on till twelve." "All that interests me," said Mr. Brown, "is, whose station is it?" You see, it was a funny position. There was the Chairman of Directors of the new company, treading the carpet of the first studio to be taken over for the first time; and there was the time, half-past eleven; and the studio wasn't his till after twelve.

Anyhow, we waited about for a while; but all the important personages were doing was checking up on furnishings, etc.; so we decided to troop away. We mean to say, that was that.

But we want you to get this in somehow, Mr. Editor, even if you have to cut out some of Mr. Hull's articles; because we want to show our readers just how well we get on with the truly great, people in Sydney—it will add to our prestige.

We mean to say, we certainly went UP in the lift with Mr. Stuart Doyle; even if we did come down with the caretaker.

—JAMES.



TWO HAPPY FAMILIES GROW INTO ONE



ONCE upon a time, and it wasn't so very long ago, there were two beautifully lovely, delightful, radio Uncleydunks. One was called the Hello Man, because he was always saying "Hello!" to more and more handsome nephews and beautiful nieces; not without pleasure, we grant you; for his one delight in life was derived from his constant association with the loveliness of youth. The other was called Uncle Bas, for a very good reason; it was his name.

Now, these two beautifully lovely, delightful radio Uncleydunks lived in great big tall stoopos in the heart of the busy city; and if you don't know what a stoosjo is you had better ask your father or your mother, because that's a very big secret. And every night at a certain hour, the Hello Man Uncleydunk told stories to children from HIS stoosjo; and every night at a certain hour the Uncle Bas Uncleydunk told stories to children from HIS stoosjo; and all the children in the world (or the State of Noo Sooth Wiles, which is the only part of the world that REALLY matters) listened either to the stories of one Uncleydunk or to the stories of the other Uncleydunk, and said "They're really awfully goodooh, and no doubt about it!"

And, indeed, the stories were exceptionally awfully good-oh; so were the songs sung by the dear old radio Uncleydunks' little fairy friends—they were so good that you didn't feel like missing one little tiny bit of either of them; not even one single "ahum!" of the Hello Man radio Uncleydunk, and not even one single "ahem!" of the Uncle Bas radio Uncleydunk; but what were you to do? If you listened to the Uncle Bas Uncleydunk you would be sure to miss some of the elegant eloquence of the Hello

Man Uncleydunk; and if you did the other thing the case was precisely similar the other way about. So, while everyone was remarkably happy, the world (or the only part of the world which really matters) was not quite as happy as it MIGHT have been.

Things were thuswise situated when a great big extraordinary Uncleydunk called Stuart came along and trained his piercing eye on the whole position as it lay before him. The Stuart Uncleydunk said, "Mmmmm!" Then he turned round the other way and said, "Yo!" Then he turned three somersaults in the air, without ONCE touching the ground, and beckoned to two more mysterious Uncleydunks called Benjie and Frank; and they came up, and they held a terribly long Conference; but what they said nobody else knows; because, if anyone says he knows what the Stuart and Benjie and Frank Uncleydunks say when they have a Conference, he ought to be put in the dock for Perjury, which is most uncomfortable and altogether to be avoided, if possible.

Anyhow, it was soon learned, when the information had trickled through the correct and orderly channels, that in future the Hello Man and Uncle Bas Uncleydunks should tell their stories from the one stoosjo, and that stoosjo was to be 2FC, which magic letters, of course, mean more than you might think they mean if you could. And the Uncle Bas Uncleydunk was to tell his stories on one night, and the Hello Man Uncleydunk was to tell his stories on the

next night, and so on and so on; in fact, they were to tell their stories on alternate nights. You look up Alternate in the dictionary. We haven't one handy, or we'd tell you what it means.

Well, when the Uncle Bas Uncleydunk and the Hello Man Uncleydunk heard this good news they looked as delighted as anything, and said: "What about a gorgeous party to celebrate?" Oh, dear! Oh, dear! They were frightfully pleased. And then the Benjie Uncleydunk consulted with his brother, Uncleydunk John, and said, "We'll give you our beautiful St. James Theatre to have your party in. Please take our Theatre to have your Party in!"

"Oh, thank you SO much," said the Uncle Bas Uncleydunk. "It's really awfully kind of you," said the Hello Man Uncleydunk. "What a positively awfully joyful time we'll have!" they exclaimed together.

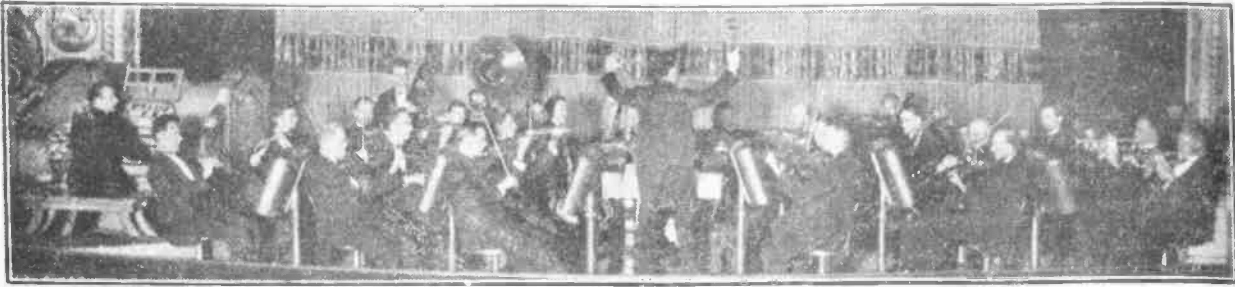
And then they began to make arrangements for their beautiful Party. Oh, they did work hard on those arrangements! But, first of all, they drew up a Statement for the Press, which is a very important thing to be done always on all occasions when you want to do the things they wanted to do at the time they did. The Statement was Something like this:—

Dear Children,
 We wish you all to come to St. James Theatre on Saturday morning, to be at the very first party of the new children's session. As you know, the 2FC and 2BL Children's Sessions have joined hands, and in future the Children's Hour will be broadcast only from 2FC. So we wish you all to, come to the best and biggest Saturday Morning Party we have ever given. We shall both be there, with all your other friends of the Children's Sessions, and we assure you it will be the next best thing to Christmas.

Your affectionate

Hello Man *Uncle Bas*

To Celebrate the Amalgamation of the 2BL and 2FC CHILDREN'S SESSIONS of the Australian Broadcasting Company, a GALA ENTERTAINMENT will be given to Radio Children by Kind Permission of S'Ben and Mr. John Fuller, In the Beautiful, Modern Theatre of SAINT JAMES on the TWENTY-SEVENTH DAY of JULY, In the MORNING.



Will Prior and his State Orchestra, with Price Dunlavy at the Wurlitzer.

:: TUNE IN TO THESE FEATURES ::

Mr. C. N. Baeyertz

MR. BAEYERTZ has been booked to give a series of four talks on Spoken English. He will speak every Tuesday at 12.5. It has also been arranged that Mr. Baeyertz shall give four talks on Greek philosophers, one every Friday, at about 2 p.m. The first will be about Socrates, the second Plato, the third Aristotle, and the fourth on the Stoics and Epicureans. Mr. Baeyertz says that Greek Philosophy can be treated quite humanly, and can be made really interesting. He will read the remarks of several modern writers on these old moralisers. Robert Louis Stevenson's story of what Socrates' wife said when old Soc. came home drunk should interest Mr. Baeyertz' modern audience.

A Dramatic Recital

FOR his special recital of Robert W. Service's works on Thursday evening, July 26, Frank Hatherley has selected the following numbers characteristic of the famous poet's best compositions:—"My Friends," "Barb Wire Bill," "The Quitter."

TWO HAPPY FAMILIES

(Continued from previous page.)

And then they wrote out their programme, which is indeed a very wonderful one indeed; and they showed this programme to WIRELESS WEEKLY; and these were the main things in it:—

In the First Part, there will be a Grand Tableau, illustrating Britannia and the Youth of Australia—Boy Scouts, Girl Guides, and Junior Red Cross included—standing very still while you look at them. Then there will be Melody and Mirth by Three Little Maids; and an address by the Hello Man. Then Errol Noate and Little Norma will do a little entertaining. Then there will be a Novelty Competition for Children. Then there will be an interval, during which Uncle Gas will speak to the children. After the interval there will be a brilliantly spectacular revue by the pupils of Kathryn Hamnaby, under her personal supervision. This will be very extra special. There will be the Rainbow Ballet; Little Dullow, who will sing and dance; Joyce Crocker, who will do The Dying Swan; Peggy Quartill, comedienne; a Toe Dance solo by Hazel Ward. "Jazzmania," by the Galway Sisters; a Chinese Novelty, by Greta and Dulcie Quoy, assisted by Winsome Liu; Black and White Ballet; an Acrobatic Display by the Whirlwinds; and—God bless our hearts! We've come to the end at last.

But won't it be wonderful? An entertainment for Children, in which only children will take part. We are sure the whole world (or the only part of the world which really matters) will be there on Saturday morning.

Robert Silvester

THE Australian Broadcasting Company, on hearing that Robert Silvester, eminent English violinist, was on a three weeks' holiday in Australia, negotiated for two broadcast appearances before he returned home. Mr. Silvester is fresh from his triumphs in England and on the Continent, and is a pupil of the celebrated Sevcik, the eminent Czecho-Slovakian violinist, and teacher of Kubelik and Erica Morini.

Alf. Lawrence and Company

PRESENTING a "pot pourri of fun and jollity," entitled "A 60 Minute Revue," Alf. Lawrence, the well-known song writer and composer, has gathered together a noted band of entertainers who will present to listeners an enjoyable radio revue from 2BL on July 27, from half-past eight until half-past nine.

Mr. Lawrence will be assisted by Nell Crane (comedienne), Dismal Desmond (comedian), Hudson Stanley (entertainer), Enid Parker (violiniste), Grace Quine (contralto), William Everard (tenor), whilst Ruby Dent will act as accompaniste. Mr. Lawrence himself has an international reputation as a conductor. He has written songs for the late Lee White and Ada Reeve, and recently wrote the second edition of "Clowns in Clover" at the Empire.

Pulpit of the Air



Rev. Canon Lea.



Rev. W. J. Grant.



Rev. C. A. Gratke.



Rev. A. P. Doran.



Rev. H. C. Foreman.



Rev. W. J. Grant.

These people will provide future broadcast church services.

Children's Birthdays

IN order to save confusion and disappointment all birthday greetings and messages for broadcasting in the 3LO Children's Sessions should be addressed to either "3LO Melbourne," or "The Australian Broadcasting Company, Ltd., Melbourne Place, off Russell Street, Melbourne, C.I.," or simply to "3LO Melbourne, Box 1904, G.P.O., Melbourne." Birthday greetings will be broadcast very morning at 7.45 excepting on Sundays, when they will be broadcast at 10 a.m., and a special Children's Session will be held every week-day at 5.45 p.m., and on Sundays at 6 p.m. "Bobby Bluegum," "Billy Bunny," and "Little Miss Kookaburra" will conduct these Children's Sessions and special features will be introduced.

Snakes' Eyes

SOME exciting moments are in store for all those who listen to the new 3LO Studio programmes. For August 2, Mr. Howlett Ross will tell one of his deepest mystery stories, entitled "Snakes' Eyes," which naturally indicates that something fascinating or sinister is afoot. In order to get the best results, listeners should make a point of turning down the lights, and, with his wonderful facility for creating "atmosphere," Mr. Howlett Ross will do the rest.

Special Country Services

DR. LOFTY'S HILLS, the new lecture manager for 3LO, is to collaborate with the University and the Departments of Agriculture, Horticulture, and Education, and also with Commonwealth Departments and Boards with a view to broadcasting a comprehensive programme of educative talks and lectures for country listeners to cover all interests. Professor Bernard Heinze, the Director-General of Music for 3LO, is conducting widespread enquiries to ascertain what class of music is most acceptable in the country and the ever popular dance sessions from both 3LO and 3AR are being organised.

PROGRAMME PERSONALITIES

Miss Marjorie Beeby

MISS MARJORIE BEEBY is the daughter of Judge Beeby, who arbitrates, or something like that, and writes plays. It must be a very fine thing to be, being a daughter of a judge; and if we thought just being a daughter of a judge would make us anything at all, like Miss Beeby, we also would be the daughter of a judge. Because that's how Miss Beeby strikes us.

Miss Beeby, however, has the added attraction of being a mezzo-contralto of note. She studied singing under Mr. Roland Foster at our State Conservatorium of Music; then went to London, to study at the London Academy, under Marcus Thompson and privately, under the Viennese, Victor Beigel. Then she went away to America, where she studied again with the Danish soprano, Pauls Prijs, a name of which we have no explanation, except that it IS so.

Miss Beeby has many concert performances in America to her credit. She sang with the New York Symphony Orchestra under the conductorship of Albert Stoessel. Miss Beeby is yet one more among those interpretative artists whom we have been pleased to welcome, in Australia recently. She specialises in Modern French songs, German Lieder, and Old English; all of

which require complete artistry from singers.

Especially these modern French songs. "I like singing these best of all," says Miss Beeby. "They are creating great interest in Europe. France is the home of the moderns; and the modern French songwriter has paid great attention to his words; he always chooses a beautiful poem, to begin with, which can't be said of many of the German composers. These French songs are more subtle, more intricate, and more difficult. They are more difficult, because the singers have to make their own backgrounds, and create their own atmosphere; whereas in opera these are already there."

The standard of musical taste in America, Miss Beeby says, is very high. "They have the money, and they buy whatever they want. Besides, they have the people. There are ten million people in New York, so you can understand how they can support so many symphony orchestras. Broadcasts from concerts of the New York Philharmonic and the Philadelphia Symphony Orchestra are quite regular occurrences."



MISS MARJORIE BEEBY.

We forgot to say that Miss Beeby is really the wife of Mr. William Code, the Sydney violinist. They have a son, Michael John Code, who is now three years old, of whom Miss—Mrs. Code is extremely proud. "You can say that if you like," she told us. Mrs. Code goes back to America to join her husband in September.

YES, THEIR WHOLE AIM IS TO PLEASE YOU

M. Florent Hoogstoel

M FLORENT HOOGSTOEL, who will broadcast from 2FC on Thursday July 18, graduated at the Brussels Conservatoire. At 18 years of age he was appointed to the staff. Later he came out to the Commonwealth and New Zealand under a touring engagement, and settled in Sydney, where he was appointed to the staff of the Sydney State Conservatorium. He was also appointed an examiner on the Australian Music Examinations Board. M. Hoogstoel has attained a wide reputation as a solo violinist and an exponent of the Belgian school of teaching. He made many appearances with the late State Orchestra under M. Verbrugghen, when, amongst other works, he gave a first performance, with orchestral accompaniment, in Sydney of the Saint-Saens A Major Concerto. He was also principal violin of the orchestra. Since then he has another first performance to his credit, being that of the Max Bruch Concerto in D Minor, which he played with the present State Orchestra under the conductorship of Mr. Arundel Orchard.

operatic work, and only a spell of homesickness for Australia and New Zealand was responsible for her return here. She is now making her first broadcast appearance in Australia.

Edgar Stone

RECITALS from the State Theatre, any day at 10.45, will be provided by a young organist, Edgar Stone, who says he is only happy when seated at a Wurlitzer. Mr. Stone is a brilliant pianist as well, and confesses to a liking for writing his own compositions. He is an adept at arranging classical and popular jazz numbers, and can make his Wurlitzer talk.



Miss Mona Deutscher

MISS MONA DEUTSCHER, contralto, will be one of the principal artists from 2FC on July 31. Miss Deutscher received her vocal tuition from the studio of Madame Goosens-Viceroy, and is the holder of the McGirr Brothers Scholarship at the Conservatorium. She has just completed a tour of the New England districts with the Annual Conservatorium Concert Party.

Madame Goosens-Viceroy

MADAME GOSENS-VICEROY, who will appear from 2BL and 2FC on July 31, is an operatic soprano whose association with the State Conservatorium is well known. Madame Goosens-Viceroy's voice is very beautiful; her diction, slightly flavored with a foreign accent, is a delight to listen to. She has achieved notable success abroad and all over Australia, and has appeared with the Royal Philharmonic Society.

Celebrated Russian Singer

MADAME HESALEVA, the operatic singer, will be included in the programme from the new 3LO Studio on August 2. Madame Hesaleva received her early musical education in the Conservatorium at Warsaw, and had just embarked upon a most successful career at the Opera House, St. Petersburg, when the outbreak of war put an end to a very promising season. She has sung in most of the musical centres of Europe.

Well-Known Elocutionist at 3LO

JOHN HOPKINS, dramatic entertainer of Melbourne, will make his debut at the new 3LO Studio on July 29. As a concert artist he has been associated with such artists as John Amadio and the late Arthur Zelman, and has given many successful recitals. As an adjudicator, he is a familiar and popular figure throughout the Commonwealth and New Zealand.

Etta Field

MISS ETTA FIELD, who will appear on 2FC's programme on Monday, July 2, and from 2BL and 2FC on July 31, is one of New Zealand's foremost dramatic sopranos. She has spent the past three years learning from world-famous teachers in London, Paris, and Vienna. Miss Field specialises in

Wireless Weekly

Incorporating "Radio in Australia and New Zealand."

FRIDAY, JULY 26, 1929.

REDUCTION IN COUNTRY SERVICES

IS broadcasting primarily an entertainment medium—or is it more important as a utility service? An old question, but one never yet settled in Australia. It is brought up again because its answer is causing the new broadcasting company some concern.

Apparently the underlying inquiry is: Will more licences be derived from providing longer hours of entertainment for listeners, or from giving comprehensive news service and market reports? If this is so, then the new broadcast company has decided against utility for the new 2FC and 2BL roster shows these services cut down approximately to half the time previously occupied.

Certainly, this move will please many city listeners, who were frequently bored by the constant repetition of stock, fruit, and farming reports; but it is not likely to find favor with the many thousands of country listeners. It is possible, of course, that more prospective licences may exist in the city than in the country. Although 2FC and 2BL paid a great deal of attention to the countryman's requirements in the past, the response in country licences has been comparatively small, yet every trader knows that there is a great and increasing number of radio fans in the country, and the circulation of WIRELESS WEEKLY itself—almost one-third of which is in the country—proves conclusively that country radio fans exist in large numbers.

No doubt the country listener has been backward in securing his licence. This is not altogether his fault, although his criticism of the curtailment of the country services may possibly be answered with a discreet charge of procrastination in this direction. But, whatever may be said, it should not be necessary, on the evidence of licence fees alone, to judge the importance of country services. They play a far greater part in our national development than any other department of broadcasting.

Even on the score of duplication of the programmes of 2FC and 2BL the utility services should stand, for they are important enough to warrant broadcasting from both stations for the convenience of those listeners who cannot hear one or the other of the stations in the far reception districts.

Eras and Errors

By A LISTENER

THE watchword, catchword, and slogan of the Australian Broadcasting Company is "A New Era in Broadcasting." As an assertion of fact it means nothing. Eras have to begin somewhere and the fact that they are new or the fact that they are eras doesn't make them either better or worse. But "A New Era in Broadcasting" means two things to the public. It is a hope and it is a promise.

What do we hope from the New Era in broadcasting? Do we know what we want? Could we draw up each his own programme for the day and hour? Or do we only know what we don't want? The latter is the more general feeling, certainly; but there are characteristics we wish all our programmes to have:

Firstly, they must be national—Australian "I feel," says Mr. E. T. Fisk, "that this great service can be used to a real degree for educational purposes; but at the same time it must be remembered that broadcasting is essentially a means of entertainment." We doubt whether the backblock Australian would agree entirely with Mr. Fisk. Broadcast market reports have proved themselves extremely valuable to our countrymen; so valuable that many have bought radio sets primarily so that they may keep in touch with market conditions. Radio is valuable not simply because it provides amusement; but because it reaches everyone immediately and simultaneously. Moreover, a national radio service, run on behalf of the Government, must serve all the needs of the nation: must serve not only those people who pay licence fees; but must also experiment with new uses of the radio medium, so that, as an instrument of national contact, it may give the greatest benefit to the community. We know that all Australians don't wish to be educated by radio. Some do. We know

very well that some educational subjects don't broadcast very well. Others do. And we know that everyone doesn't want to listen to the latest price of beans or how wool went on the Exchange to-day, or "Will Mrs. Smith come home immediately; her husband is seriously ill." National broadcasting is not essentially a means of entertainment. So we want a service which will teach Australians what their politicians can't—to think nationally.

Secondly, we want our programmes presented properly. This will necessitate the careful study by programme compilers of the public's needs, and a thorough knowledge of the technique of studio production. Presentation is not part, but the whole of broadcasting, and begins with the programme department and ends with the last item of the programme. We want our programmes to be made up of national requirements, educational, utilitarian, and recreative allotted to their proper times, so that we may have them when we most want them; and presented with just that manner which is the difference between the yawn and the cheer of an audience.

Thirdly, we want better regional broadcasting. We want broadcasting stations in the country districts; and of these it is possible to say that sixteen are definitely promised, to be installed within three years.

With those three wishes, our power of hoping flickers and goes out. But with the lamplack we have written a tall order. National programmes—efficient presentation—national wide availability.

What are we promised for our New Era in broadcasting? The main promise of the Australian Broadcasting Company is that it will attempt to double the number of licences in the Commonwealth.

ONCE BITTEN, NEVER SHY



The Acquaintance Who Asked Him If He'd Ever Bought A Radio Set.



He Is Due for a Rude Awakening



The Wife Doesn't Know Half Of It



Ma Knows the Symptoms.

THE SAFETY VALVE



Readers are urged to express their opinions on matters pertaining to broadcasting. If you have some grievance, if you have some constructive criticism to offer, here is your chance for expression—your safety valve. The

editor assumes no responsibility for statements made by readers and published on this page, as opinions of correspondents do not necessarily represent our editorial policies. Anonymous letters are not considered.

Country News

Dear Sir,—I notice according to published report that the early morning news session from 2PC at 7 o'clock is to be replaced by "early rising gramophone records" and children's birthday calls, under the new radio control policy, and the earliest news of the day to be broadcast will be at 1 p.m., from 2BL.

I would like to point out, in the general interest of country listeners, that midday broadcast is the worst time for reception, and probably the latest news is one of the most interesting matters to country people; a sparkling gramophone march may be a good stimulant for the city folk, who desire to catch a train, and birthday calls will certainly be a pleasure to the children in the early morning, but, above all, give the "back-bone" of the country his bit of early news from the morning papers at five minutes past 7.—Yours, etc.

COUNTRY LISTENER.

Toorooka.

Worth Listening To

Dear Sir,—With regard to the remarks made last week by an old-timer re the old-time dance nights at 3LO, I am with this correspondent in what he says, as I consider this is one of the programmes really worth listening to.

I am writing this in the hope that other listeners will write in and keep the subject before the eyes of the new company, as it will in future be the one that will provide the programmes. The writer says that the discontinuation of the old-time nights would be a knock-back to at least 90 per cent. of the listening public. I am sure this would affect easily 90 per cent. of the listeners—in, as I know in this district, listeners are always talking about the old-time nights.

Trusting all who are interested will make good use of the safety-valve page in regard to the above.—Yours, etc.

ANOTHER OLD-TIMER.

Bungendore, N.S.W.

What of B Stations?

Dear Sir,—In your issue of July 12 you ask what of B stations? What a question you open up! In part you say in America if a station offends with objectionable advertising its licence is forfeited, and you go on to consider that that condition should apply here. I do not agree with you. Our B stations want encouragement and a 10 per cent. cut out of the licence fee. I take the biggest part of my programmes from them, and I say they should receive a share of my fee. This state of affairs was the outcome of the Melbourne conference of about 1923, when it was agreed that the A stations received the licence fee less 10 per cent., with no advertisements. B stations not to receive any of the fee, but the rights to advertise to help cover running costs.

The time has passed when the representative of the listeners should have had a say. When Mr. Gibson notified the companies

that a big change was on the move that great, big, powerful body of listeners' representatives known as the Listeners' League should have demanded that B stations be given 10 per cent. of the licence fee power to increase to 5 k.w., and A stations to increase to 10 k.w.

I say, taking the musical side of the programmes on the last 12 months, the B stations lead easily, especially 2UE and 3UZ.

In conclusion, what a lot of questions could be asked Mr. Gibson on this move or change-over? Has he been fair to listener and company.—Yours, etc.

Bull.

BUSHIE.

Mr. Conlon's 14 Points

Dear Sir,—Enclosed herewith is a list of suggestions arrived at after a period of observation extending over about six years (since the inception of broadcasting in Australia).

The writer makes the bold claim that their adoption would be the means of greatly increasing licences, and would meet with the approval of every radio set owner, be he a "fan" or just a "listener."—Yours, etc.

Broken Hill.

C. J. CONLON.

1. One powerful station subsidised and jointly controlled by an ecclesiastical body representing all religious denominations in conjunction with the Government, operating on multiple wave lengths, and broadcasting religious subjects, services, and lectures, etc., only.

2. Absolutely no advertising barefaced, shrouded, or "inspired" from any A class station.

3. Positively no political piffle of any breed. The press takes ample care of all hot-air merchants of every shade.

4. No land line or relayed music. Music from acoustically correct chambers only, with all extraneous noises filtered out, and with a background of dead silence, not as at present, good music spoiled by squeals, coughs, etc., and the other congregational noises of theatres, picture palaces, and the like.

5. No police notices, missing relatives, absconding husbands, lost babies, etc. These walls are introduced merely to use up the listeners' time. The "agony" columns of the press are available for this stuff at so much an inch.

6. Market reports—spuds and onions, etc.—from one station, not the lot, as heretofore; those interested can tune in at specified periods daily.

7. Positively no studio audiences to applaud each and every tin-pot item, eat up the listeners' time, and rag his nerves.

8. No relays, with their attendant hums, hisses, and Morse-infested racket invariably associated with these broadcasts, unless events of utmost national importance.

9. No monotonous repetitions of to-morrow's programmes. The programmes are printed in WIRELESS WEEKLY for those interested.

10. A complete and adequate news service, issued at exact periods daily, including Sundays and holidays.

11. Good gramophone recordings, vocal and

instrumental, reproduced on good machines, are much preferred to fourth-rate items done by fourth-rate artists.

12. Specific periods for jazz.

13. Dual wave-lengths transmissions, both long and short wave (20 to 40 metres); long wave lengths (250 to 550), for city and suburban districts, and short waves for the back-country listener. An improved service during the day would be welcomed by the back-country listener who would be willing to pay the extra cost of operation of dual transmission.

14. One master station to handle all Australian racing, working land lines to all racing centres, simultaneously broadcasting on long and short waves. Short waves have proved most effective in reaching all corners of the Commonwealth and New Zealand during the day; the dyed-in-the-wool radio fan is not interested in horse racing. The racing fan is interested in nothing else. He should therefore have his own station and help in its upkeep.

C.J.C.

Got the Bird

Dear Sir,—The arresting article by W. McE., in which he believes that "human beings could be birds" if they could only be trained from infancy to flap wings until such could bear their weight, finds in me a seconder. But he bemoans that, having no children to experiment upon, he lacks opportunity to demonstrate it.

Perhaps my case will be acceptable as proof, seeing that my paternal relative, holding a similar theory, trained me in it until now. I think nothing of supporting myself by the aid of my muscles alone. Whether he began with the clothes-line and pulley method I cannot recall, although I have faint recollections of sundry painful "tail-spins," etc., under his guiding hand. Anyhow, I learned to fly. Yet one should not boast of it! Let me rather tell something else it did to me.

I notice certain physical changes operating within me. When on the roof of a high building I find my "wings" flap, enticing me to "volo-plane" to the street below—which one does not attempt out of respect for the passers-by. At meals I have dispensed with knife and fork and have developed a noticeable "peck." This cannot be helped, for, having lost all my teeth, the weight of the shell-grit in my gizzard forces my head down, and I cannot drink without lifting my head and "chewing" my drinks. An observer once declared I ought to be fed on pollard and bran mash and live in a fowl-yard. My flesh at this went utterly "goosey," and remained so. Then my whiskers turned to feathers—but a safety razor used daily hides this from my neighbors. Only my wife has realised the change—and because my toe-nails, through non-clipping, have become talons, she makes me sleep on a rail as on a hen-roost. The worst part of it, however, is the shame that has since utterly come over me. I hide my head under my wing, and I wish I had never become a bird—for she now nightly sprinkles sand under my perch.—Yours, etc.

ANOTHER CUCKOO.

Lakemba.

∴ Yours For Better Radio ∴

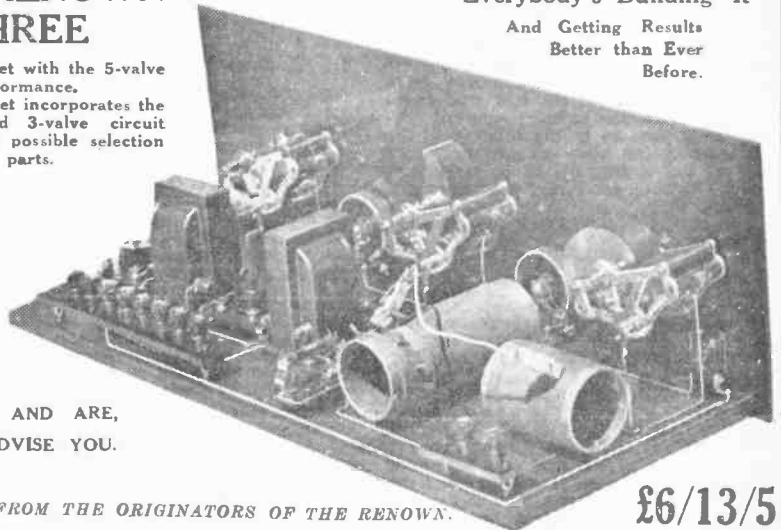
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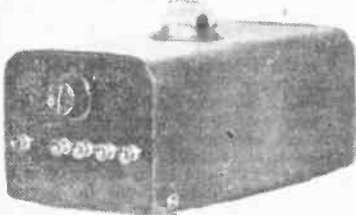
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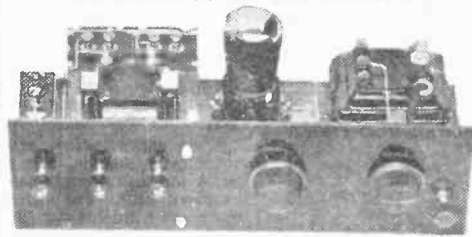
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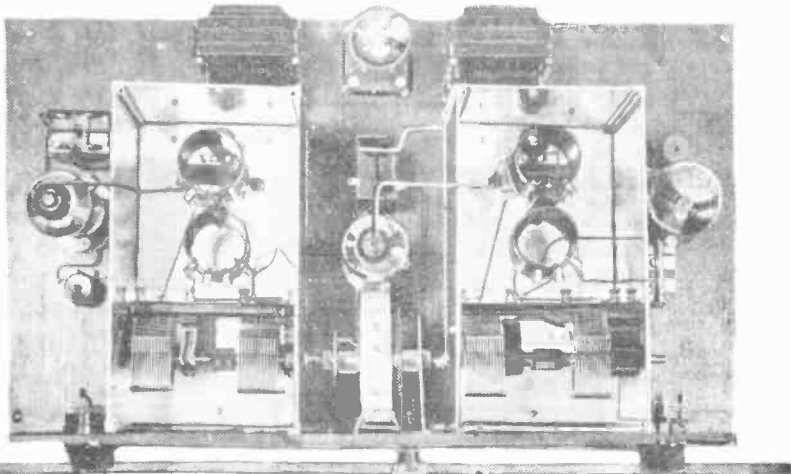
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The construction of two types of power supply systems is detailed in this second article on the Standard A.C. Four. In addition, the adjustment of the receiver is given comprehensive treatment.



Completing the STANDARD A.C. 4

By BOSS A. HULL

LAST week, in writing about this four-valve receiver of ours, we laughed about the possibility of decorating the article with a big, splashy heading. We visualised a simple, unassuming title, in keeping with a simple, unassuming sort of article. But it was the "make-up" man who had the laugh. A disbelieving, interfering, biased, unvarnished, malicious, and generally unspeakable sort of cuss, he proceeded to fit the story out in a manner becoming the most amazing "new" circuit or the most superior "super-stonkadyne." And then, to cap his misdemeanors, he sat our name on top of the story in type which shouted loudly at the reader.

We are grieved about it all—we apologise. When we left the receiver last it was mechanically complete, though far from being in a condition to bring forth bursts of music. It was still necessary, as we explained, to provide a power supply system and to carry out a number of careful adjustments throughout the set. Let us, then, talk of power supplies.

The first requirement is a means of lighting the valve filaments. Since this is an a.c. type of receiver, the power for this purpose will be obtained from the lighting mains through a step-down transformer. The alternating current from this transformer will be quite satisfactory for the supply, since the first three valves are specially designed for operation in this manner, while the last valve (though not of the indirectly heated type) can also be made to run from the same supply without any serious hum resulting. The first three valves are rated at four volts on the filament, and operation will be simplified if the power

valve chosen also has the same rating. One power valve used during experiment with the receiver was the Philips B403. In this case the filament supply was obtained from a Philips transformer, having a secondary voltage of 4. In another case the power valve was a Radiotron UX-245, which has a filament voltage of 2.5. This valve was run from a 2.5 volt winding on the Pilot power transformer (to be mentioned again later), while the other three valves were run from a 5-volt winding on the same transformer. In order to drop this voltage down to the four volts, a resistor of .4 ohms was put in series. A great many other filament supply arrangements are possible, the only important requirement being that the filaments of the first three valves are supplied at four volts, and the power valve with whatever voltage is necessary, according to the instructions supplied by its maker.

POWER FOR THE PLATE CIRCUITS

Greater complications are involved in the provision of a plate supply for the valves

In any receiver the plate supply is of great importance, but in this outfit, provided, as it is, with two screened-grid radio-frequency amplifiers, the "B" system has a very definite influence over its functioning.

The actual requirements in the way of plate supply are tappings to provide between 200 and 250 volts for the power valve and its bias, 90 volts for the detector, between 150 and 200 volts for the radio-frequency amplifier plates, and between 60 and 100 for their screen-grids. The greatest current drain from any tap will be that of the power valve. It may be between 20 and 35 milliamperes—a current readily supplied by most of the rectifiers provided for the purpose.

The diagram, Figure 1, is the circuit of one type of plate-power system which fulfils these requirements. The same circuit, re-drawn for non-technical readers, is shown in Figure 2. The complete supply system is shown in the photograph. It was built up by us, and tested carefully, in order that we would be able to say that it could be used with the "Standard A.C. Four" with complete effectiveness. From Figure 1 it can be seen that the high-voltage transformer feeds, not a valve rectifier, as is usually the case, but one of the new "copper-oxide" or "metal" rectifiers. The output of this rectifier connects with two 2 mfd. condensers (marked C1), with a rated working voltage of 400. From this point the partly filtered output goes through two separate chokes, one helping to filter the supply to the power valve and the other performing the same function for the supply to the other valves. Since B2 must carry a much heavier current than B1, it is of higher rat-

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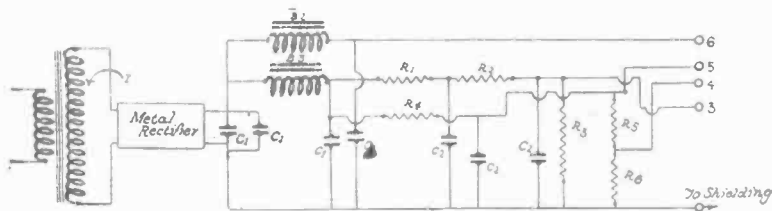


Figure 1.—The circuit of the power supply for grid and plate circuits of the Standard A.C. Four. Separate from this is a Phillips 4-volt filament transformer. The parts used include:—
Type EM1 high voltage transformer (T.).
Metal rectifier, type R80.

Type B2 filter choke.
Type B3 filter choke.
Four type C1 2 mfd. condensers.
Three type C2 2 mfd. condensers.
One 3000 ohm resistor, R1.
One 15,000 ohm resistor, R2.
Three 25,000 ohm resistors, R3, R5, R6.

One 40,000 ohm resistor, R4.
All of this apparatus is of Ferranti make.
The baseboard used measures 11 1/2 in. x 9 in. x 3/16 in. The mounting strip for the resistances is 9 in. x 4 in., while the uprights supporting it are 4 in. x 4 in.

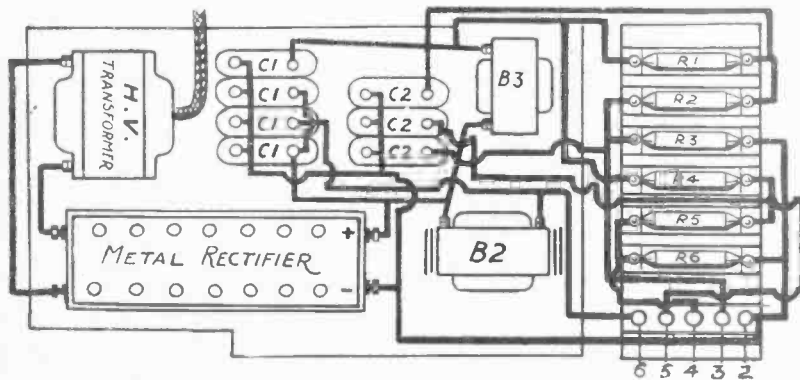


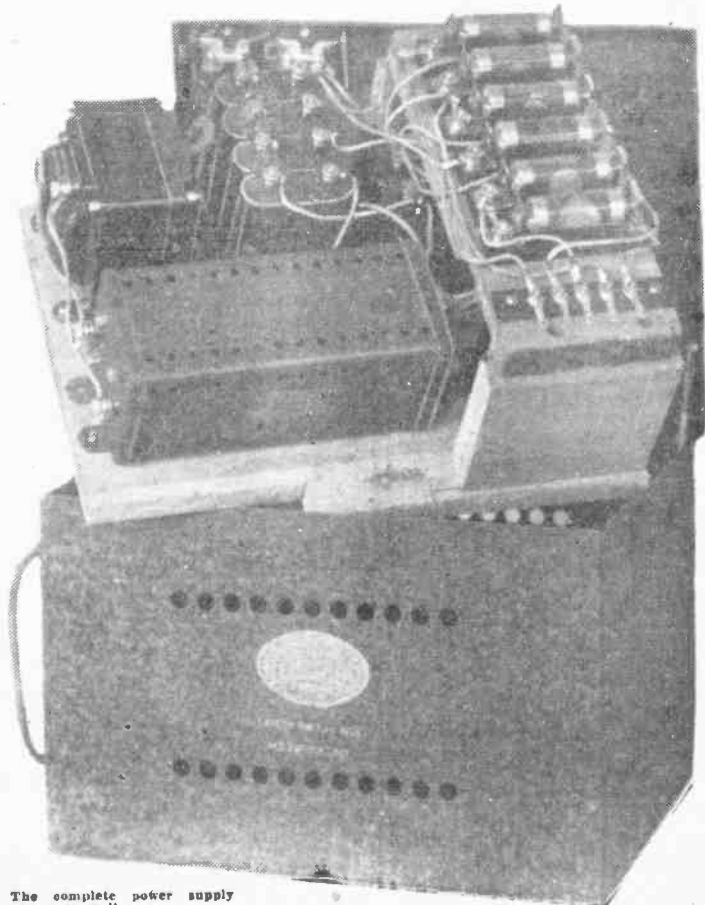
Fig. 2.

ing. B2 is the Ferranti choke rated at 100 milliamps, while B1 is the same make of choke rated at 50 milliamps. It can be seen that another C1 type condenser is shunted across the supply on the set side of choke B2, while the output of B2 feeds into a maze of resistors and condensers used to drop the voltages to the required values, and to filter out any remaining ripple. The resistors, R1 and R2, drop the voltage for the detector valve, and at the same time operate (in conjunction with the two C2 condensers which connect them with the negative lead) as filters. R3 connects between the detector tap and the negative line to cause a heavier load current through R1 and R2 and to improve the constancy of the output voltage. The feeder which branches off through R4 supplies the plate and screen-grid voltage for the radio-frequency amplifiers. The tap for the screen-voltage is taken from the potentiometer arrangement, consisting of R5 and R6.

The voltages available from the various taps depend not only on the values of these resistors, but also on the current drawn from each tap. It is, therefore, impossible to specify resistance values which will give certain voltages at the terminals under all conditions. The resistance values mentioned for this supply system are suited only for the Standard A.C. Four or a receiver in which the current drain from the various terminals is of the same order. For other receivers it is probable that different resistance values would be necessary. The resistance required can be determined by a series of simple computations, which we hope to treat in detail at some later date.

The mechanical arrangement of this plate power system can be followed from the lay-out sketch and the photograph. All the components used are of the Ferranti type. The high voltage transformer, type EM1, sits at the left corner of the baseboard, while in front of it is the rectifying units. Alongside the transformer is a bank of four type C1 condensers, and another bank of three type C2 condensers. At the right-hand end of the baseboard are the two chokes. The resistance units, as can be seen in the photograph, are mounted on a small secondary baseboard mounted above the two choke coils. In the lay-out drawing this resistance unit is shown lifted off its end mountings and put down at the right side of the main baseboard. This was done in order to simplify the drawing of the complete wiring. At the end of this bank of resistance units can be seen the terminal strip. The "terminals" used consist merely of 1/4 in. machine screws on a strip of Dilecto, with a couple of soldering lugs held to each with a single nut. Leads from the supply are soldered to one of the lugs, while the supply cable to the receiver has its leads soldered to the other. This arrangement would not be satisfactory if the supply were to be used for general experimental work. A row of ordinary binding posts would then be more desirable.

The box on which this supply is shown resting in the photograph is one of the Ferranti Safety Boxes—a very excellent affair, of sheet steel, the lid of which is pro-



The complete power supply unit.

THE STANDARD A.C. FOUR

vided with a switch which opens the power supply to the whole unit as soon as it is raised. This is, of course, a very worthwhile arrangement, since it completely avoids the possibility of any wiring being "live" during adjustment or experiment with the high-voltage supply system. We cannot stress too strongly the absolute need for very great care in the handling of apparatus such as that being described. The voltages being used are available at a sufficiently high current to cause a very serious shock—possibly a fatal one.

A COMPLETE "A.B.C." SUPPLY

An alternative power supply system for the Standard A.C. Four is that shown in Figures 3 and 4. It was built up by us from Pilot parts to provide an example of complete power supply unit capable of supplying both the filament and plate voltages and those for the bias.

In the circuit diagram (Figure 1) the power transformer is shown at the left. The particular transformer used has five different secondary windings, but of these only three were used. The leads from them are marked on the diagram with the same numbers that are used on the terminal plate of the transformer. The winning "7, 8, 9," supplies 5 volts for the filament of the rectifier valve—a Marconi-Osram type U5. This valve is of the full-wave type, and, therefore, has two plates, one of which is connected to the plate leg on the valve base and the other to the grid leg. These two plates are fed from the centre-tapped high-voltage winding, "13, 14, 15," the centre-tap of which provides the "negative" lead from the power supply. This is not given a number on the terminal strip. It connects, in both power supplies, to the "ground" of the receiver—that is, the shielding.

The third winding on the transformer of which use is made is "10, 11, 12." The leads numbered, "10, 12," from this winding serve to supply the filament voltage for the valves. It is rated, however, at five volts and, though it may be run directly to a five-volt power valve, a resistor will have to be used in series with the remaining three valves to reduce the voltage to four. This resistor will be of about .4 ohms. A one-ohm rheostat would serve the purpose if its moving contact were adjusted to a point slightly less than half-way round the re-

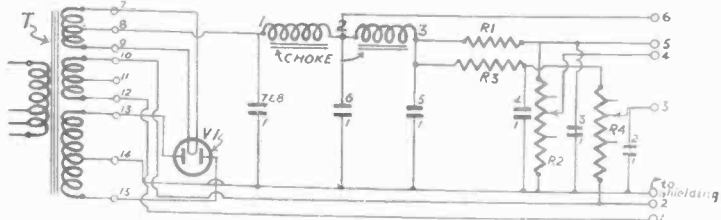


Figure 3.—The wiring of the complete "A.B.C." supply. The apparatus used includes:— Type 308 C power transformer (T). Double choke coil, type 305. Condenser block, type 306.

- Two voltage dividers, type 308 (R2 and R4).
- One 5000 ohm fixed resistor (R1).
- One 10,000 ohm fixed resistor (R3).
- One 10X type valve socket.

All of this apparatus is of Pilot make. An Osram rectifier valve, type U5, is also required. This base-board measures 6 1/2 in. x 10 in. x 3 1/2 in.

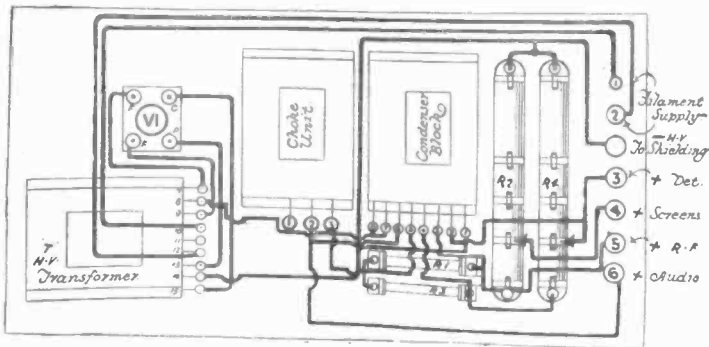


Fig. 4.

istance strip. An a.c. voltmeter would be very useful to make certain that the voltage is of the correct value.

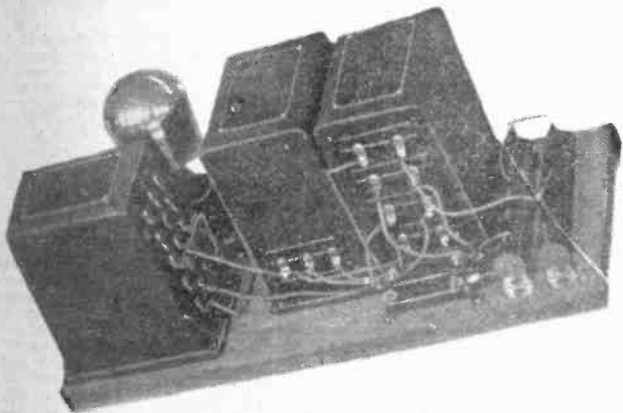
The high voltage output of the rectifier valve, which is taken off between the centre-tap of the filament winding and that of the high-voltage winding, is connected to the choke unit and the condenser block in the manner shown in the circuit diagram. In each case the numbers on the connections correspond with the numbers on the terminal plates of the Pilot units. That is, of course, with the exception of the numbers on the output terminal strip, which correspond with those shown on the diagrams of the receiver itself.

The filter and voltage divider system can be seen to differ from that used in the first power system described. Also, it is differ-

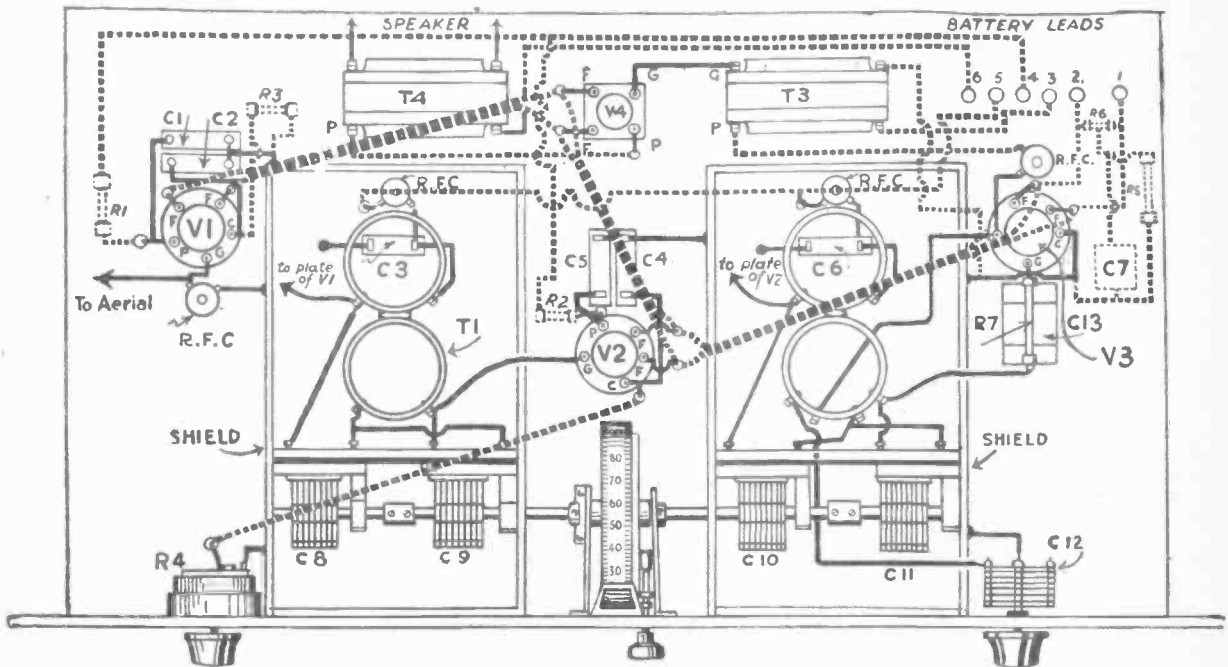
ent from the arrangement given on the leaflet that comes with the apparatus. The changes have been made, in order to provide a system particularly suited for a receiver of the type of the Standard A.C. Four. The positive lead from terminal "A" of the power transformer goes first to one section of the choke unit. A lead is taken from the junction of the two units to supply the power valve in the receiver. In this way the voltage drop in the second section of the choke unit is avoided, and undesirable coupling between the last valve and those preceding it is reduced. The filtering of this supply is not, of course, as complete as that which passes completely through the choke. It is entirely satisfactory, however, since any slight ripple which may exist is only in the plate circuit of the last valve, and hence not subject to amplification. The output of the second section of the choke unit is divided into two paths—one through resistance R1 and R2 and the other through R3 and R4. In this way we have two separate voltage dividers, one for the radio-frequency amplifiers and their screens and the other for the detector. This leads to output terminals "4" and "3," which supply the screen-grids and the detector, are shown with arrows on them. These are intended to indicate that the tapings used are adjustable. There are three intermittent taps on the resistors R2 and R4, and these permit the adjustment of the screen and detector voltages over wide limits. Satisfactory operation of the receiver probably will be obtained with these leads on the taps shown in the diagram.

In both this system and the previously described it will be seen that no by-pass condensers are shown across the screen-grid tapings. These condensers were omitted in the supply systems, since they exist on the receiver itself. When located on the receiver these condensers are able to serve the dual role of radio-frequency by-pass and filter condensers.

The mountings of the parts of this second



The alternative power supply unit described in the article.



Complete wiring diagram of the Standard A.C. Four. Dotted lines indicate wires beneath the base-board; solid lines, wires above the base-board.

power supply is quite straight-forward. From the lay-out diagram and the photograph, it can be seen that the components are merely screwed to a baseboard, with the connections made, as in the first arrangement with rubber-covered "flex." This method of wiring is entirely satisfactory, since the rubber insulation is sufficient for the voltages being handled. Unlike the wiring in the receiver itself, the leads of the power supply should be carrying no radio-frequency current. Hence any trouble taken in avoiding parallel wires or in making the leads short is quite unjustified. Then, appearance is hardly a consideration, since the supply apparatus is sure to be located inside a cabinet or a metal safety box of some sort. Bare "bus-bar" or bare wire of any other type should never be used for the connections of the power supply.

ADJUSTING THE RECEIVER

And now, with the plate and filament voltages available, we may connect the power supply to the receiver and take up the matter of bias adjustment.

It will be remembered that the first radio-frequency valve obtains its grid bias from the voltage drop through a 450-ohm. fixed resistor connected between the cathode and "ground." This value of resistance is suited for plate voltages of the order of 180-200 volts, since we are to use such plate voltages as a bias of the first valve may be forgotten for the moment. The second valve obtains its bias from the drop across a variable resistor R4. The variation of this resistance by varying the bias serves to control the amplification of the valve. It is, therefore, an effective volume control. In the operation of the receiver it will be found that the point on this resistor at which greatest sensitivity is obtained is not at its minimum setting, as is the case with the usual volume control resistor. It will be at a setting which provides a resistance of about four or five hundred ohms. On either side of this point the volume of the received signals will drop.

The cathode of the detector valve is returned directly to ground, and there is no need to be concerned over its grid bias. The last valve, however, must be given very care-

ful attention. The bias of this power valve is obtained from the voltage drop across the resistor R5. Since the adjustment of the power valve bias is one of the most important matters in the whole receiver, the value of this resistance must be watched with great care. Unfortunately, its value will vary with the type of valve used and with the plate voltage. The method of arriving at the correct value is quite simple and the enthusiast could well decide on it for himself, providing he has the bias and the plate current rating of the power valve he is to use. With the Philips B403, for instance, the necessary bias would be about 35 volts, and the plate current about 18 milliamps at a plate voltage of 180. The power supply systems we have just described are capable of supplying between 220 and 240 for the power valve, and it will, therefore be possible to drop 35 or 40 of this for the bias, and still have almost 200 for the plate. With the output voltage from the power supply at 220 volts, a 35-volt bias would serve for the 185 plate volts that would be left. From Ohm's law we know that the resistance necessary will be found by dividing the required voltage drop by the current passing through the resistor. In this case the resistance will be equal to 35 (the required bias), divided by .018 (the 18 milli-

amps of plate current). The answer to this computation will be about 1940 ohms. This value of resistance would be very hard to obtain in a fixed unit, but it is quite probable that a fixed resistance of 2000 ohms would serve effectively.

Another power valve which we used in the receiver was the new UX-245 Radiotron. At a plate voltage of about 190, the bias required in this case is approximately 38, and the plate current 28 milliamps. The resistance required will, therefore, be 38, divided by .028, the answer being approximately 1360. A fixed resistor of 1400 ohms would serve for R5. It is very desirable, of course, to make a check on the bias actually obtained by inserting a milliammeter in the plate circuit of the valve. This meter should indicate the rated plate current of the valve, and its needle should not fluctuate, even when very loud reproduction is being obtained. Any fluctuation definitely indicates distortion, due probably to incorrect bias adjustment.

At this stage, with the plate, bias and filament voltages adjusted correctly, we may proceed with the work of alignment of the four variable condensers. This adjustment, we would mention, is possibly the most important one in the whole receiver. Both selectivity and sensitivity will be lost if all the circuits are not accurately tuned. Even if one of the four circuits is slightly off-tune, the operation of the receiver will be seriously affected. Enthusiasts who have been used to tuning a three-dial neutrodyne will be familiar with the difficulties of getting an accurate adjustment of all three condensers. They will be able to appreciate the extreme care that is necessary in the setting of four tuning condensers which run from the one shaft, and hence are not subject to individual adjustment at various points on their range. It is quite difficult to tune all four circuits to the one wavelength, even at one setting of the dial. To maintain all four circuits accurate in tune across

SPECIAL ELECTRICAL REPRODUCTION NUMBER

Next week's WIRELESS WEEKLY is to be a Special Electrical Reproduction Number. In it particular attention is to be given to the ways and means of attaining high quality reproduction of gramophone records. Amplifiers will be described which permit a high standard of performance when operated from "pick-ups" of various types. The selection of valves, transformers, power supplies, and speakers also will be discussed.

(Continued on Page 54.)

RADIOKES and the Standard A.C. 4.

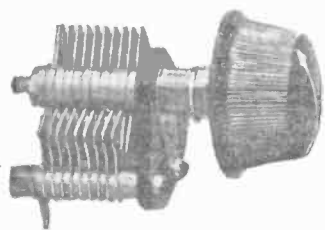
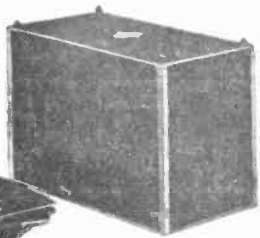
This excellent modern electric receiver depends for a great measure of its success upon the employment of RADIOKES quality components.

The technical editor of this paper, Mr. Ross A. Hull, realises the value of high-grade apparatus, and consequently RADIOKES were his choice.

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These shields are accurately constructed from black crystalline finished heavy gauge aluminium, with plated corner posts.

The RF Wiring is completed, THEN this convenient shield is assembled, thus offering maximum ease of assembly and wiring.

PRICE 15/- EACH.

RADIOKES Midget Condensers are made in several sizes, sufficient to cover most requirements.

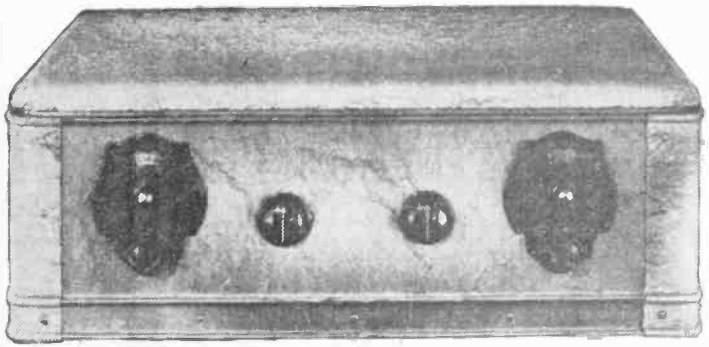
A seven-plate model has been chosen as a reaction control for this receiver, because of the accuracy of construction.

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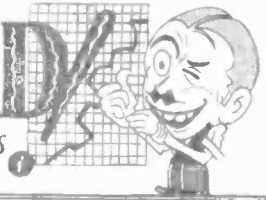
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Some Unexpected Results

HAVING a detector, resistance capacity, and super-power transformer stages, with choke output circuit, I was not satisfied with the volume obtainable with tuning arrangements sufficiently selective to separate 2UW and 2KY. I decided to add another valve, and was faced with the problem, so admirably tackled in WIRELESS WEEKLY, July 12, p. 12—"Another Valve to Be Added—Where?" To obtain room on the experimental baseboard I decided first to try experiments in decreasing size of coils, the better also to avoid interaction when setting up screen-grid stage. The coil in use was 3in. transformer aestically wound primary over a secondary of two sections of 40 turns each. Tried a valve base winding. Found to my surprise (though the matter became clear on consulting induction formulae) that the smaller coil actually required less turns of the thinner wire which had to be employed—in point of fact, 36 turns in each of the secondary sections. The reaction coil wound on the same base, however, had to be much increased—even 50 turns were insufficient to bring about oscillation up to 2BL's wavelength. The set was connected to an aerial consisting of a vertical wire merely 8ft. long to the ceiling. An inch or two of wire, however, joined to this, could be connected with a vertical outdoor aerial 35ft. vertical. It was now noticed that with the outer aerial 2FC, normally the strongest station here, lived up to its reputation, whilst 2KY overpowered 2UW (also as usual) with its broad tuning. With the small aerial, however, a surprising change took place: 2UW was perhaps even slightly louder than before, with 2KY completely eliminated. 2FC, though tuned within the condenser range, was of much less amplitude than 2UW.

Having thus unexpectedly obtained, with fair amplitude, the selectivity required, I decided to forego the rather tedious fitting of the screen-grid valve, with its attendant coil design, and attempt, instead, to insert another resistance capacity stage. Tentative trials proved disappointing, allowance not having been made for the feed-back through a common B eliminator resistance. The use of wire-wound resistances of the order of 25,000-50,000 ohms in the B leads to the r.f. stages, with 2 mfd. capacity to earth overcame the difficulty.

I am thus left with a four-valves that promises well in both reproduction and selectivity. I do not set much value on distance inter-State performance, as static interferes too much. It is interesting to note, however, that on Sunday evening, after 10.30 the Melbourne amateur, 3BY, can be just heard on the loud-speaker, using the indoor, and rather better on the outdoor.

Now, I am wondering just how the results are to be explained; namely, why 2FC should lose 60 per cent. in strength, whilst 2UW gains, if anything, on the short aerial, while the increased selectivity that was expected is still obtained. Seemingly the small coil favors the low wavelength, though a single experiment, of course, is not decisive.

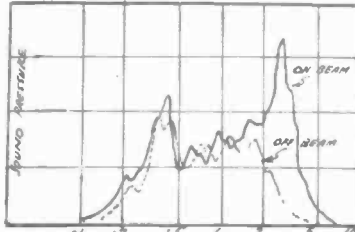
The use of resistance capacity and power valve stages in quest of purity so lowers the effective amplification as to render

greater volume desirable, especially where slightly deaf people are concerned. Hence the necessity for the fourth valve. Making the last stage push-pull super-power, in the set described above, a volume control becomes necessary. There is, however, the comfortable feeling of power in reserve if required.

—A.T. KEEBLE, B.Sc., Sydney

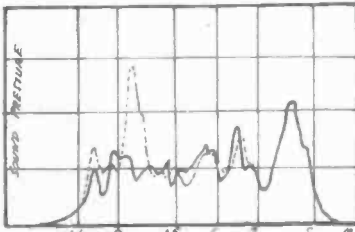
Locating the Loud-speaker

EXPERIMENTERS interested in musical reproduction undoubtedly have noticed the influence over the audible performance of a given speaker, resulting from the characteristics of the room in which it is operated. The effects obtained are worthy of careful study.



FREQUENCY—THOUSAND CYCLES PER SECOND

The result of sound pressure measurements taken on and off the beam. Illustrating the definite loss of high frequencies caused by a movement of the listener away from the front of the speaker.



FREQUENCY—THOUSAND CYCLES PER SECOND

One typical instance of low frequency resonance of the corner of a room behind the speaker. These are tracings of curves taken in an American laboratory visited by the writer.

One fundamental factor to be considered is that speakers in general radiate more sound to the front than to the sides, particularly on the high frequencies where the radiated sound is definitely in the form of a beam. Whenever the vibrating surface is small compared to the wavelength of the sound being produced, the output will spread out almost equally well in all directions. However, it is known that if the wavelength is small compared to the vibrating surface, the sound will be projected in the form of a beam perpendicular to the vibrating surface.

If, now, the speaker is located in a room with very high absorption it can be seen that the energy reaching the listener will, on the high frequencies, depend greatly upon his location with respect to the "beam." If, however, the room is one of low absorption, the energy reaching the listener by direct radiation will be greatly added to by the reflected

sound energy. Providing the reflection is fairly uniform at all frequencies, it is probable that the relative energy on all the frequencies will be constant, irrespective of his location with respect to the speaker. As a matter of fact, the absorption will not be constant for all frequencies—being less at the low frequency end—and these efforts will be more pronounced in practice as a result of this fact.

In the placement of the speaker in the room there is the further possibility that certain sections of the room, or, rather, their air content, may resonate at some particular frequencies. Placing the speaker in a corner, for instance, is almost certain to produce such a result. In some instances, this resonance may be effective in remedying some weakness in the reproduction, but the opposite may be true. Altogether, the problem is a very interesting one to students of reproduction who may have developed the knack of making an aural analysis of musical reproduction.

The "Pick-up" Problem

MAY I offer a word of advice to those who are about to decide upon the purchase of a pick-up for the first time. The uninitiated are apt to give preference to the pick-up which gives the loudest volume. When purchasing my first pick-up I fell into the trap, and purchased such a type. Experience has since taught me to be more circumspect in my choice of pick-ups. I would advise intending purchasers to note the following in regard to performance—frequency response, needle chatter, weight, record wear.

Assuming that a satisfactory amplifier and speaker are used for demonstration, the response to high and low notes should be reasonably uniform. Choose a record for test having a wide band of frequencies, and note whether there tends to be an undue predominance of treble or bass.

As needle chatter may not manifest itself till a fortissimo passage occurs, let the record for this test be a loud one. It will also exist, irrespective of volume control adjustment, and it may, therefore, be distinguished from possible amplifier distortion by keeping the volume control rather low.

The pick-up's weight, at the needle-point, should not exceed five ounces. On the other hand, undue lightness tends to cause the needle to jump the grooves of the record, particularly on heavy passages.

It should not be necessary to wait till visible signs of wear appear upon a record to determine whether the pick-up will be likely to offend in this respect. After a record has been played once, carefully examine the needle-point, and note whether it has a quantity of record substance adhering to it. This substance can be distinguished from dust by its jet black appearance. Its presence indicates surface scratch, whose damage to the record, though slight at first, proceeds rapidly, until permanent injury renders the record unfit for playing. Providing that the playing angle and tracking adjustments are correct, its existence is either due to excessive damping or undue weight—perhaps both.

—A. McLEOD, Brisbane.



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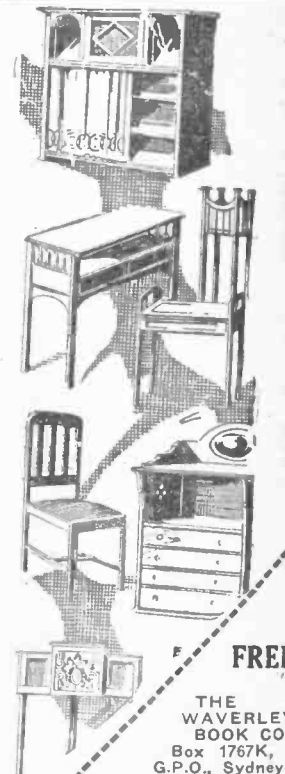
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RADIO Proficiency

In this, the second "Proficiency" article, we treat electric currents in general, and then pass on to the action of the electron in conductors and insulators, discussing why we are able to say "there is no perfect insulator." Following on this, we are enlightened on some of the definitions and units used in radio, enlarging upon the notes already given in "Proving Radio" series.

SOLIDS are divided into two classes—"Conductors" and "Insulators," depending on whether they do or do not conduct electricity. We have learnt (in "Proving Radio") that an electric current is a flow of electrons between two points of different potential.

We may regard a conductor, then, as a substance containing electrons which are free to move under the action of an electric field, while in non-conductors the electrons are more or less fixed and relatively unable to follow the impulse of the field. Though these electrons are held so tightly, it is quite possible to displace a number of them, and thus we say that there is no perfect insulator.

A good conductor is one in which the atoms readily part with electrons. The movement of the electrons can be accounted for by the fact that a positive ion attracts to it a number of electrons. It then becomes a negative ion, i.e. it will have a superfluity of electrons, and will readily part with some of them if another positive ion is near. Students of "Proving Radio" will appreciate these additional details.

Thus it will be seen that the tighter the grip of the nucleus on the electrons, the lower will be the conductivity of the substance and the difference between good and bad insulators, or good and bad conductors, is in the readiness or otherwise with which their atoms part with electrons. If, on an E.M.F. being applied, the electrons are transferred readily from one atom to another, the substance is a good conductor. If the same E.M.F. is applied to an insulator only a few electrons will be transferred.

We will now proceed to define units of electrical measurement. These units were discussed briefly in "Proving Radio," and it is in conjunction with those notes that the following points should be studied.

Resistance, denoted by the letter *R*, is the property of matter opposing the passage of electrons through it, or the property of converting the energy of swiftly moving electrons into heat. It may be compared with friction that is encountered by all moving bodies.

The less the willingness with which molecules receive and release electrons, the greater is the shock given to the atom, and consequently to the molecule, the greater the oscillation of the molecule, and greater the heat generated.

The unit of resistance is the Ohm. The "specific resistance" of a conductor is the resistance of an inch cube or cm. cube between opposite faces. Tables of the specific resistances of various conducting substances are made out usually at 0 degrees Centigrade, since resistance alters with a change of temperature.

If the specific resistance of a conductor is known, its length and cross sectional area is easily calculated from the formula R equals ρ over a , where ρ equals specific resistance in ohms per cm. cube; l equals length in cms.; and a equals cross sectional area in square cms.; 2.54 cms. equals one inch. Some specific resistances are, approximately:

Copper—1.7 microhms per cm. cube.
Platinum—11 microhms per cm. cube.
Mercury—94 microhms per cm. cube.
Distilled water 7,000,000,000,000,000

microhms (millionths of an ohm) or cm. cube.

This latter figure, owing to the number of noughts, would be expressed as 7×10 to the 18th power, or 70 to the 18th power.

Conductivity, or conductance, is the property a body possesses of conducting a current, being obviously just the opposite to resistance. Conductors have both resistance and conductivity. The unit mho, i.e., ohm spelt backwards, is generally used to express conductivity. Thus, the conductivity can be found from the resistance by the following formula:—1 over No. of Ohms resistance.

As an example, if the resistance equals 40 ohms, the conductivity will equal 1/40 mhos.

The unit of quantity of electricity is the coulomb (symbol *Q*). It is approximately equal to 10 to the 18th electrons. The number of coulombs is equal to current multiplied by time, when the current is expressed in amperes and the time in seconds. Thus, the quantity of electricity used when the current flows at the rate of one ampere for 60 seconds is 60 coulombs.

Current (symbol *I*) is a measure of the rate of flow of electricity. It is a rate of flow of one coulomb per second. If a pressure of one volt be impressed on a closed circuit having resistance of one ohm, then a current of one ampere will flow through the circuit.

SPECIAL REPRODUCTION NUMBER

THERE exists in Australia an increasing number of individuals who are waking up to the possibilities of the radio receiver as a source of genuine music. The distance hunters—the men whose one object is to make the greatest noise from the most distant station—constitute a fast-falling race. They will soon come to be known in Australia, as they have been for years overseas, as one of the greatest nuisances of the age. It will be realised that the radio receiver which cannot reproduce the detail, the brilliance, and the crispness of the highest musical notes as well as the full roundness of throbbing bass notes is just as much utter junk as the crudest old phonograph. There are many thousands of receivers in the country at the moment which could be classified as such junk. But not all of them need be scrapped. They can be re-arranged to provide brilliant musical reproduction by the installation of a high quality amplifier and a good speaker. In the next issue of WIRELESS WEEKLY such amplifiers and speakers will be given detailed consideration. Amplifiers will be described which, when added to the radio frequency and detector valves of an existing set, will permit musical reproduction of a high order. These amplifiers will be particularly suited also for the reproduction of the brilliant music that is to be found on our modern gramophone records.

A larger unit of quantity, used in conjunction with the quantity of electricity stored (as, for example, by an accumulator), is the ampere-hour. This is equivalent to 1 coulomb per second for 3600 seconds, i.e. 3600 coulombs.

The unit of electrical pressure is the volt. The symbol generally used is *E*, which is an abbreviation for electro-motive force. For measuring larger pressures the kilovolt (a thousand volts) is sometimes used. The symbol in this case it *kV*.

Electro-motive force (E.M.F.) is sometimes called voltage, electrical pressure, potential difference (P.D.), or difference of potential (D.P.), and is used to designate the "push" that moves, or tends to move, electrons from one place to another, i.e., causes electricity to flow, since a flow of electrons constitutes a flow of electricity.

As the unit is the volt, we draw a comparison between voltage, amperage, and resistance by saying "A volt is the E.M.F. required to drive a current of one ampere through a resistance of one ohm."

When an E.M.F. exists in a closed circuit it causes a current to flow, the total resistance in the circuit, operating like friction in a water-pipe, having to be overcome. It is obvious that the greater the E.M.F. and the smaller the resistance the greater will be the resulting current; or, the less the E.M.F. and the greater the resistance, the smaller will be the current. This is expressed as Ohm's Law, which says: "The current is directly proportional to the E.M.F. and inversely proportional to the resistance."

From the above relationship the following formula is gotten:—

I equals E over R (or current equals voltage over resistance).

In all equations such as this the current will be in amperes, E.M.F. in volts, and resistance in ohms.

This formula applies only to steady currents. The effects of inductance and capacity modify the conditions, and will be dealt with later.

If a battery with an E.M.F. of 10 volts and an internal resistance of 2 ohms is placed in parallel with a fixed resistor of 3 ohms, the current will be 1 equals E over R , i.e. 1 equals 10 over 2 plus 3, equals 2 amperes.

It is worth while mentioning here that many are prone to make the error of calculating the external resistance as being in parallel with the internal resistance. The writer himself made this error in the early days, and this will explain why he is so anxious that the reader pause for a moment and draw out a diagram. With a little thought he will soon see that though the external resistance (i.e., the resistance outside the battery) is connected in parallel to the battery, actually the current flows round both resistances—and they are therefore in series, and not in parallel. Actually the battery and the external resistance are in parallel, but the two resistances are in series. This is an important point, because if the two resistances are calculated as being in parallel the resultant current would be (as explained in Proving Radio), the sum of the reciprocals of the two resistances (which will be 1.1-5 of an ohm), expressed as the divisor of 10—and the current would then be 8.1-3 amperes.

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Making Model 'Planes

Do not forget to tune in to the Model Aero Club Session from 2BL on Monday night (see programme).

By **NORMAN LYONS**

IN the design and construction of the fuselage or main frame, standardisation has become more marked than in any other portion of a model aeroplane. This applies both to general details, methods, and material. It may seem peculiar, because in other components contributing in a far greater degree to the success of the model, great diversity of opinion exists.

It is difficult to ascribe this lack of uniformity to any particular reason, unless it is the failure on the part of amateur model-builders to appreciate the meaning of the term "efficiency." Very few endeavour to extract the maximum amount of work for a minimum expenditure of power from the propellers, and so forth. The aim of crack aero-modellists is to make the model fly the longest possible distance, and to remain in the air the longest possible time, with the smallest possible amount of rubber.

Figure 1 shows some frame sections which are in common use. All spars should taper in a fore and aft direction, so that each spar virtually becomes a cantilever. Another form of spar construction is shown in Figure 2.

Choice of materials and the method of utilising them to the best advantage, so that the machine is strong without being unduly heavy, is a phase of model aeroplaning that calls for some care and judgment. There is a very erroneous impression among novices that packing-case wood or similar material is suited to the requirements of model aeroplanes. Nothing could be further from the truth; for the true test of any model is the way it "stands up" to a nose dive, in which the care and forethought of the builder in providing for anticipated eventualities will manifest itself.

The three salient points to be borne in mind, on which the durability of the machine largely depends, are:—

First, its capacity for resisting the torque of the rubber motor.

Second, its capacity to absorb the shocks of rough landing.

Third, the provision that has been made for the rigid attachment of the various parts.

Now, if the model is at fault with regard to point one, fuselage distortion is sure to

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WIRELESS WEEKLY is conducting a Model Aero Competition for Baby R.O.G.'s. The rules are very simple. All competitors must fly a Baby R.O.G., built to the sizes given in WIRELESS WEEKLY the time of flight to be the moment the under-carriage leaves the platform until the under-carriage touches the ground again. The decision of the time-keeper and judge will be final. In the event of a tie, those trying to fly off.

The first prize, 15 minutes' flight in an "Air Taxi" Moth.

Second prize, 10 minutes' flight in an "Air Taxi" Moth.

Third prize, five minutes' flight in an "Air Taxi" Flight.

If you desire to enter the competition, sign the form and return to WIRELESS WEEKLY, Phillip St., Sydney.

There is no entrance fee. Application forms must be received not later than 31st August, 1929.

Please enter me in the R.O.G. Competition, to be held early in September, 1929.	
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occur, and in the case of a simple fuselage being used there will be lack of alignment of the plane surfaces and attendant troubles.

Point two calls for suitable bracing of the spar or spars, and the careful choice of timber. If no arrangement has been made to fix rigidly the wings, chassis, etc. (point 3), these parts are likely to rock or sway when the machine is in the air, and so occasion bad stability. Apart from that, a couple of landings would shake the machine out of line.

To resist fuselage distortion the spar must be suitably braced in a lateral direction. Figure 3 shows several types of frames and methods of bracing.

PROPELLERS

There is a great diversity of opinion in regard to the construction of propellers for model aircraft. Some favour small diameter, with long pitch; others long diameter and short pitch, and others who are always attempting freak propellers.

For the beginner it is a useful rule to make the diameter approximately one-third the span for either single-screw or twin-screw machines, as this relation seems to give a very small effect on lateral stability, whereas, when the diameter is made larger, the machine has a tendency to capsize laterally in the opposite direction to which the screw revolves. This force is known as torque.

It is also difficult to speak positively on the question of the best speed at which a screw should rotate, as the loading per square foot of surface enters into the question, meaning that if a model has 1 sq. ft. of surface for every ounce of its weight, there is a speed at which the main surface will give a maximum of lift for a minimum of power, and a screw must be fitted whose

pitch, multiplied by its revolutions per minute, equals the distance per minute the model should fly.

Most boy aero-modellists determine this question without going into the theoretical. By this method, if the screw turns over too fast, the model will ascend nose first, and show a tendency to stall. If the pitch or diameter of the propeller is too great it will appear to be under-powered. Then the happy medium must be found.

Probably no air screw has yet exceeded 80 per cent. efficiency, 70 per cent. being a very fair average. So it would not be amiss to outline some factors involved in the design of an air screw, as being one of the most important units. The efficiency or non-efficiency can make or mar a model. The loss, inefficiency, or "slip," is usually expressed as a percentage of the theoretical pitch. Thus a propeller with a theoretical pitch of two feet, which possesses 75 per cent. efficiency, has an effective pitch of 18 inches. In other words, if a propeller with a theoretical pitch of two feet was 100 per cent. efficient, it would in one revolution travel forward two feet, but, as the air is not a solid body, "slip" takes place, and, as we have assumed the loss is 25 per cent., the amount of forward travel is only 18in.

When setting out a propeller it should be remembered that the maximum blade width should be located one-third of the radius from the screw-tip, and should be about one-eighth the diameter. The latter, in turn, should be two-thirds of the pitch. Inversely, therefore, the pitch should be one and a half times the diameter. With twin-screw machines this may be extended to twice the diameter, or even more; but should never exceed three times the diameter.

We will now assume that a screw is required for a single-screw machine, and a diameter of 12in. has been decided on. One and a half times 12 inches gives 18 inches

as the pitch, and the formula for pitch being—

$$P = \pi \times D \times \frac{\text{Thickness of Block}}{\text{Width of Block}}$$

where P equals Pitch, D equals Diameter of screw. Using a ratio of 6 to 1 (which gives 2in. as the width of the block), we have

$$18 = \frac{22}{7} \times \frac{12}{1} \times \frac{\text{Thickness of Block}}{2}$$

from which thickness of block equals .954 in. equals 61-64in. approximately.

The block may now be carved according to instructions given in previous issues of WIRELESS WEEKLY. At this stage the screw has to be balanced. This is of great importance, since the screw that is unbalanced loses a great amount of efficiency, owing to the consequent vibration when it rotates.

For models that require large propellers the laminated type is favoured. These laminated propellers are exceedingly strong, as the grain, by virtue of the splayed blanks, follows the blade. Propellers carved from the solid block are a trifle weak near the boss, owing to the cross-grain. The laminae must be carefully glued, and it is a rather good practice to rub each layer down with chalk to ensure a good joint.

The method of obtaining the pitch angles cannot be dealt with in this article, but it is obvious that the pitch of a propeller should be constant along the whole length of blade, so that the air is deflected or driven back at a constant velocity. An efficient propeller delivers a solid cylinder of air, whereas an inefficient one delivers a tube of air. It will be seen that, if the pitch at the propeller tip is 30 inches, whilst at, say, three inches from the boss it is only 25 inches, it is obvious that the tip of the propeller will be imparting a higher velocity to the air than the portion approaching the centre, and thus this latter would be idling and acting as a drag upon the other portion.

The method is to set out a distance, equal to the pitch, to some convenient scale, and to erect another line vertically, and to the same scale equivalent to the circumference of the circle swept by the propeller. Subdividing this line into a convenient number of equidistant parts (three or four are sufficient for screws up to 14in. in diameter), and connecting up the points so obtained to the right-hand end on the base line, gives the pitch angles at the corresponding points of the blade. It will be the subtended angles that are required.

Templates should be cut to these angles (which, of course, are the angles made with the axis), with which to check the angles along the blade during construction. This checking is more necessary with bent-wood screws than with carved ones.

(Next week you will learn how to make box kites.)



FIG. 1.



FIG. 2.

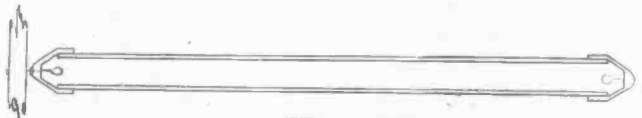
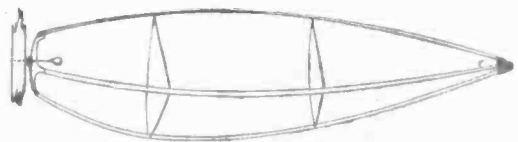
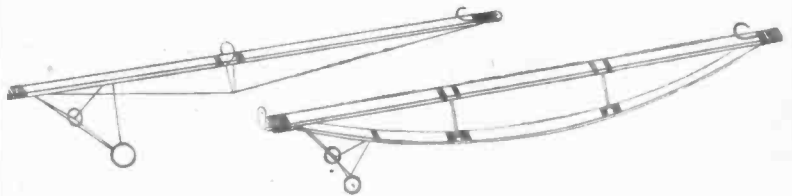
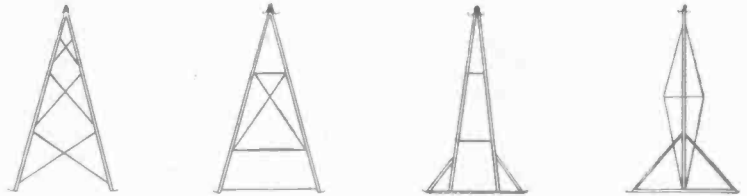


FIG. 3.

AERO INFORMATION SERVICE

C.C. (Dandenong), D.C. (Brookland), Jack P. (Quindialia).—The baby R.O.G. kits consist of: 2 propeller blocks, 2 wing spars, 2 fuselage sticks, 3 bamboo sticks, 1 sheet Cellaero tissue, and 1 envelope containing 2 thrust washers, 1 thrust bearing, 6 inches .015 wire, 3 inches .020 wire, and 18 inches rubber. Banana oil, seccotine, and fibre wheels are not included in the kit.
B.R. (Abernethy), W. J.H. (South Brisbane).—Baby

R.O.G.'s are not for sale completed, you must build it yourself.
RON S. (Katoomba).—The 11in. of bamboo is to build your rudder, cross spar, and the tail-piece.
A.V.Q. (Orange).—See next week's publication for diagrams of box-kites.
ROY L. (Glebe Point).—So far have been unable to procure the requested plans, will advise later by mail.
A.G. (Lakemba).—Single-seater, yes; otherwise observer does it.

An Aeronautical Dictionary *The sixth of the series of aviation definitions.*

Step: A break in the form of the bottom of a float or hull, designed to cut down resistance, when the aircraft is under way. It serves rapidly to decrease the wet surfaces as the speed increases; and it also serves to eliminate suction effects.

Flotation Gear: An emergency gear attached to a landplane so that it can alight on the water and float when not in motion.

Landing Gear: The under-structure of an aircraft which supports its weight when in contact with the surface of the land or water and reduces the shock of landing. There are five common types of landing gear—the boat type, the float type, the skid type, the wheel type, and the ski type. The boat and float types are used on seaplanes, while the other three types are used on land planes, to meet

prevailing conditions. Ordinarily the wings, fuselage, and motor of a land plane are supported by wheels, and the tail by a skid, but skis have been used successfully in the Arctic. The first plane took off and landed on skids.

Shock Absorber: A device made a part of the landing gear of an aircraft to reduce the shock imposed on it when it is landing or taking off. Usually it is placed between the main structure and wheels, floats, skis, or tail skids, so that the plane can land or taxi with a minimum of strain. Heavy cables, made of hundreds of strands of rubber, are often used, but there are many other types.

Skid: A runner used as a member of the landing gear, and designed to aid the aircraft in landing or taxi-ing. There is the tail skid.

Tail Skid: A skid used to support the tail when in contact with the ground, and the wing skid.

Wing Skid: A skid placed near the wing tip, and designed to protect the wing from contact with the ground.

Landing angle: The acute angle between the line of thrust of an aeroplane and the horizontal, when the plane is resting on level ground in its natural position. This is also called the "ground angle."

Decalage: The acute angle between the wing chords of a biplane or multiplane. The chord of the wing is the line from the leading edge to the trailing edge, so that the decalage is the angle which represents the difference, between the wings, of the angle of wing setting.

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ORSP

GET MUSIC—AS THE MICROPHONE HEARS IT—WITH A PHILIPS SPEAKER

Local Programmes, Friday, July 26

2FC

EARLY SESSION—7 to 8.15 a.m.

- 7.0: "Big Ben" and weather forecast.
- 7.5: Early-rising music.
- 7.40: Breakfast news.
- 7.45: Mails and shipping.
- 7.48: What's on to-day?
- 7.50: Birthday calls.
- 8.0: Music from the studio.
- 8.15: Close.

MORNING SESSION—10.30 a.m. to 12.30 p.m.

- 10.30: Announcements.
- 10.32: To-morrow's sporting events.
- 10.45: From the State Theatre. recital on the grand organ by Edgar Stone.
- 11.0: Household helps—a talk on cooking and recipes by Miss Ruth Furst.
- 11.10: The Light Orchestra.
- 12.0: "Big Ben" and Stock Exchange.
- 12.5: "What to Read"—a talk on books. by Grattan Smith.
- 12.20: Midday market reports.
- 12.30: Close.

THE LUNCH HOUR—1 p.m. to 2.30 p.m.

- 1.0: Lunch to music with the Station Orchestra.
- 2.0: Stock Exchange, second call.
- 2.2: Popular Education—a talk on modern compositions, by Gerald Peachell, conductor of the Royal Philharmonic Society—Part I.
- 2.20: A glance at the afternoon papers.

THE RADIO MATINEE—2.30 p.m. to 4.30 p.m.

- 2.30: The Station Orchestra.
- 2.42: Peter Sutherland, basso.
- 2.50: The Station Orchestra.
- 3.5: Leonore Gotsch, soprano.
- 3.12: Marcus Burkitt, blind pianist.
- 3.24: Peter Sutherland, basso.
- 3.32: The Station Orchestra.
- 3.50: Marcus Burkitt, blind pianist.
- 4.2: Leonore Gotsch, soprano.
- 4.10: The Station Orchestra.
- 4.28: Stock Exchange, final call.
- 4.30: Close.

EARLY EVENING SESSION—5.45. to 7.55 p.m.

- 5.45: Kiddies' "Good-night" stories—told by Uncle Bas and assisted by Aunt Willa.
- 6.45: The Dinner Orchestra.
- 7.30: Sporting news and views.
- 7.45: From the State Theatre—Mr. Price Dunlavy at the Grand Organ.

EVENING PROGRAMME—8 p.m. to 11.30 p.m.

- 8.0: "Big Ben"; Fun from Pullers—An Hour of Vaudeville Jollity.
- 9.0: "Big Ben." From the studio—The Mankey Trio, popular numbers.
- 9.10: The Radio Male Quartet, melodies of bygone days.
- 9.20: Fred Bluett, the Fun-Maker.
- 9.30: Neil Judges, popular songs of the day.
- 9.37: Frank Wilson, the Musical Wizard.
- 9.44: Tit-bits from the "Talkies."
- 10.15: From the studio—to-morrow's programmes and announcements; official weather forecast.
- 10.20: From the ballroom of the Oriental—Simpson's Syncopaters.
- 11.30: National Anthem.

2BL

OPENING SESSION—8.15 to 11 a.m.

- 8.15: Music for every mood—records.
- 8.45: "Interest Item" on outstanding events of the day.
- 9.0: Songs and choruses.
- 9.30: British official wireless news.
- 9.40: New music.

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- 10.10: The Ladies' Club Hour—the Australian Women's A.B.C. Association.
- 10.30: Studio Light Orchestra.
- 11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

- 12.0: Station Orchestra.
- 1.0: Afternoon news service.
- 1.15: Women's "Interest Talk"—Graham Kent on Bridge.
- 1.30: Traders' "Selling the Set" music.
- 2.0: At the console of the Wurlitzer Organ at the Capitol Theatre, Mr. Fred Scholl.

AFTERNOON ENTERTAINMENT—2.30 p.m. to 5.45 p.m.

- 2.30: Business efficiency talk.
- 2.45: The Magic Carpet—Travel and Adventure—A story of travel or adventure by C. R. Hall.
- 3.0: Musical programme, including the Janetski Trio, instrumentalists; Charles Lawrence and Rae Foster, duets; dance music by the A.B.C. Dance Band.
- 4.45: "The Trade Hour."
- 5.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

- 6.15: The Dinner Orchestra.
- 6.45: Boy Scouts—Mr. Norman Lyons.
- 7.5: Markets.
- 7.20: Late news.
- 7.25: Dinner Quartet.
- 7.55: Whats' on the air to-night?

EVENING SESSION

- 8.0: G.P.O. chimes; National Broadcasting Orchestra.
- 8.15: Keith Grant, New Zealand baritone.
- 8.22: Lily Price, pianoforte recital.
- 8.34: Daisy Mangan, soprano.
- 8.41: Robert Silvester, violinist.
- 8.49: Fred Webber, monologues.
- 8.56: The Orchestra.
- 9.8: The Denning Lee Quartet.
- 9.18: Lily Price, pianist.
- 9.30: Keith Grant, baritone.
- 9.37: Robert Silvester, violinist.
- 9.44: Fred Webber, monologues.
- 9.51: The Orchestra.
- 10.1: The Denning Lee Quartet.
- 10.12: The Orchestra.
- 10.25: To-morrow's programme and announcements; official weather forecast.
- 10.30: National Anthem.

2GB

- 10.0: Music.
- 10.10: Happiness talk by A. E. Bennett.
- 10.20: Music.
- 10.30: Women's session by Miss Helen J. Beegling.
- 11.45: Close down.
- 2.0: music.
- 2.5: Women's radio service by Mrs. Dorothy Jordan.
- 2.50: Movie

- Know All. 3.30: Close down.
- 5.30: Children's session by Uncle George.
- 7.0: Music.
- 7.45: Feature story.
- 8.0: Miss Ethel Muller, contralto.
- 8.7: Miss Ada Brook, pianist.
- 8.15: The New Male Voice Party.
- 8.30: Symphony Orchestra.
- 8.40: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock.
- 8.45: Address.
- 9.0: Weather report.
- 9.3: Miss Ethel Muller, contralto.
- 9.13: Band selections.
- 9.23: The New Male Voice Party.
- 9.40: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock.
- 9.45: Symphony Orchestra.
- 9.55: Mr. Clement Hosking, baritone.
- 10.5: Instrumental music.
- 10.30: Close down.

2UW

MIDDAY SESSION

- 12.30: Request numbers.
- 1.0: G.P.O. clock and chimes; music.
- 1.15: Talk on homecraft by Pandora.
- 1.40: Music and request numbers.
- 2.30: Close down.
- 4.30: Musical programme.

EVENING SESSION

- 5.30: Children's hour, conducted by Uncle Jack.
- 6.30: Close down.
- 7.0: G.P.O. clock and chimes; request numbers.
- 8 to 9 p.m.: Tenor and baritone recital.
- 9.0: G.P.O. clock and chimes; comments on Foreign Affairs by Mr. J. M. Prentice.
- 9.10: Music and request numbers.
- 10.30: Close down.

2KY

MORNING SESSION

- 10.0: Tune in to the ticking of the clock.
- 10.3: Popular fox-trots.
- 10.15: Hawaiian steel guitar selections.
- 10.30: Request numbers.
- 10.50: Vocal items.
- 11.0: A few laughs.
- 11.5: Pianoforte selections.
- 11.15: Calls and announcements.
- 11.20: Musical interlude.
- 11.30: Request numbers.
- 11.40: Music and vocal items.
- 11.55: Where to go to-night.
- 12.0 noon: Closing announcements.

CHILDREN'S SESSION.

- 6.0: Birthday calls, request numbers, and kiddies' entertainment—Aunt Jemima and Uncle Bert.

EVENING SESSION

- 7.0: Musical interlude.
- 7.5: Birthday calls.
- 7.15: Sporting feature—turf topics, review of candidates and their prospects for to-morrow—Mr. Geo. A. Davis.
- 7.40: Request numbers.
- 8.0: Hawaiian steel guitar selections.
- 8.15: Request numbers.
- 8.30: Music and vocal items from the studio.
- 9.10: Sporting feature, presented by Tooth and Co., Ltd., Kent Brewery, from ringside of M'Hugh's Leichhardt Stadium, full description of main 15-round fight—Mr. Jack Dunleavy.
- 10.0: Closing announcements.

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“MINIWATTS”

Interstate Programmes, Friday, July 26

3LO

EARLY MORNING SESSION.

7.0: Time signal from the Melbourne Observatory. Weather forecast. 7.5: Early rising music. 7.40: Mails and shipping. 7.43: What's On To-day. 7.45: Birthday Greetings. 8.0: Breakfast news and market reports. 8.15: Close down.

MORNING MUSICALS.

10.30: The thought for to-day—Dr. Loftus Hills 10.35: Reproduced music. 10.45: Arnold Coleman at the Wurflitzer. 11.0 to 12.15: 3LO Studio Orchestra, with Thelma Ready, banjo. 12.15: News of the day: rates on 'Change; market reports.

MIDDAY SESSION.

12.30: National Broadcasting Orchestra, under the direction of Wm. G. James (Conductor, Percy Code)—Overture, "Merrie England" (German). Mollie Warden, soprano. Orchestra: "Norwegian Rhapsody No. 1" (Svendens). 1.0 to 2.0: Luncheon music provided by the National Broadcasting Orchestra.

THE LECTURETTE SESSION.

2.0: Mr. G. Alston, Protector of Aborigines—"Daily Life and Thoughts of the Arunta Aborigines of Central Australia." 2.15: Reproduced music. 2.25: Prof. G. H. Cowling, M.A.—"Classical Allusions." 2.40: Reproduced music. 2.45: Mr. R. J. A. Barnard, M.A.—"Are There People on Mars?"

THE RADIO MATINEE.

3.0: The National Broadcasting Orchestra, under the direction of Wm. G. James (Conductor, Percy Code)—Overture, "Midsummer Night's Dream" (Mendelssohn). Ernest Wilson, bass-baritone. Orchestra: Selection from "Lohengrin" (Wagner). 3.40: A One-act Play, "The Hypnotist," by Nell Young, produced by Winifred Moverley. 3.55: Orchestra, "Ballet Egyptien" (Luigini). First appearance in broadcasting of the talented young xylophonist, "Winks" Egmith. 4.15: Violet Semple, contralto. 4.25: Orchestra—"Slavonic Dance" (Dvorak). 4.30: Close down.

THE CHILDREN'S CORNER.

5.45: "Billy Bunny"—Old Tales in new guises. 6.0: "The Mouth Organ Man," Jingle Tunes. 6.15 to 7.30: Dinner Music, supplied by the 3LO Studio Orchestra. 7.0: To-day's news; rates on 'Change; market reports.

NIGHT SESSION.

7.45: National Broadcasting Orchestra—Under direction of Wm. G. James. Conductor, Percy Code. Overture—"Fidelio" (Beethoven). "Le Deux Pigeons" 8.0: First appearance in broadcasting of The Bartleman Male Choir—"The Pilgrims' Chorus" (Wagner). "Night" (Schubert). "Who is Sylvia?" (Schubert). "Oft in the Silly Night" (Emerson). "The Song of the Jolly Roger" (Candlish). 8.20: Collingwood Citizens' Band (Conductor, F. C. Johnson)—Selections from the works of Liszt. 8.30: The Bartleman Male Choir—"The Shepherdess" (Dermott M'Murrough). "The Red Sarafan" (Russian Folksong). "On the Sea" (Dudley Buck). 8.40: Orchestra—"Prelude" (Jarnfelt). "In a Monastery Garden" (Ketelby). 8.50: "The Court Cards"

Musical Company—

"The Pick of the Pack 'Shuffling' along in their Merry Musical Mixture, which we will call a 'Square Deal.'" We introduce ourselves. The new pack is opened. "The Four Aces" in "A Little Advice." "The Queen of Hearts" has fallen in love, and will sing merrily. "The Jack of Spades" and the "Jack of Clubs" have an argument. "The Queen of Diamonds" is attended by the Four Jacks. "The Joker" drops out of the pack and makes merry. "The Diamonds" leave the pack and "Go Shopping." "The King of Clubs" tells of his Nautical Experiences. "The Joker" takes "The Queen of Clubs" on a Hunting Expedition.

"The Four Jacks" join in a Little Harmony. "The Queen of Clubs" in a Melodious Mood. "The Court Cards" go to Asia Minor. "The Court Cards" look ahead and sing of Television. "The Queen of Spades" in some "Sob-stuff." "The Court Cards" combine in a little "Opera." "The Joker" has a few more cards up his sleeve. "The Clubs" feel a trifle depressed, club together, and form a choir. "The Jack of Hearts" discovers he is 'right' bower," and takes a trick. "The Court Cards" discover there are other "games" besides cards. The Two "Red Kings" join hands with the two "Black Queens" and sing a Lullaby. "The Queen of Hearts" feels frivolous. "A Mis-deal" annoys "The Joker." "The Court Cards" learn the latest songs. 10.30: News from to-morrow's papers. 10.35: Eric Welch will speak of to-morrow's races at Moonee Valley. 10.45: The 'Rex' Dance Band. 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.0: G.P.O. clock says "ten." 10.1: Market reports. 10.25: Shipping reports. Ocean forecasts. 10.30: Mail notices. Express train information. 10.35: News service, exclusive to 3AR. 10.59: Weather forecast.

MORNING MUSICAL SESSION.

11.0: The Strad Trio—"Trio in E Flat, Op. 11" (Haydn). 11.10: Celebrity singers. 11.20: Cecil Parkes, violin, and Myra Montague, piano—"Sonata, F Major" (Beethoven), Allegro con brio, Adagio, Scherzo. 11.36: Captain Donald MacLean will continue his series of talks—"The Conquest of Peru," 11.51: Frank Johnstone, "cello"—"Adagio" (Popper). "Harpicini" (Popper). 12.0: Celebrity singers. 12.20: The Strad Trio—"Minuet" (Beethoven), "Passepied" (Dellbes), "Tango" (Albeniz). "Spanish Dance, No. 1" (Moszkowski). 12.30: Close down.

AFTERNOON SESSION.

2.45: Description of Public Schools football. 3.6: Rotary Rhythms. 3.10: Description of the Public Schools Football, Melbourne Grammar School versus Geelong Grammar School. 3.35: Rotary Rhythms. 3.45: Description of the Public Schools Football, Melbourne Grammar School v. Geelong Grammar School. 4.6: Rotary Rhythms. 4.10: Description of the Public Schools Football, Melbourne Grammar School versus Geelong Grammar School. 4.40: Close down.

EVENING SESSION.

6.0: Beautiful ballads. 7.10: News service. Announcements. 7.20: More variety, vocalised.

NIGHT SESSION.

8.15: Out of the Past. 8.16: Captain Donald MacLean—"The Conquest of Peru." 8.30: A Maker of History. 8.31: Community Singing from the Collingwood Town Hall. 10.20: News service. Announcements. 10.30: God Save the King.

4QG

EARLY MORNING SESSION

7.43: Time signals. 7.45: News service. 8.0: Records. 8.15: News service. 8.30: Close down.

MORNING SESSION

11.0: Music. 11.5: Social news. 11.15: Lecturette. A cookery and household talk, by "The Etiquette Girl." 11.30: Music. 12 (noon): Close down.

MIDDAY SESSION

1.0: Market reports and weather information. 1.20: Lunch-hour music. 2.0: Close down.

AFTERNOON SESSION

3.0: The Studio Orchestra. 4.30: Close down.

NIGHT SESSION

8.0: From the studio. Programme, arranged by Mr. Sydney May. 9.0: Metropolitan weather forecast. 9.15: A description of the scene and frocks at the Naval Ball. 9.30 p.m.: From the studio. The second portion of programme arranged by Mr. Sydney May. 10.30: Dance music from the Naval Ball. 11.0: From the Studio: News; weather information. Close down.

5CL

MORNING SESSION.

11.15: Chimes. 11.16: Morning Melodies. 11.45: Kitchen Craft and Menu Talk. 12.0: G.P.O. chimes. 12.1: Midday music. 12.15: News session. 12.40: More midday music. 12.52: Our Commercial Corner. 1.0: G.P.O. chimes. 1.1: From the Adelaide Town Hall. Community singing. 1.59: Meteorological information. 2.0: G.P.O. chimes. Close down.

AFTERNOON SESSION.

3.0: G.P.O. chimes. 3.1: Programme review and announcements. 3.10: Bright selections; Wilfrid Thomas (bass), "The Gay Highway" (Drummond), "Why Shouldn't I?" (Russell), "Go Not, Happy Day" (Somervell), "Bird in the High Hall Garden" (Somervell); musical moments. 4.10: An Educational Talk. 4.25: Stock Exchange information. 4.30: G.P.O. chimes. Close down.

EVENING SESSION.

6.0: G.P.O. chimes. 6.1: Children's Happy Moments. 6.30: Crosley Dinner Session, including items by Wilfrid Thomas (bass) and Jean Finlay (pianiste). 7.0: G.P.O. chimes; Senior Birthday League greetings; 5CL's sporting service; stock Exchange information; soccer notes; general market reports. 7.20: "Mo" Manning on "Football." 7.30: Mr. A. G. Fenner will speak on "Athletic Activities." 7.45: Mr. A. Grenfell Price, M.A., F.R.C.S., on "Pioneers of Australia."

NIGHT SESSION.

8.0: G.P.O. chimes. 8.1: Ninety Years Ago To-day! Programme revue. 8.10: From the Malvern Methodist Church. A concert:

Organ solo, "Adoration" (Borowski), Fred Pilgrim. Chorus, "Lift Up Your Heads" (Handel), Malvern Choir. Bass, "Like as the Hart" (Allitsen), Ray Wood. Part song (unaccompanied). "Saviour, Thy Children Keep" (Sullivan), Malvern Choir. Soprano, "O Divine Redeemer" (Gounod), Phyllis Webb. Chorus, "Who is Like Unto Thee" (Sullivan), Malvern Choir.

Violin solo, "Benedictus" (Mackenzie). 9.0: From Studio. G.P.O. chimes. 9.1: Meteorological information. 9.2: Overseas grain report.

9.3: Wilfrid Thomas (bass)—"Ave Maria" (Kahn). "Windy Night" (Stanford). 9.10: From Malvern Methodist Church. Continuation of concert.

Tenor, "Sing Ye Praise," Lindsay Jessop. Chorus, "All Ye That Cried." Duet and chorus, "I Waited for the Lord" (Mendelssohn), Phyllis Webb, Joy Watson, Malvern Choir.

Organ solo, "Chant Pastoral" (Dubois), Fred Pilgrim. Anthem, "God So Loved the World" (Harold Moore), Malvern Choir.

Bass, "The Lord is My Light" (Allitsen), Ray Wood. Anthem, "Hear Me When I Call" (King Hall), Malvern Choir.

Soprano, "I Will Extol Thee" (Costa), Joy Watson. Chorus, "Hail, Gladdening Light" (Martini), Malvern Choir.

10.15: From Studio. General News Service. Meteorological information. Announcements.

5CL's sporting service. 10.30: Modern dance music. 11.0: G.P.O. chimes. Close down.

6WF

10.0: Tune in. Records. 11.0: Close down. 12.30: Tune in. 12.35: Market news. 1.0: Time signal. 1.1: Weather bulletin. 1.3: Musical items by the Radio Trio. 2.0: Close down. 3.30: Tune in. 3.35: Music and song relayed from the Primrose Cafe de Luxe. 4.30: Close down.

6.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Radio Trio. 7.30: Commercial and general information. 7.45: Racing talk. 8.0: Time signal. 8.1: First weather bulletin. 8.2: Music and elocution. 8.50: Late news Reel; weather bulletin. 8.58: "Gardening" talk, by Mr. James Conarty. 9.13: Programme continued from the studio. 10.30: Close down.

10.4.5 METRE TRANSMISSION. Simultaneous broadcast on 104.5 metres of programme given on 1250 metres commencing at 6.45 p.m.

7ZL

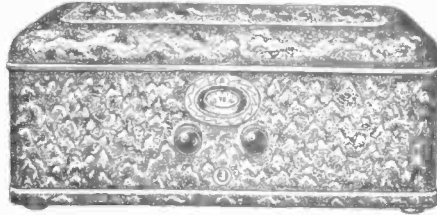
11.30 a.m.: Selections. 11.34: Weather information. 11.35: Selections. 11.55: Tasmanian Stations 9 a.m. weather report. 12.0: G.P.O. Chimes. 12.1: Shipping information. 12.8: Selections. 12.30: Announcements. 12.33: Selections. 12.55: News service. 1.10: Selections. 1.20: Close down. 3.0: G.P.O. chimes. 3.1: Selections. 3.4: Weather information. 3.5: Selections. 4.15: Personalities. 4.30: Close. 6.15: Children's hour. 7.10: News session. 7.15: Sid Jones, will speak on "Football." 7.30: Studio concert. Solos by Miss Mary Moore—(a) "Life is a Song" (Neale), "Thank God for a Garden" (Del Riego). 7.44: Harold Turner—"Until," "Rose of My Heart" (Lohr). 7.58: Doreen Ellison, soprano—"The Net Mender" (Clarke), "A Heart That's Free" (a). 8.12: Mary Moore, contralto—"Echo" (Somerset), "Yonder" (a). 8.23: Harold Turner, baritone—"Lie There, My Lute" (Macduinn). "She Is Far From the Land" (Lambert). 8.40: Doreen Ellison, soprano—"Danny Boy" (Weatherley), "By the Waters of Minnetonka" (Licurance). 8.46: J. M. Counce—"The History and Development of Music." 9.45: News session. 10.8: G.P.O. chimes. Close down.

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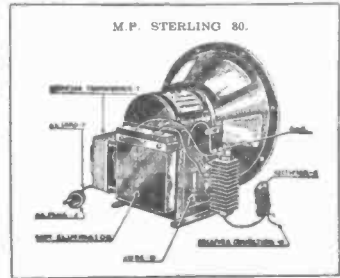
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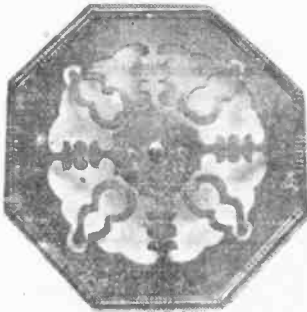
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2FC

EARLY SESSION—7 to 8.15 a.m.

- 7.0: "Big Ben" and weather forecast.
- 7.5: Early-rising music.
- 7.40: Breakfast news.
- 7.45: Mails and shipping.
- 7.48: What's on to-day?
- 7.50: Birthday calls.
- 8.0: Music from the studio.
- 8.15: Close.

MORNING SESSION—10.30 a.m. to 12.30 p.m.

- 10.30: Announcements.
- 10.32: Sporting—the Racing Observer.
- 10.45: From the State Theatre—recital on the Grand Organ by Edgar Stone.
- 11.0: Household helps—week-end suggestions.
- 11.10: The Light Orchestra.
- 12.0: "Big Ben" and Stock Exchange.
- 12.5: Music.
- 12.20: Midday market reports.
- 12.30: Close.
- 12.50: From Rosehill—description of events in the running by the Racing Observer. During intervals in racing, musical items from the studio by the National Broadcasting Orchestra and Nea Hallett, popular vocalist.
- 5.0: Close.

EARLY EVENING SESSION—5.45 to 7.55 p.m.

- 5.45: Kiddies' Good-night Stories—the Hello Man and Aunt Margot.
- 6.45: The Dinner Orchestra.
- 7.30: The A.B.C. sporting news and veils.
- 7.45: From the State Theatre—Mr. Price Dunlavy at the Grand Organ.

EVENING PROGRAMME—8 p.m. to 11.30 p.m.

- 8.0: "Big Ben"; the New South Wales Fire Brigades' Band.
- 8.15: Bryson Taylor, tenor.
- 8.22: The Orpheus Trio, instrumentalists.
- 8.30: Gwenda Zane, contralto.
- 8.37: Warwick Armstrong, comedian.
- 8.47: The New South Wales Fire Brigades' Band.
- 9.2: Peter Brookes, popular vocalist.
- 9.8: Ward Lear, whistling novelities.
- 9.16: Dan Thomas and May Crane, entertainers.
- 9.26: Gwladys Edwards and Anne Stuart Gurr.
- 9.36: The Orpheus Trio, instrumentalists.
- 9.46: "Talkie" trifles.
- 10.15: From the studio—to-morrow's programme and announcements; official weather forecast.
- 10.20: From the ballroom of the Oriental—Simpson's Syncopaters.
- 11.30: National Anthem.

2BL

OPENING SESSION 8.15 to 11 a.m.

- 8.15: Music for every mood.
- 8.45: "Interest Item" on outstanding events of the day.
- 9.0: A musical pot-pourri.
- 9.30: British official wireless news.
- 9.40: A review of new records.
- 10.10: Gardening topics by Mr. G. Cooper, Superintendent of City Parks.
- 10.30: Studio Light Orchestra.
- 11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

- 12.0: Station Orchestra.
 - 1.0: Afternoon news service.
 - 1.15: Music.
 - 1.30: "Traders' "Selling the Set" music.
 - 2.0: At the console of the Wurlitzer Organ at the Capitol Theatre—Mr. Fred Scholl.
- AFTERNOON ENTERTAINMENT—2.30 p.m. to 5.45 p.m.**

- 2.30: Music.
- 3.0: From the Sydney Cricket Ground—description of the final Test match, "All Blacks" v. Australia.
- 4.0: During the interval, musical programme from the studio.
- 4.10: From the Sydney Cricket Ground—"All Blacks" v. Australia.

- 5.0: From the studio—sporting resume.
- 5.15: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

- 6.15: The Dinner Orchestra.
- 6.45: Basil Kirke will relate Tales of Adventure.
- 7.5: Music.
- 7.20: Late news.
- 7.30: The Dinner Quartet.
- 7.55: What's on the air to-night?

EVENING SESSION

- 8.0: G.P.O. chimes; the A.B.C. Dance Band.
- 8.12: Dan Thomas and May Crane, entertainers.
- 8.22: Ward Lear, whistling novelist.
- 8.29: Gwladys Edwards and Anne Stuart Gurr.
- 8.36: High Spots Review—Alf Lawrence and Company in a pot-pourri of fun and folly.
- 8.36: The A.B.C. Dance Band.
- 9.16: Bryson Taylor, tenor.
- 9.53: Florence Page, monologues.
- 10.0: G.P.O. chimes; Warwick Armstrong, comedian.
- 10.7: Peter Brookes, popular vocalist.
- 10.15: The A.B.C. Dapire Band.
- 10.28: To-morrow's programme and announcements; official weather forecast.
- 10.33: Gwenda Zane, contralto.
- 10.40: The A.B.C. Dance Band.
- 11.30: Romano's Dance Band, conducted by Bennie Abrahams.
- 12.0: National Anthem.

2GB

- 3.0: Musical session. 5.30: Children's session by Uncle George. 7.0: Request hour. 8.0: Dance programme by Sutton's Dance Orchestra. 10.30: Close down.

2UW

- 5.30 p.m.: Children's hour, conducted by Uncle Jack. 6.30: Close down. 7.9: Request numbers. 10.30: Close down.

2KY

CHILDREN'S SESSION

- 6.0: Birthday calls, request numbers, and kiddies' entertainment—Aunt Jemima and Uncle Bert.

EVENING SESSION

- 7.0: Musical interlude. 7.5: Birthday calls. 7.15: Sporting feature—turf topics; How they ran to-day—Mr. Geo. A. Davis. 7.50: Request night. 10.0: Closing announcements.

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Interstate Programmes, Saturday, July 27

3LO

EARLY MORNING SESSION.

7 a.m. to 8.15: See Friday.

MORNING MUSICALS.

10.30: Thought for to-day, Mr. Chas. Nuttall.
10.35: Reproduced music. 10.45: Arnold Coleman at the Wuriltzer organ.
Sporting.—11 a.m.: Eric Welch's final selections for to-day's races at Moonee Valley.
11.10 to 12.15: 3LO Studio Orchestra, with Ray Carey, tenor. 12.15: To-day's news; rates on 'Change; weather forecast.

MIDDAY SESSION.

12.30: National Broadcasting Orchestra—Under the direction of Wm. G. James; conductor, Percy Code. Overture, "A May Day" (Wood), "Shepherd's Hey" (Grainger), Elita Bernard, contralto; Orchestra, "Four Gipsy Songs" (Dvorak).
Luncheon Music.—1.40 to 2.0: Supplied by the National Broadcasting Orchestra, under direction of Wm. G. James (conductor, Percy Code).

AFTERNOON SESSION.

1.58: Description by Eric Welch of Geilbrand Hurdle Race, 2m., Moonee Valley Races. 2.5: National Broadcasting Orchestra, under direction Wm. G. James (conductor, Percy Code) Overture, "Maslanello" (Auber), "In the Steppes of Central Asia" (Borodin). 2.18: Victor Harding, bass-baritone. 2.28: Description of Derrimut Handicap, 6f., Moonee Valley races. 2.35: Orchestra—Selection, "Wildflower" (Youmans). 2.45: Description by Mel Morris of football match, Melbourne v. Geelong, at Melbourne Cricket Ground. 2.57: Description of Lindsay Gordon Steeplechase, 2m. and 3ch., Moonee Valley races. 2.5: Description of football match, Melbourne v. Geelong, at Melbourne Cricket Ground. 3.25: Quarter-time football scores. 3.28: Description of Glen Ori Handicap, 1 1/4m., Moonee Valley races. 3.35: Description of football match, Melbourne v. Geelong, at Melbourne Cricket Ground. 3.45: Half-time football scores. 3.48: Orchestra—Selections from "The Gelscha" (Jones). 3.58: Description of Mt. Cotterill Jumpers' Flat Race, 1m. 7f., Moonee Valley races. 4.5: Description of football match, Melbourne v. Geelong, at Melbourne Cricket Ground. 4.28: Description of Sunset Welter Handicap, 7f., Moonee Valley races. 4.35: Three-quarter time football scores. 4.38: Description of football match, Melbourne v. Geelong, at Melbourne Cricket Ground. 5.30: Final football scores; all sporting results.

THE CHILDREN'S CORNER.

5.45: "Little Miss Kookaburra" will tell about the wreck of the Dunbar off the coast of Sydney on August 20, 1857 (for the bigger children). 6.3: Children's music by 3LO Studio Orchestra. 6.15 to 7.30: Dinner music, supplied by the 3LO Studio Orchestra.
News from Everywhere.—7.30 to 8.0: To-day's news; market reports; all sporting results.

NIGHT SESSION.

8.0: A special programme has been arranged. University Symphony Orchestra (conducted by Professor Bernard Heinze), in celebrity concert from Melbourne Town Hall.
10.30: News session.
10.40: "The Rex" Dance Band.
11.30: God Save the King.

3AR

MORNING SESSION.

10.0 G.P.O. clock says "ten." 10.1: Market reports. Farm and station produce, fruit, fish and vegetables. 10.25: Shipping reports. Ocean forecasts. 10.30: Mail notices. Express train information. 10.35: News service, exclusive to 3AR. 10.59: Weather forecast. 11.0: Cecil Parkes, violin—"Romance in G" (Beethoven), "Zapatoado" (Sarastate). 11.10: Beautiful ballads. 11.20: Frank Johnstone, "cello"—"Aria" (Pergolesi), "Danse Rustique" (Squire). 11.25: Beautiful ballads. 11.30: Myra Montague Piano—"Liebes Walzer" (Moszkowski). 11.35: Beautiful ballads. 11.40: The Strad Trio—"Andante" (Beethoven), "Menuet, E Flat" (Beethoven), "Gavotte" (Gossec), "Scherzo" (Reissiger). 11.50: News service. 12.0: Close down.

AFTERNOON SESSION.

1.30: Description of the baseball, Melbourne v. University, at the M.C.C. 1.58: Description of the Geilbrand Hurdle Race, two miles, Moonee Valley Races, by Eric Welch. 2.5: Description of the baseball, Melbourne v. University, at the M.C.C. 2.28: Description of the Derrimut Handicap, six furlongs, Moonee Valley races. 2.35: Description of the baseball, Melbourne v. University, at the M.C.C. 2.40: Sonora recital. 2.45: Description of the football, Melbourne v. Geelong, at the M.C.C. 2.57: Description of the Lindsay Gordon Steeplechase, two miles eight chains, Moonee Valley Races. 3.5: Description of the football, Carlton v. Richmond, at Carlton Cricket Ground. 3.15: Description of the football, Melbourne v. Geelong, at M.C.C. 3.28: Description of the Glen Ori Handicap, 1 1/4 miles, Moonee Valley Races. 3.35: Quarter-time football scores, League and Association football matches. 3.40: Description of the football, Carlton v. Richmond, at the Carlton Cricket Ground. 3.48: Half-time football scores—League and Association. 3.50: Description of the football, Melbourne v. Geelong, at the M.C.C. 3.57: Description of the Mt. Cotterill Jumpers' Flat Race, 1 mile 7 furlongs, Moonee Valley Races. 4.5: Description of the football, Carlton v. Richmond, at the Carlton Cricket Ground. 4.15: Description of the football, Melbourne v. Geelong, at the M.C.C. 4.27: Description of the Sunset Welter Handicap, 7 furlongs, Moonee Valley Races. 4.35:

Three-quarter time football scores—League and Association. 4.40: Description of the football, Carlton v. Richmond, at the C.C.G. 4.50: Description of the football, Melbourne v. Geelong, at the M.C.C. 5.30: Final scores of the League and Association football matches. 5.35: Close down.

EVENING SESSION.

6.0: All sporting results.
6.20: Seraphic selections for Saturday.
7.10: News session. Announcements.
7.20: More selections.
8.0: Out of the Past.
8.2: A Maker of History.
8.3: The Strad Trio—
"Trio, Op. 32, D Minor" (Arensky).
Moderato. Allegro.
8.15: Ray Carey, tenor—
"The Red Sarafan" (Varlanoff).
"Oh, the Merry Merry Frost Time" (Dubuc).
8.22: The Strad Trio—
"Chanson Paroles" (Tschalkowsky).
"Chanson Triste" (Tschalkowsky).
"Spanish Dance, No. 1" (Moszkowski).
8.32: Lindsay Biggins, piano—
"Melodie" (Rachmaninoff).
"Moment Musicale" (Rachmaninoff).
"Two Preludes" (Liabov).
"Cappriccio" (Rimsky-Korsakov).
"Berceuse" (Rimsky-Korsakov).
"Pastels" (Gretchaninoff).
8.53: Ray Carey, tenor—
"The Dream" (Rubenstein).
"But Lately In Dance" (Arensky).
9.0: The Strad Trio—
"Adagio" (Schubert).
"Gavotte from Mignon" (Thomas).
"Melody" (Moszkowski).
"Waltz" (Coleridge-Taylor).
9.15: The Melody Makers—
Twenty minutes of mirth and melody.
9.35: Buccaneers Bold!
9.45: The Radio Revelers—
"Glad Rag Doll" (Ager).
"That's Her Now" (Ager).
9.51: Rita Hilton, soubrette—
"Ten Little Miles from Town."
"When We've Company at Our House."
9.58: The Radio Revelers—
"Only a Rose" (Friml).
"Can You Blame Me" (Goodwin).
"Casablanca" (Evans).
10.7: Rita Hilton, soubrette—
"A Good Man is Hard to Find."
"Why Don't You Smile?"
10.14: The Radio Revelers—
"Melancholy Melancholy" (Sherwin).
"Shake That Thing" (Jackson).
10.20: "Age" news service. Announcements.
10.30: The Radio Revelers—
"She's Funny That Way" (Moret).
"Chilly Pom Pom" (Byron).
"Carolina Moon" (Burke).
"Thinking of You" (Ruby).
"Up in the Clouds" (Ruby).
Selected.
11.0: God Save the King.

4QG

No morning transmission.

MIDDAY SESSION

12.0 (noon): Prom Mt. Gravatt. Opening of the Show.
1.10 p.m.: Close down.

NIGHT SESSION

The Orpheans—
"Ocotie"—"Opening Chorus" (R. Tait).
C. Rice (tenor)—
"My Little Banjo" (Dichmont).
The Orpheans (octette)—
"True Till Death" (Scott Gatty).
E. Harper (baritone)—
"The Mill Wheel" (German Volkslied).
The Orpheans (octette)—
"The Lowland Sea" (Traditional).
Frances Lane (soubrette)—
"Sonny Boy" (Al Jolson).
G. Williamson (tenor)—
"Love Sends a Little Gift of Roses" (Openshaw).
T. Muller (monologist)—
"Failure at Fogg" (O'Brien).
F. Crane (baritone)—
"Sea Fever" (Clarke).
The Orpheans—
"In Praise of Song" (Maurer).
J. P. Cornwell (bass)—
"Nita Gitana" (Newton).
C. Rice (tenor)—
"Sleeping Camp" (Parkes).
The Orpheans (octette)—
"She Wore a Wreath of Roses" (Bell).
J. P. Cornwell (bass) and F. Crane (baritone)—
Vocal duet, "Go, Lovely Rose" (Quilter).
Frances Lane (soubrette)—
"Girl of My Dreams" (Clapp).
E. Harper and Orpheans—
"Sleepy Head" (Lullaby—R. Tait).
G. Williamson (tenor)—
"Adown a Peaceful Valley" (Traditional).
F. Crane (baritone)—
"Spanish Gold" (Fisher).
The Orpheans (octette)—
"The Story of a Bee" (Old).
J. P. Cornwell (bass)—
"Smile Through Your Tears" (Gambien).
The Orpheans (octette)—
"The Arms I Love" (Parkes).
10.0: News; weather information. Close down.

5CL

MIDDAY SESSION.

12.0: G.P.O. chimes. 12.1: Probable starters and selections for races at Yorktown by "Silvius," and selections for Moonee Valley Races, by our special representative in Melbourne. 12.15: News session. Official Wireless news. Stock Exchange Information, Meteorological information. Announcements.

AFTERNOON SESSION.

During the afternoon descriptions of League football will be broadcast, interspersed with Yorktown and Moonee Valley race results, and musical numbers.

EVENING SESSION.

6.0: G.P.O. chimes and resume of race results. 6.1: Children's Happy Moments. 6.30: Dinner music, including items by Wilfrid Thomas, bass. 7.0: G.P.O. chimes. Senior Birthday League greetings. Stock Exchange Information. Announcements. 7.30: Mr. Ray Walsh, producer of "Juanita," will speak to you from his dressing-room. 7.35: Mr. C. G. Riley in "Items of Interest." 7.45: 5CL's sporting service.

NIGHT SESSION.

8.0: G.P.O. chimes.
8.1: 90 Years Ago To-day.
Programme review.
8.10: Special programme from Studio. Meteorological information. Wilfrid Thomas, bass—
"My Love is Like a Red Rose" (Scottish).
"Simon the Cellarer" (Wallace).
Continuation of special programme.
10.20: 5CL's sporting service. Meteorological information. Announcements.
10.30: Modern dance music.
11.0: G.P.O. chimes. Close down.

6WF

10.0: Tune in. Records. 11.0: Close down. 12.0: Tune in. 12.5: Racing anticipations. 12.7: Piano-forte solos, by Miss Audrey Dean. 12.44: Markets, news, etc. 1.0: Time signal. 1.1: Weather. 1.3: Close down.
3.30: Tune in. Sporting session. Race results, and quarter-time scores of the football matches. 5.30 Approx.: Close down.
6.45: Tune in. 6.48: Bedtime stories by Auntie Amy. 7.12: Sports results. 7.30: Commercial and general information. 7.45: Music. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Variety programme, soprano solos by Miss Bertha Warren; piano-forte solos and duets by Mr. R. and Miss Gwen Cooté; old-time dance music, relayed from the Unit Theatre. 8.50: Late news; weather bulletin. 9.5: Programme continued from the studio and Unity Theatre. 10.30: Close down.
104.5 METRE TRANSMISSION.
Simultaneous broadcast on 104.5 metres of programme given on 1250 metres commencing at 6.45 p.m.

7ZL

11 a.m.: Record recital. 11.34: Weather forecast. 11.35: Record recital. 11.55: Tasmanian Station's 9 a.m. weather report. 12.0: G.P.O. chimes. 12.1: Shipping information. 12.8: Gramophone recital. 12.30: Announcements. 12.35: Record recital. 12.55: News service. 1.10: Record recital. 1.30: Close down. 2.45: Transmission from the North Hobart Oval—football match, League v. Broken Hill, described by Sid Jones. Running description will be given of the Moonee Valley Races, held at Moonee Valley Racecourse, Melbourne. 4.50: Sporting results to hand. 5.0: Close down. 6.0: Sporting results. 6.15: Children's hour. 7.15: News session. 7.30: Belle St. Lawrence, will give a "Travel Talk." 7.45: J. M. Counsel on "European Affairs." 8.0: G.P.O. chimes. 8.5: A request programme of popular records, specially arranged by Paton's Music Warehouse. 9.30: News session. 9.45: Record programme continued. 10.30: Close down.

ALL-ELECTRIC BOOKLET

"ELECTRIFIED RADIO," a handy publication in booklet form by "The Wireless Shop," 6 Royal Arcade, Sydney, goes a long way towards making all-electric home installation clear. Skirting the theory briefly, with a few graphic sketches, the more solid matter of re-wiring existing sets is covered fully, with full circuits and baseboard plans to make everything quite clear. The writer is Alan Burrows. This booklet is being sold at the price of 1/-, and contains full costs and prices of the necessary alterations.

DEPENDABLE RADIO

"A.C." 4 POWER PACK

Below is a list of parts for building the A.C. Power Pack described in this issue

Parts required for "Pilot" type Power Supply

	£	s	d
ONE POWER TRANSFORMER, TYPE No.398-C (PILOT)	2	17	6
ONE DOUBLE CHOKE, COIL TYPE, No. 395 (PILOT)	2	2	6
ONE FILTER CONDENSER, BLOCK TYPE, No. 396 (PILOT)	2	17	6
ONE 8,000 OR 10,000 OHM PILOT FIXED RESISTOR		6	6
ONE 10,000 OHM PILOT FIXED RESISTOR		6	6
TWO PILOT VOLTAGE DIVIDERS, TYPE No. 960		17	6
ONE PILOT UX TYPE VALVE SOCKET		3	0
ONE MARCONI-OSRAM TYPE U5 RECTIFIER VALVE	1	5	0

Parts required for Ferranti type Power Supply:

	£	s	d
ONE HIGH VOLTAGE TRANSFORMER, TYPE EM1	3	15	0
ONE TYPE R80 METAL RECTIFIER	7	8	6
ONE TYPE B1 FILTER CHOKE	2	0	0
ONE TYPE B2 FILTER CHOKE	2	0	0
THREE TYPE C2 FILTER CONDENSERS, 2MF		19	6
FOUR TYPE C1 FILTER CONDENSERS, 2MF	1	12	0
ONE 8,000 OHM FIXED RESISTOR WITH CLIPS		7	6
ONE 15,000 OHM FIXED RESISTOR WITH CLIPS		7	6
ONE 40,000 OHM FIXED RESISTOR WITH CLIPS		7	6
THREE 25,000 OHM FIXED RESISTORS WITH CLIPS	1	2	6
ONE METAL SAFETY BOX	1	7	0

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Local Programmes, Sun., July 28

2FC

THE CHURCH HOUR—10 a.m. to 12.30 p.m.

10.0: Announcements.
10.5: Studio music.
10.30: This morning's news
10.45: Music.
11.0: The morning service from Chalmers Street Presbyterian Church: preacher, Rev. David Brandt.
12.15: From the studio—music.
12.30: Close.

AFTERNOON CONCERT—3 p.m. to 4.30 p.m.

3.0: The Salvation Army Congress Band.
3.15: Lance Jeffree, tenor.
3.22: The Sverjensky Trio—violin, cello, and piano.
3.32: Ann Mills, mezzo.
3.40: The Sverjensky Trio.
3.50: Lance Jeffree, tenor.
3.58: The Salvation Army Congress Band.
4.12: Ann Mills, mezzo.
4.20: The Sverjensky Trio.
4.30: Close.

EVENING PROGRAMME—6 p.m. to 10.30 p.m.

6.0: Announcements.
6.5: The Monaco Quartette.
6.25: Signor and Signorina Molinaris—excerpts from Verdi's opera, "Il Trovatore."
6.40: An address by a prominent public man.

7.0: The Monaco Quartette.
7.20: Excerpts by Signor and Signorina Molinaris from the opera, "Il Trovatore" (Verdi).

7.40: The Monaco Quartette.
8.0: Evening concert, arranged by Mr. Will Prior; organ recital by Mr. Price Dunlavy from the State Theatre Grand Organ. Mr. Will Prior's Broadcasting Ensemble Instrumental Trio (Lionel Lawson, violin; Bryce Carter, cello; H. White, piano); vocal items; instrumental items.
10.0: From the studio—meditation music.
10.30: Close. National Anthem.

2BL

WEDNESDAY SESSION, 10.55 a.m. to 3 p.m.

10.55: Announcements.
11.0: The morning service from Christ Church St. Laurence; preacher, Rev. Father John Mathew.

12.15: From the studio, music.
12.30: News items.
12.38: Studio presentation of a specially-arranged programme of music.
2.15: A few minutes with the "Cheer-up" Society, Mr. Frank Grose.

2.30: Half an hour's music with the great masters.
3.0: Close.

LATE AFTERNOON SESSION, 4.30 to 6.40

4.30: An instrumental trio, conductor, George Cleaver.
4.45: Laurence Macaulay, baritone.
4.53: Organ solos by G. Vern Barnett.
5.5: Madame Vera Tasman, soprano.
5.13: The instrumental trio.
5.28: Laurence Macaulay, baritone.
5.36: Organ solos by G. Vern Barnett.
5.43: Madame Vera Tasma, soprano.
5.50: The instrumental trio.
6.0: Close.

EVENING SESSION, 6 to 10.
6.0: A children's session for hospital.
6.40: Paul Vinogradoff, pianoforte recital.
7.0: The evening church service from the Strathfield Presbyterian Church. Preacher, Rev. V. O. Bell.

8.30: Relayed from 3LO, Melbourne. A complete concert programme from the State Theatre, Melbourne. The State Theatre's Sunday night musical ensemble, with Mr Stanley Porter's symphony orchestra, Mr. B. M'Questen's syncopated band, Frank Lanterman on the grand organ, and company of broadcasting vocalists and instrumentalists.

Overture, Stan Porter and his symphony orchestra, "Orpheus in der Underwelt" (Offenbach).

Violin solo, Arved Norit, "Rhapsodie Hongroise" (Dvorak-Kreisler).

Vocal number, Oscar Lansbury, English baritone, selected.

Melody number, Bob M'Questen and his syncopated band. A popular selection of the

best known Moon Ballads. "Moonlit Waters," "Get Out and Get Under the Moon," "Talking to the Moon," "Me and the Man in the Moon."

Duet, flute and French horn, "Serenade" (Titli).

Orchestral item, Stan Porter and his symphony orchestra, "Pastoral," "Intermezzo" L'Arlesienne Suite (Bizet). (The intermezzo featuring a saxophone solo, one of the first ever written for this instrument.)

Tenor solo, Charles Stevens. Grand opera item. Selected.
Organ solo, Frank Lanterman. "Gems from Wagner."

Melody number, Bob M'Questen and his syncopated band. (a) A very beautiful Spanish symphonically-arranged foxtrot, "Sarita," interpolating in this arrangement "La Paloma." (b) A foxtrot arrangement symphonically arranged by Paul Whiteman. "The Meditation from Thais."

Cello solo, "Cantabile" (Caesar Cut).
Vocal duet, Charles Stevens and Oscar Lansbury. Selected. String quartette, "G Minor" (Mozart).

Orchestra item, Stan Porter and his symphony orchestra. "Allegretto," from Violin Sonata No. 2 (Grieg).

10.0: Close. National Anthem.

2GB

9.0: Address by Miss Mary Rivett, "Psychological Sources of Power." 9.30: Address by Mr. Victor E. Cromer, "Power from on High." 10.15: Organ music from St. Alban's Church, Regent Street, Sydney. 10.30: Morning service from St. Alban's Church. 12 noon: Music from studio. 12.30: Close down. 3.0: Musical session. 5.30: Children's session by Uncle George. 7.0: Lecture from Adyar House. 8.0: Music from studio. 8.15: Sacred concert—Miss Ada Brook, pianiste. 8.23: Miss Mary Neal, contralto. 8.30: Mr. Gregory Valentine, violinist. 8.38: Mr. Cecil Houghton, tenor. 8.45: Miss Elsie Brown, soprano. 8.52: Miss Ada Brook, pianiste. 9.0: Weather report. 9.3: Address. 9.8: Mr. Gregory Valentine, violinist. 9.16: Mr. Cecil Houghton, tenor. 9.23: Miss Elsie Brown, soprano. 9.30: Close down.

2UW

10.30: Request items. 1.0: Close down. 5.30: p.m.: Children's hour, conducted by Uncle Jack. 6.30: Close down. 7.0: Request numbers. 10.30: Close down.

Baeyertz Self Training in Better English

MR. C. N. BAEYERTZ, who is so well known in Australia and New Zealand as a broadcasting entertainer, and as a critic of music and elocution, is the author of a course of lessons in correct English, public speaking, voice production, and elocution. The Baeyertz method is scientific, and nothing is left to chance. Mr. Baeyertz sets the order of the studies to meet the special need of every individual student. He gives examples of the right pronunciation of vowels, diphthongs, labials, and all the rest, with shocking examples of those various sounds as they are mispronounced. He knows what he wants to say and to teach, and he takes care to say it in such a way that he cannot possibly be misunderstood. He offers the earnest student the surest guide and the clearest path to good English. The course tells not only how to speak English clearly and beautifully, but also how to produce the voice in such a way as shall ensure the fullest effect of beauty. An excellent book, entitled, "Purpose and Attainment," has been published, which will tell you all about this course, and of many other matters that will interest you. If you send your name and address to the C. N. Baeyertz Institute, 219 Elizabeth Street, Sydney, a copy of "Purpose and Attainment" will be posted to you by return mail.

Interstate Programmes, Sun., July 28

3LO

MORNING SESSION.

10.0: Birthday greetings. 10.15: Reproduced music. 10.45: News of the week-end. 11.0: Morning service from Scots Church, Collins Street—Preacher, Rev. Dr. W. Borland. Subject: "Who are Kin to Jesus?" 12.30: Close down.

AFTERNOON SESSION.

2.0: Frank Lanterman at the Wurlitzer in a medley of popular items from Wesley Church. 3.0: Pleasant Sunday Afternoon Service. 4.30: Close down.

CHILDREN'S CORNER.

4.0: An hour's sunshine with your old favorite, "Bobby Blugum."

EVENING SERVICE.

10: Evening service from St. Paul's Cathedral. Sermon by The Dean.

11.0: The State Theatre's Sunday Night Musical Ensemble.

12.0: Mr. Stanley Porter's Symphony Orchestra. M. B. M'Queen's Syncoated Band. Frank Lanterman on the Grand Organ, and company of Broadcasting Vocalists and Instrumentalists.

Overture: Stan Porter and his Symphony Orchestra—"Orpheus in der Underwelt" (Offenbach).

Violin Solo: Arved Norit. "Rhapsodie Hongroise" (Dvorak-Kreisler).

Vocal number: Oscar Lansbury, English baritone—Selected.

Melody number: Bob M'Queen and his Syncoated Band—

A popular selection of the best-known Moon Ballads.

"Moonlit Waters."

"Get Out and Get Under the Moon."

"Talking to the Moon."

"Me and the Moon in the Moon."

Duet: Flute and French Horn—

"Serenade" (Titi).

Orchestral Item: Stan Porter and his Symphony Orchestra—

"Pastorale."

"Intermezzo" L'Arlesienne Suite (Bizet).

The intermezzo featuring a saxophone solo, one of the first ever written for this instrument.)

Tenor Solo: Charles Stevens—Grand Opera item.

Selected.

Organ Solo: Frank Lanterman—

"Gems from Wagner."

Melody Number: Bob M'Queen and his Syncoated Band—

(a) A very beautiful Spanish symphonically arranged Foxrot. "Barrita," interpolating in this arrangement "La Paloma."

(b) A Foxrot arrangement symphonically arranged by Paul Whiteman. "The Meditation from Tchaik."

Cello Solo—

"Cantabile" (Caesar Cui).

Vocal Duet: Charles Stevens and Oscar Lansbury—

Selected.

String Quartette—

"G Minor" (Mozart).

Orchestral Item: Stan Porter and his Symphony Orchestra—

"Allergret," from Violin Sonata No. 2 (Grieg).

Xylophone Solo: A. Morgan—

"Jorja Jasper."

Organ Solo: Frank Lanterman—

Melodies of To-day.

Vocal Item: Miss Norma Stewart, lyric soprano—

Selected.

Melody Number: Bob M'Queen and his Syncoated Band—

A medley of a few of the most popular tunes of the day—

(a) "Rain."

(b) "Old Rag Doll," interpolating in this number a Xylophone Solo.

(c) "It's a Precious Little Thing Called Love."

(d) "All by Yourself in the Moonlight."

Cornet Solo, with Organ Accompaniment: Alex King—

"The Lost Chord" (Sullivan).

Orchestral Item: Stan Porter and his Symphony Orchestra—

"Intermezzo" from Delibes' Ballet "Nuit."

10.30: Close down.

3AR

MORNING SESSION.

11.0: Service from the First Church of Christ, Scientist, St. Kilda Road, Melbourne. 12.15: British Official Wireless News from Rugby; news from yesterday's papers. 12.20: Close down.

AFTERNOON SESSION.

2.0: Selections. 3.30: The Royal Philharmonic Orchestra, conducted by Felix Weingartner—"Symphony, No. 5 in C Minor" (Beethoven). 4.30: Close down.

EVENING SESSION.

5.0: "Bry Rabbit" has some stories for the children. 5.30: Close down.

NIGHT SESSION.

7.0: Evening service from the Cairns Memorial Church, East Melbourne. Preacher, Rev. F. A. Hagenauer, M. A.

8.30: The Malvern Tramways Band—

Selections, "Gems from the Overtures" (Hawkins).

8.45: Adelaide Meitman, Soprano—"O Sleep, why dost Thou Leave Me?" (Handel)

"When the Roses Bloom" (Reichhardt).

8.47: Eddie Fren, and the Regent Wurlitzer—

transmitted from the Regent Theatre, Collins Street, Melbourne—

Request numbers.

9.30: Adelaide Meitman, Soprano—"Swing Low, Sweet Chariot" (Burleigh). "Vale" (Kennedy Russell). 9.37: The Malvern Tramways Band—Selection, "Queen of Dramas" (Lithgow). March, "Mysterioso" (Ord Humel). 9.50: News service, announcements. 10.0: God Save the King.

4QG

MORNING SESSION

11.0 a.m.: Church service, from Albert Street Methodist Church. 12.30: Conclusion.

AFTERNOON SESSION

3.15: From the Botanic Gardens: Band concert. 4.30: Close down.

EARLY EVENING SESSION

6.0: Children's session. Greetings to little listeners, and replies to letters. 7.0: Children's service.

NIGHT SESSION

7.30: Evening service, Albert Street Methodist Church.

8.30: Brisbane Municipal Concert Band.

9.30: Close down.

5CL

MORNING SESSION.

10.45: Carillon of bells from Adelaide Town Hall.

11.0: Chimes. 11.1: Service from Rose Park Congregational Church. 12.10: British official wireless news. 12.15: Close down.

AFTERNOON SESSION.

3.0: Chimes. 3.1: A pleasant Sunday Afternoon Service, from Glenelg Congregational Church. 4.0: Close down.

EVENING SESSION.

6.0: Chimes. 6.1: Birthday greetings. 6.15: "The Bird Lady" and "The Sunshine Songsters." 7.1: Service from St. Peter's Cathedral.

NIGHT SESSION.

8.20: Announcements. The Unemployment Relief Fund Distress Message.

8.30: Symphony Orchestra, conducted by Lionel Baird—

Military Switch. "Martial Moments" (Winter).

8.42: The Madrigal Singers—

"The Long Day Closes" (Sullivan).

"Good-night, Beloved" (Pisautti).

8.48: C. W. Emery, clarinet—

Two clarinet solos.

8.55: The Madrigal Singers—

Request Numbers.

9.2: "The News" Symphony Orchestra, conducted by Lionel Baird—First Movement "Unfinished Symphony" (Schubert).

9.12: The Madrigal Singers—"Oft in the Still Night" (Welsh Song).

"Silver Threads Among the Gold" (Traditional).

9.19: C. J. Emery, trumpeter—

Two trumpet solos.

9.25: The Madrigal Singers—

Request Numbers.

9.32: Symphony Orchestra, conducted by Lionel Baird—

Selection, "H.M.S. Pinfore" (Sullivan).

9.40: Mr. P. H. Nicholls, in another of his interesting talks, entitled "Bach and his Music."

9.52: General news service.

10.0: Close down.

6WF

10.25: Tune in. 10.30: Special half-hour for the enthusiastic listener. 11.0: Morning service, relayed from Wesley Church, Perth. 12.15: Close down.

3.30: Tune in. 3.35: Musical programme. 4.30: Close down.

6.45: Tune in. 6.48: Bedtime stories for the kiddies. 7.15: Music. 7.30: Evening service. 8.45: Band concert, relayed from Queen's Hall, Perth, items by the Perth City Band, conducted by Mr. Les Price. 10.15: Close down.

104.5 METRE TRANSMISSION. Simultaneous broadcast on 104.5 metres of programme given on 1250 metres commencing at 9.45 p.m.

7ZL

11.0: Morning service from Holy Trinity Church, Hobart. 12.15: Close down. 3.30: From the Studio—An instrumental recital by the Derwent Concert Band. 4.30: Close down. 6.15: Children's chorus singing, conducted by Trevor M. Morris. 6.45: Bertha Southey Bramhall will read a poem to the wee folk. Only the other day.

7.0: Evening service from Melville Street Methodist Church, Hobart. 8.25: A programme of sacred and classical music, arranged by J. M. Counsel. 9.45: News session. 9.50: Close down.

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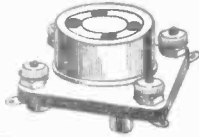
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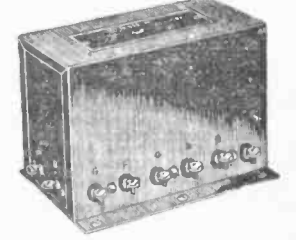
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TWIN UNIT PUSH PULL TRANSFORMER

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32 Clarence St., Sydney 'Phone B2002

Local Programmes, Monday, July 29

2FC

EARLY SESSION—7 to 8.15 a.m.

- 7.0: "Big Ben" and weather forecast.
- 7.5: Early-rising music.
- 7.40: Breakfast news.
- 7.45: Mails and shipping.
- 7.48: What's on to-day?
- 7.50: Birthday calls.
- 8.0: Music from the studio.
- 8.15: Close.

MORNING SESSION—10.30 a.m. to 12.30 p.m.

- 10.30: Announcements.
- 10.32: The Racing Observer.
- 10.45: From the State Theatre—recital on the Grand Organ by Edgar Stone.
- 11.0: Household helps—a talk on cooking and recipes by Miss Ruth Furst.
- 11.10: The Light Orchestra.
- 12.0: "Big Ben" and Stock Exchange.
- 12.5: "The Public Forum Speaker"—Victor C. Bell, B.A.
- 12.20: Midday market reports.
- 12.30: Close.

THE LUNCH HOUR—1 p.m. to 2.30 p.m.

- 1.0: Lunch to music with the Station Orchestra.
- 2.0: Stock Exchange, second call.
- 2.2: Popular education—a talk arranged by a Sydney University Lecturer.
- 2.20: A glance at the afternoon papers.

THE RADIO MATINEE—2.30 p.m. to 4.30 p.m.

- 2.30: The Station Orchestra.
- 2.45: Peggy Dunbar, contralto.
- 2.52: Max Carrington in a sketch.
- 3.3: Dorothy Farmer, pianist.
- 3.13: Gordon Hele, baritone.
- 3.20: The Station Orchestra.
- 3.35: Peggy Dunbar, contralto.
- 3.43: Max Carrington, sketch.
- 3.55: Dorothy Farmer, pianist.
- 4.7: Gordon Hele, baritone.
- 4.15: The Station Orchestra.
- 4.28: Stock Exchange, final call.
- 4.30: Close.

EARLY EVENING—5.45 to 7.55 p.m.

- 5.45: Kiddies' "Good-night" Stories, told by Uncle Bas, assisted by Aunt Willa.
- 6.45: The Dinner Orchestra.
- 7.30: Sporting news and views.
- 7.45: From the State Theatre—Mr. Price Dunlavy at the Grand Organ.

EVENING PROGRAMME—8 p.m. to 11.30 p.m.

- 8.0: "Big Ben"; National Broadcasting Orchestra.
- 8.15: Madame Goossens-Viceroy, soprano.
- 8.23: John Boulton and Reg Mitchell in an Australian Bush sketch.
- 8.35: Florent Hoogstoel, violinist.
- 8.45: Marjorie Beeby, mezzo.
- 8.53: Frank Hutchens, pianist.
- 9.5: The Melody Boys.
- 9.15: The Kalua Trio.
- 9.25: Laurel Mather, popular vocalist.
- 9.32: The National Broadcasting Orchestra.
- 9.45: Wally Baynes, comedian.
- 9.53: Laurel Mather, popular vocalist.
- 10.0: "Big Ben"; Romano's Dance Orchestra, conducted by Bennie Abrahams.
- 10.15: From the studio—To-morrow's programme and announcements; official weather forecast.
- 10.20: Romano's Dance Orchestra, conducted by Bennie Abrahams.
- 11.30: National Anthem.

2BL

OPENING SESSION, 8.15 to 11 a.m.

- 8.15: Music for every mood.
- 8.45: "Interest Item" on outstanding events of the day.
- 9.0: Light music and songs.
- 9.30: British official wireless news.
- 9.40: A review of new records.
- 10.10: The Ladies' Club Hour. The Australian Women's A.B.C. Association.

10.30: Studio light orchestra.

11.0: Close.

MIDDAY SESSION, 12 noon to 2.30 p.m.

- 12.0: Station orchestra.
- 1.0: Afternoon news service.
- 1.15: Women's "Interest Talk," Miss Gwen Varley.
- 1.30: Traders' "Selling the Set" music.
- 2.0: At the console of the Wurlitzer organ at the Capitol Theatre, Mr. Fred Scholl.

AFTERNOON ENTERTAINMENT—2.30 to 5.45

2.30: Business efficiency talk—the first of a series arranged by the Chamber of Manufacturers.

2.45: The Magic Carpet—Travel and Adventure—a story of travel and adventure by C. Price Conigrave.

3.0: Musical programme, including Sydney Simpson's Syncopaters; Walter Searle, entertainer; Laurel Mather, popular vocalist; Hilda Grace, novelty pianist; dance music by the A.B.C. Dance Band.

4.45: "The Trade Hour."

5.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

- 6.15: The Dinner Orchestra.
- 6.45: Girl Guides—Miss Gwen Varley.
- 7.5: Markets.
- 7.20: Late news.
- 7.25: Dinner Quartet.
- 7.55: What's on the air to-night?

EVENING SESSION

- 8.0: G.P.O. chimes; The Kalua Trio.
- 8.10: The Melody Boys.
- 8.20: Wally Baynes, comedian.
- 8.28: A "Talkie" short.
- 8.48: St. James Frolics.
- 9.48: From the studio—Frank Hutchens, pianist.
- 9.57: Marjorie Beeby.
- 10.4: Florent Hoogstoel, violinist.
- 10.12: John Boulton and Reg Mitchell—in a Bush Cameo.
- 10.21: Madame Goossens-Viceroy, soprano.
- 10.28: To-morrow's programme and announcements; official weather forecast.
- 10.30: National Anthem.

2GB

- 10.0: Music.
- 10.10: Happiness talk by A. E. Bennett.
- 10.20: Music.
- 10.30: Women's session, by Miss Helen J. Beegling.
- 11.45: Close down.
- 2.0: Music.
- 2.5: Women's radio session, by Mrs. Dorothy Jordan.
- 2.50: Movie Know All.
- 3.0: Address.
- 3.30: Close down.
- 5.30: Children's session, by Uncle George.
- 7.0: Music.
- 7.45: Feature story.
- 8.0: Miss Heather Kinnaird, contralto.
- 8.7: Miss Mollie Jones, pianiste.
- 8.15: Mr. Cecil Chaseling, baritone.
- 8.22: Symphony Orchestra.
- 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock.
- 8.35: Miss Dorothy Stacey, soprano.
- 8.45: Address.
- 9.0: Weather report.
- 9.3: Miss Mollie Jones, pianiste.
- 9.15: Miss Heather Kinnaird, contralto.
- 9.23: Symphony Orchestra.
- 9.33: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock.
- 9.38: Mr. Cecil Chaseling, baritone.
- 9.48: Instrumental Trio.
- 9.53: Miss Dorothy Stacey, soprano.
- 10.0: Instrumental music.
- 10.30: Close down.

2UW

MIDDAY SESSION

- 12.30: Request numbers.
- 1.0: G.P.O. clock and chimes; music.
- 1.15: Talk on homecraft by Pandora.
- 1.40: Music and request numbers.
- 2.30: Close down.
- 4.30: Musical programme.

EVENING SESSION

- 5.30: Children's hour, conducted by Uncle Jack.
- 6.30: Close down.
- 7.0: G.P.O. clock

and chimes; request numbers. 7.45: Radio talk, by Mr. E. Homfray. 8 to 9 p.m.: Band recital. 9.0: G.P.O. clock and chimes; comments on Foreign Affairs by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.

2KY

MORNING SESSION

10.0: Tune in to the ticking of the clock. 10.3: Popular fox-trots. 10.15: Hawaiian steel guitar selections. 10.30: Request night. 10.50: Vocal items. 11.0: A few laughs. 11.5: Pianoforte selections. 11.15: Calls and announcements. 11.20: Musical interlude. 11.30: Request numbers. 11.40: Where to go to-night. 12.0 noon: Closing announcements.

CHILDREN'S SESSION

6.0: Birthday calls, request numbers, kiddies' entertainment—Aunt Jemima and Uncle Bert.

EVENING SESSION

7.0: Musical interlude. 7.15: Dance music. 7.45: Militant Women's Group. 8.0: Overture. 8.8: Tenor solos, Mr. A. Hillman. 8.15: Dance music. 8.30: Series of Biblical talks, presented by I.B.S.A. 8.45: Soprano solos, Miss Wright. 9.0: Novelty interlude. 9.10: Request numbers. 9.30: Selection of latest Parlophone, Columbia and Regal, Brunswick, and Golden Tongue records. 10.0: Closing announcements.

Owing to the fact that we have not been able to give our many service calls the attention they demand, we are removing to 235 Livingstone Rd., West Murrickville, where we shall be situated on and after Monday, 22nd inst.

For any Service Calls or Information, Ring

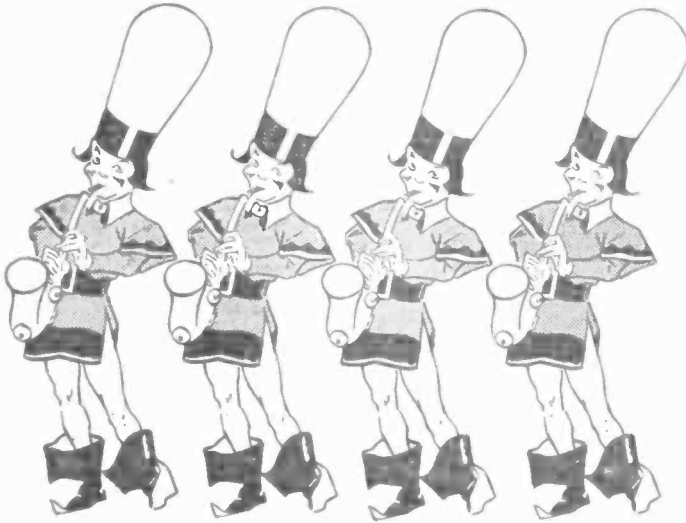
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RCA Radiotron

Interstate Programmes, Monday, July 29

3LO

EARLY MORNING SESSION

1 a.m.: Time signal from Melbourne Observatory; weather forecast. 7.5: Early rising music. 7.40: Mails and shipping. 7.43: What's on to-day. 7.45: Birthday greetings. 8.0: Breakfast news and market reports. 8.15: Close down.

MORNING MUSICALS

10.30: The thought for to-day—Dr. Loftus Hills, D.Sc. 10.35: Reproduced music. 10.45: Arnold Coleman at the Wurliizer Organ. 11.0 to 12.15: 3LO Studio Orchestra, with Melba Stocks, mezzo-soprano. 12.15: To-day's news: rates on 'Change; weather forecast.

MIDDAY SESSION

12.30: National Broadcasting Orchestra. Under the direction of Wm. G. James. Conductor, Percy Code. Overture—"I Guarany" (Gomez). "Serenade" (Pierne). John D. Fraser, baritone—"Go, Lovely Rose" (Quilter). "Sapphic Ode" (Brahms), selected. Orchestra—Suite, "L'Arlesienne," Part 2 (Bizet). 1.0 to 2.0: The National Broadcasting Orchestra, Under direction of Wm. G. James. Conductor, Percy Code.

THE LECTURETTE SESSION

2.0: Miss E. Babington—"Temperament and What it Means." 2.15: Reproduced music. 2.25: W. C. Groves, B.A. Dip. Ed.—"New Guinea—Yesterday, To-day, and To-morrow." 2.40: Reproduced music. 2.45: Hon. J. E. Keating: "Early Days of Our Commonwealth."

THE RADIO MATINEE

3.0: National Broadcasting Orchestra. Under direction of Wm. G. James. Conductor, Percy Code. Four dances from "The Rebel Maid" (Phillips). Leonard Thornton, tenor—"The Desert Love Songs" (Clark). 3.30: A playlet—"A Farewell Supper," by Arthur Schnitzler. Produced by Catherine Nell. Guest: Mimi. Catherine Nell; Anatol, Charles Langley; Max. Scene: A private room at Sacher's Restaurant, in Vienna, one evening—supper time. 3.50: Bertha Jorgensen, violin—"Romance" (Svendsen). "Serenade" (Drda). 4.0: Eileen Pascoe-Webbe, contralto—"When You're Away" (Sanderson). "If My Songs Were Only Winged" (Hahn). "Danny Boy" (Weatherley). 4.10: A piano recital, by Viva Holgate Clarke. 4.25: Orchestra—Melodies from "The Girl Friend" (Rodgers). 4.30: Close down.

THE CHILDREN'S CORNER

5.45: "Billy Bunny" has a "Pixie" story for to-day, and then you'll hear "The Fairy Bells." These are real fairy bells—a different kind of music. 6.15 to 7.30: Dinner music, provided by the 3LO Studio Orchestra.

NEWS FROM EVERYWHERE

7.30: To-day's news. Rates on 'Change; market reports.

NIGHT SESSION

7.45: National Broadcasting Orchestra, under the direction of Wm. G. James. Conductor, Percy Code. Overture—"Robespierre" (Litolff). Serenade, "Les Millon D'Arlequin" (Drigo). 8.0: Alexander Raff, baritone—"In Moonlight" (Elgar). "The Swind Song" (Elgar). "To Phyllis" (Benjamin). 8.10: Orchestra, Suite—"Three Famous Pictures" (Hadyn Wood). 8.20: The Melbourne Male Quartette—"Serenade" (White). "Songs My Mother Taught Me" (Dvorak). "Foresters Sound the Cheerful Horn" (Bishop). 8.30: William Murdoch—the world-famed Australian pianist—Two Choral Preludes—(a) "I call on Thee, Lord Jesus Christ" (J. S. Bach, arranged by W. Murdoch). (b) "Dearest Jesus, We Are Here." "Organ Concerto in D Minor" (Vivaldi-Bach-Murdoch). 8.50: Saffo Arnay, soprano—"The Bitterness of Love" (Dunn). "Lullaby" (Cyril Scott). "O Primavera" (Tirindelli). 9.0: William Murdoch will continue his recital—"Bruvvers" (Heather). "Poissons d'Or" (Goldfish) (Debussy). "Cubana" (de Falla). "Andaluza" (de Falla). 9.15: A dramatic recital by John Hopkins (his first appearance in broadcasting, selection, from "Quo Vadis" (Sienkiewicz). 9.25: Orchestra—Excerpts from "The Flying Dutchman" (Wagner). 9.30: The Melbourne Male Quartette—"The Southern Cross" (Peterson). "The Two Roses" (Werner). "Baby O'Toole" (Scarmolla). 9.40: Orchestra—Selection from "The Chocolate Soldier" (Strauss). Fun and Frivolity. 9.50: "The Town Topics"—"Harmony and Hilarity." 10.20: Orchestra—Musical Comedy Medley. 10.30: News from to-morrow's papers. 10.40: "The Rex" Dance Band. 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.0 to 10.59: See Friday.

MORNING MUSICAL SESSION

11.0: Recordings. 12.10: British Official Wireless News from Rugby; announcements. 12.20: Com-

munity singing, transmitted from the King's Theatre, Russell Street, Melbourne (conductor, G. J. Mackay); Erii. Hall's Radio Revelers, with Hugh Huxham, assisted by the James Girls and Charles O'Mara. 1.45: Close down.

AFTERNOON SESSION.

3.0: Recordings. 3.30: The B.B.C. Wireless Symphony Orchestra—"Casse Noisette Suite" (Tschaikowsky). 4.30: Close down.

EVENING SESSION.

6.0: Recordings. 7.10: News session; announcements. 7.20: Recordings.

NIGHT SESSION.

7.46: Madame Soward—"French Without Tears." 8.1: The Strad Trio (Cecil Parkes, Violin; Myra Montague, Piano; and Frank Johnston, 'Cello)—"Trio G Major" (Haydn). 8.15: Guy Moore, Tenor—"Two Desert Songs (Comingsby Clarke). "I will await thee." "My Heart's Desire." 8.22: The Strad Trio—"Trios—"Ave Maria Stella" (Orleg). "Menuetti" (Haydn). "Waltz" (Brahms-Parkes). "Tambourin" (Rameau). 8.32: Programme arranged by Miss Mary Campbell Albert Street Conservatorium. Jean Hambleton, Contralto. Arias, "Tu se morta"—Orfeo (Monteverde). "Invocazione"—Orfeo (Pari). Ida Scott, Piano—"Tempo di Ballo" (Scarlatti). "Courante" (Corelli). Millicent Osmond, Soprano—Arietta, "O Cessate" (Scarlatti). Aria, "Per la Gloria"—Griselda (Bononcini). Muriel Campbell, Violin—"Concerto D Minor" (Tartini). Allegro. Grave. Presto. Jean Hambleton, Contralto—Arias, "Caro mio ben" (Giordani). "Ah, non mi" (Rossi). Ina Scott, Piano—"Minuet" (Boccherini). Millicent Osmond, Soprano—"Tre giorni" (Pergolesi). Arietta, "Pur Dieci" (Lotti). Millicent Osmond, Soprano, and Jean Hambleton, Contralto—"Duet" (Pergolesi). Muriel Campbell, Violin—"Largo" (Veracini). "Allegretto" (Boccherini). 9.32: Captain Donald MacLean—"The Conquest of Peru." 9.47: Guy Moore, Tenor—"June Music" (Trent). "Faery Song" (Boughton). 9.52: Cecil Parkes, Violin—"Romance in G" (Beethoven). "Morceau" (Bowden). 10.2: Madoline Knight, Contralto—"Here in the Quiet Hills" (Osborne). "Castilian Lament" (Riego). Selected. 10.12: The Strad Trio—"Spanish Dances" (Moszkowski). Nos. 1, 2, and 3. 10.20: News service; announcements. 10.30: The Radio Revelers—"My Castle in Spain is a Shack in the Lane" (Friend). "That's What I call Music" (Mestkill). "I Fell Head over Heels in Love" (Thayer). "The Tile Trot" (Penson). "Deep Night" (Henderson). "Shivering" (Docer). "Stay at Home, Girl" (O'Hagen). "I Can't Give you Anything but Love" (Fields). "Revenge" (Lewis). 11.0: God Save the King.

4QG

MORNING SESSION.

10.30: The presidential speech delivered at the annual conference of the Federated Chambers of Commerce of Queensland, will be relayed from the School of Arts, Southport. 11.15: A session for the ladies. 12.0: Close down.

EARLY EVENING SESSION

6 to 7.45: Lecturette, the children's music corner, conducted by "The Music Man."

NIGHT SESSION.

PART I. A CLASSIC PROGRAMME.

8.0: From the studio, a classic programme, arranged by Mr. Arthur Sharman. Ivy Plane (soprano)—"Prelude" (Landon Ronald). "Like to the Damask Rose" (Edward Elgar). Ruth Trecurtha, in a recital of poetry. Rhythmic poems by John Drinkwater and Elizabeth Belloc. Arthur Sharman, pianist—"Sonata in G Minor, Op. 13" (Beethoven). (Pathetic). Grave—Allegro molto e con brio. 8.3: Douglas Drouyn and his Novelty Trio, featuring the electric vibra-harp. 8.5: Kennedy Allen—the fifth of a series of reviews

on Shakespeare and his works—"King Lear," "A Study in Old Age." 8.15: Ernest Harper, baritone—"The King's Minstrel" (Pinsuti). 8.20: Douglas Drouyn and his Novelty Trio—"More melody." 9.0: The main speeches at the dinner held in connection with the annual conference of the Federated Chambers of Commerce of Queensland will be relayed from Southport. 9.30: An impromptu programme of music by the Citizens' Band (conductor, A. Kaeser). Between items Patricia O'Nigly (soprano) will sing; "Bells of Twilight" (Forster), "Nymphs and Fauns" (Bemberg). 10.0: Mrs. F. North—a reading from "Bedtime at Browns" (Ethel Turner). 10.10: News supplied by the metropolitan dailies; weather information. Close down.

5CL

MORNING SESSION.

11.15 to 2.0: See Friday.

AFTERNOON SESSION.

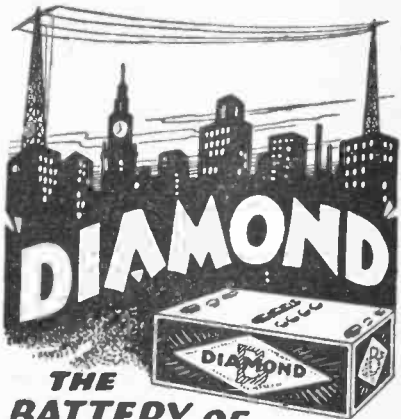
3.0 to 4.30: General programme, see Friday

EVENING SESSION.

6.0: Chimes. 6.1: Birthday greetings. 7.1: Senior Birthday League Greetings; 5CL's Sporting Service, including billiards and golf notes; Stock Exchange and general market reports. 7.15: Under the auspices of the South Australian Agricultural Department, Mr. R. Baker (Lecturer on Dairying, Roseworthy Agricultural College), will speak on "The Management of Cattle." 7.30: The 5CL Twinkler Boys' Club.

NIGHT SESSION.

8.0: Chimes. 8.10: Walter Barratt and his Maison Masters of Melody—"Miss Mardi Gras" (Best). A Rhythmic Classic, "Rigoletto Riggles," a clever transcription of the well-known quartette, cleverly arranged by Frank J. Black. 8.20: Wilfred Thomas, bass—"I Would I Were a King" (Sullivan). 8.23: Walter Barratt and his Maison Masters of Melody—"The Best Things in Life are Free" (De Sylva). "She's Funny that Way" (Whiting). "Painting Fray Pictures" (Weddell). 8.33: Phyllis Tier, elocutionist—"Where's Mum." 8.37: Walter Barratt and his Maison Masters of Melody—"Dance of the Paper Dolls" (Tucker). "My Ohio Home" (Kahn). "I Fell Head over Heels in Love" (Thayer) 8.47: Wilfred Thomas, bass—"Young Tom o' Devon" (Russell).



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- Walter Barratt and his Maison Masters of
 "My Girl Said 'Yes'" (Sherman).
 Solo, "Lollipops," played by Joinnie Gar-
 diner.
 "South Wind" (De Sylva).
 Meteorological information, including Sema-
 phor lights.
 Overseas train report.
 Announcements.
 A dialogue, specially written for 5CL by Mr.
 Henry Cohen, entitled "Miss Hath Charms."
 Characters: Mary, Phyllis Tier; Join, Henry
 Cohen.
 Scene: The sitting-room in their home at Brigh-
 ton.
 Walter Barratt and his Maison Masters of
 "Chilly Pom-Pom-Pee" (Bryan).
 "When You Played the Organ" (Gilbert).
 "Let's Make-believe" (Harris).
 Wilfrid Thomas, bass—
 "What the Red-haired Boyun Said" (Harrhy).
 Walter Barratt and his Maison Masters of
 "A Siren's Dream" (Pollack).
 "How Long Has This Been Going On" (Davis).
 "Side by Side" (Woods).
 Phyllis Tier, elocutionist—
 "Family Songs."
 Walter Barratt and his Maison Masters of
 "Bases for Remembrance" (Curtis).
 "The Toy-maker's Dream" (Golden).
 "He and the Man in the Moon" (Leslie).
 Wilfrid Thomas, bass—
 "Tally Ho" (Leoni).
 "Colette" (Harrhy).
 Walter Barratt and his Maison Masters of
 "In the Woodshed She Said She Would" (Jolin-
 son).
 "Happy Humming Bird" (Dixon).
 "The Varsity Drag" (De Sylva).
 "Two Lips to Kiss My Cares Away" (Rose).
 "Collegiana" (M Hugh).
 General news service.
 Walter Barratt and his Maison Masters of
 "Out of the Dawn" (Donaldson).
 "Mother, I Still Have You" (Joison).
 "Carolina Moon" (Davis).
 "I Just Roll Along" (Trent).
 Request numbers.
 Close down.

6WF

- 10.0: Tune in. Records. 11.0: Close down. 12.30:
 Tune in. 12.35: Markets, news, etc. 1.0: Time sig-
 nal. 1.1: Weather bulletin. 1.3: Panatrophe hour.
 2.8: Close down.
 3.30: Tune in. 3.35: Afternoon tea programme re-
 layed from the Carlton Cafe. 4.30: Close down.
 4.45: Tune in. 6.48: Bedtime stories by Uncle
 Duffy. 7.5: Light music by the Perth Piano Trio.
 7.30: Commercial and general information. 7.45: Talk
 by Lieut.-Colonel Le Souef, Director Zoological Gar-
 dens, South Perth. 8.0: Time signal. 8.1: First
 weather bulletin. 8.3: A popular programme. 8.50:
 Late news; weather bulletin. 9.5: Programme con-
 tinued from the studio. 10.30: Close down.
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 gramme given on 1250 metres commencing at 6.45
 p.m.

7ZL

- 11.30: Record recital. 11.34: Midlands Weather
 forecast. 11.55: Record recital. 11.55: Tasmanian
 stations, 9 a.m. weather report. 12.0: G.P.O.
 clock chimes the hour. 12.1: Shipping information;
 ships within wireless range; mail notices;
 housewives' guide; commercial news. 12.8: Record
 recital. 12.30: Announcements. 12.33: Record
 recital. 12.55: News service; British official wire-
 less news. 1.10: Record recital. 1.30: Close
 down. 3.0: G.P.O. clock chimes the hour. 3.1:
 Record recital. 3.4: Weather information. 3.5:
 Record recital. 4.15: "Aunt Edna" will speak on
 "Accessories." 4.39: Close down. 6.15: Child-
 ren's hour with "Uncle David." 7.15: News ses-
 sion. 7.30: Under the auspices of the Tasmanian
 University, Geo. Lima will speak on "Negre
 Spirituals—the Structure and Characteristics." 7.45:
 Geo. Collis will speak on "Physical Culture." 8.0:
 G.P.O. clock chimes the hour. 8.1: Record re-
 cital. 8.6: Transmission from the Memorial Com-
 munal Church, Hobart—a concert programme,
 arranged by James Marsh. Artists—Mr. John Pat-
 terson. Mrs. Harry Gibbons (Contralto). Mr. David
 Dalman (Violinist), and Mr. James Marsh (Organist).
 9.30: News session. 9.45: Record recital. 10.0:
 G.P.O. clock chimes the hour; close down.

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Local Programmes, Tuesday, July 30

2FC

EARLY SESSION—7 to 8.15 a.m.

- 7.0: "Big Ben" and weather forecast.
- 7.5: Early-rising music.
- 7.40: Breakfast news
- 7.45: Mails and shipping.
- 7.48: What's on to-day?
- 7.50: Birthday calls.
- 8.0: Music from the studio.
- 8.15: Close.

MORNING SESSION—10.30 a.m. to 12.30 p.m.

- 10.30: Announcements.
- 10.32: The Racing Observer.
- 10.45: From the State Theatre—recital on the Grand Organ by Edgar Stone.
- 11.0: Household helps—hints to housewives.
- 11.10: The Light Orchestra.
- 12.0: "Big Ben" and Stock Exchange.
- 12.5: A literary talk—"The Great Thinkers—Socrates to the Present Day." by C. N. Baeyer.
- 12.20: Midday market reports.
- 12.30: Close.

THE LUNCH HOUR—1 p.m. to 2.30 p.m.

- 1.0: Lunch to music with the Station Orchestra.
- 2.0: Stock Exchange, second call.
- 2.2: Popular education—Nature's Wonders—a talk by Elliott Napier.
- 2.20: A glance at the afternoon papers.

THE RADIO MATINEE—2.30 p.m. to 4.30 p.m.

- 2.30: The Station Orchestra.
- 2.45: Aida Bulmas, soprano.
- 2.53: The Station Orchestra.
- 3.5: Dorothy Nall, monologues.
- 3.13: Una Black, violinist.
- 3.21: Aida Bulmas, soprano.
- 3.29: The Station Orchestra.
- 3.43: Dorothy Nall, monologues.
- 4.0: Una Black, violinist.
- 4.10: The Station Orchestra.
- 4.28: Stock Exchange, final call.
- 4.30: Close.

EARLY EVENING—5.45 to 7.55 p.m.

- 5.45: Kiddies' "Good-night" stories, told by the "Hello Man," assisted by Aunt Elly.
- 6.45: The Dinner Orchestra.
- 7.30: Sporting news and views.
- 7.45: From the State Theatre—Mr. Price Dunlavy at the Grand Organ.

EVENING PROGRAMME—8 p.m. to 11.30 p.m.

- 8.0: "Big Ben"; A.B.C. Dance Band.
- 8.12: Herbert Batchelor, baritone
- 8.19: A.B.C. Dance Band.
- 8.31: Frank Ryan, comedian.
- 8.38: A.B.C. Dance Band.
- 8.50: De Raine and Dixie, plantation melodies.
- 8.58: A.B.C. Dance Band.
- 9.9: Dorothy Stevens, popular songs.
- 9.16: A.B.C. Dance Band.
- 9.28: James Donnelly, entertainer.
- 9.37: A.B.C. Dance Band
- 9.49: Ina Varini, popular vocalist.
- 9.58: A.B.C. Dance Band.
- 10.8: Dorothy Stevens, popular songs.
- 10.15: To-morrow's programme and announcements; official weather forecast.
- 10.30: A.B.C. Dance Band.
- 11.30: National Anthem.

2BL

OPENING SESSION—8.15 to 11 a.m.

- 8.15: Music for every mood.
- 8.45: "Interest Item" on outstanding events of the day.
- 9.0: A bunch of ballads.
- 9.30: British official wireless news.
- 9.40: A review of new records.
- 10.10: The Ladies' Club Hour—the Australian Women's A.B.C. Association.
- 10.30: Studio Light Orchestra.
- 11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

- 12.0: Station Orchestra.
- 1.0: Afternoon news service.
- 1.15: Women's "Interest Talk," Miss Rose de Warrea.



DOROTHY STEVENS, who will sing some popular songs, from 2FC to-night.



CHARLES LAWRENCE, popular comedian, in to-night's 2BL programme.

- 1.30: Traders' "Selling the Set" music.
- 2.0: At the console of the Wurlitzer Organ at the Capitol Theatre—Mr. Fred Scholl.

AFTERNOON ENTERTAINMENT—2.30 p.m. to 5.45 p.m.

- 2.30: Business efficiency talks—F. Arlington-Burke will speak on Post-War Reconstruction of Industry in England.
- 2.45: The Magic Carpet—Travel and Adventure—a story of travel and adventure by Lucille Bruntnell.
- 3.0: Musical programme—Harry Croot, baritone; Nellie Ferguson, monologues; G. W. Desmond, entertainer; Ahad Duo, steel guitars; dance groups from Romano's.
- 4.45: "The Trade Hour"
- 5.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

- 6.15: The Dinner Orchestra.
- 6.45: Girl Guides—Miss Gwen Varley.
- 7.5: Markets.
- 7.20: Late news.
- 7.25: Dinner Quartet.
- 7.55: What's on the air to-night?

EVENING SESSION

- 8.0: G.P.O. chimes; from the Royal Motor Yacht Club, concert programme, featuring leading principals.
- 9.45: From the studio—Revisical Snapshots, directed by Charles Lawrence; assisted by Vernon Sellars and Patsy Hill, De Raine and Dixie, Frank Ryan, James Donnelly, Ina Varini.
- 10.25: To-morrow's programme and announcements; official weather forecast.
- 10.30: National Anthem.

2GB

- 10.0: Music.
- 10.10: Happiness talk by A. E. Bennett.
- 10.20: Music.
- 10.30: Women's session, by Miss Helen J. Beegling.
- 11.45: Close down.
- 2.0: Music.
- 2.5: Women's radio service, by Mrs. Dorothy Jordan.
- 2.50: Movie Know All.
- 3.0: Address.
- 3.30: Close down.
- 5.30: Children's session, by Uncle George.
- 7.0: Music.
- 7.30: Talk from Sutton's 2GB Radio Service Department, by Mr. Stan Crittenden.
- 8.0: Miss Elsie Condon, contralto.
- 8.7: Miss Mildred Hill, pianiste.
- 8.15: Mr. William Green, tenor.
- 8.22: Symphony Orchestra.
- 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock.
- 8.35: Miss Gladys Verona, soprano.
- 8.45: Instrumental Quartette.
- 8.50: Miss Elsie Condon, contralto.
- 9.0: Weather report.
- 9.3: Address.
- 9.15: Miss Mildred Hill, pianiste.
- 9.25: Mr. William Green, tenor.
- 9.35: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock.
- 9.40: Symphony Orchestra.
- 9.50: Miss Gladys Verona, soprano.
- 10.0: Instrumental music.
- 10.30: Close down.

2UW

MIDDAY SESSION

- 12.30: Request numbers.
- 1.0: G.P.O. clock and chimes; music.
- 1.15: Talk on homecraft by Pandora.
- 1.40: Music and request numbers.
- 2.30: Close down.
- 4.30: Musical programme.

EVENING SESSION

- 5.30: Children's hour, conducted by Uncle Jack.
- 6.30: Close down.
- 7.0: G.P.O. clock and chimes; request numbers.
- 8 to 9 p.m.: Drinking and hunting songs.
- 9.0: G.P.O. clock and chimes; comments on Foreign Affairs by Mr. J. M. Prentice.
- 9.10: Music and request numbers.
- 10.30: Close down.

2KY

MORNING SESSION

- 10.0: Tune in to the ticking of the clock.
- 10.3: Popular fox-trots.
- 10.15: News items.
- 10.30: Vocal Items.
- 10.50: Hawaiian steel guitar selections.
- 11.0: A few laughs.
- 11.5: Pianoforte selections.
- 11.15: Calls and announcements.
- 11.20: Musical numbers.
- 11.30: Request numbers.
- 11.40: Music and vocal items.
- 11.55: Where to go to-night.
- 12.0 noon: Closing announcements.

CHILDREN'S SESSION

- 6.0: Birthday calls, request numbers, and kiddies' entertainment—Aunt Jemima and Uncle Bert.

EVENING SESSION

- 7.0: Musical interlude.
- 7.15: Sporting feature—turf topics; How they should run to-morrow, Mr. Geo. A. Davis.
- 7.45: Request numbers.
- 8.0: Novelty numbers, Miss Billie Underwood.
- 8.10: Soprano solos.
- 8.18: Baritone solos, Mr. Higgins.
- 8.28: Pianoforte solos, Mr. Hancock.
- 8.30: Series of Biblical talks, presented by I.B.S.A.
- 8.45: Music and request numbers from the studio.
- 9.0: Sporting feature—presented by Tooth and Co., Ltd., Kent Brewery—from the ringside of M'Hugh's Leitchardt Stadium, results of early events and full description of main 15-round event.
- 9.40: Dance music from the studio.
- 10.0: Closing announcements.



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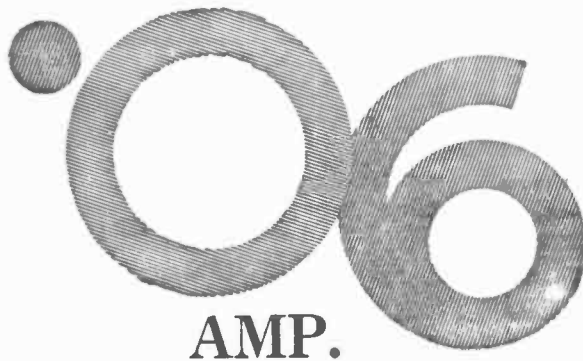
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Interstate Programmes, Tuesday, July 30

3LO

EARLY MORNING SESSION.

7.0: Time signal from Melbourne Observatory; weather forecast. 7.5: Early rising music. 7.40: Mails and shipping. 7.43: What's on to-day. 7.43: Birthday greetings. 8.0: Breakfast news and market reports. 8.15: Close down.

MORNING MUSICAL.

10.30: The thought for to-day—Mr. Charles Nuttall. 10.35: Reproduced music. 10.45: Arnold Coleman at the Wurlitzer Organ. 11.0 to 12.15: GLO Studio Orchestra, with Martin La Matt, tenor. 12.15: To-day's news: rates on 'Change; weather forecast.

MIDDAY SESSION.

12.30: National Broadcasting Orchestra, under direction of Wm. G. James: conductor, Percy Code—Overture, "Maritana" (Wallace). "Poupee Valsamie" (Poldini). Madge Vivian, contralto. 12.50: Orchestra—Oriental Phantasy "Portrait of a Dancer in Red" (Besny). Valse from "Ballet Dornrosche" (Tschalkowsky). 1.0 to 1.30: Luncheon music, supplied by National Broadcasting Orchestra, under the direction of Wm. G. James: conductor, Percy Code.

THE LECTURETTE SESSION.

2.0: Miss A. Wallis. "Children's Activities and Formation of Habits." 2.15: Reproduced music. 2.25: Prof. D. B. Copland, M.A., D.Sc. "Wages and National Income." 2.40: Reproduced music. 2.45: Dr. Loftus Hills, D.Sc. "Topics of the Week."

THE RADIO MATINEE.

3.0: National Broadcasting Orchestra—Suite, "The Shoe" (Ansell); Clarice Kingsley, songs at the piano. 3.20: From the Bijou Theatre—Linn Smith and his Jazz Band, with assisting artists. 3.40: From the Studio—Orchestra. Selection, "Tiptoes" (Gershwin). 3.50: A playlet, "In the Darkness," produced by Betty Rae. Cast: Lissie (a farmer's wife), Betty Rae (Nathan a farmer), Rex Sinclair; Bess (his sister), Ruby May; Arth (a shepherd), W. H. Chandler. Scene: The kitchen of Nathan's farm. 4.5: Memories of the Operas. Orchestra—Gems from "Faust" (Gounod); Jovan Massonoff, operatic tenor, excerpts from Italian opera. 4.20: Orchestra—Selections from "Il Trovatore" (Verdi). 4.30: Close down.

CHILDREN'S CORNER.

5.45: "Bobby Bluegen" and his two famous friends, "Eclair" and "Orace," will entertain. 6.5: "Nicholls and Mack"—A programme of original music on their many quaint instruments. 6.15 to 7.30: Dinner music, provided by the 3LO Studio Orchestra. 7.40: To-day's news: rates on 'Change; market reports.

NIGHT SESSION.

7.45: National Broadcasting Orchestra, under direction of Wm. G. James: conductor, Percy Code—Overture, "Pete Schmolli" (Weber).
7.55: The Original "We Four" Male Quartette—"Pilgrim's Chorus," from "Tannhauser" (Wagner).
8.0: "Drink To Me Only" (Quilter).
8.5: Orchestra—
"Hungarian Rhapsody No. 1 in F" (Liszt).
8.10: Isabel Bircell, contralto—
"Che Faro" (Gluck).
"A May Night" (Brahms).
"I Love Thee" (Grieg).
8.20: The first appearance in Broadcasting of Elise Steele, violinist—
"Larghetto" (Handel).
March from "The Choice of Hercules" (Handel, arr. by Carl Flesch).
"Melodie" (Gluck-Kreisler).
"Dance of the Princess" (Hans Newsidler, arr. Harold Craxton).
"Prelude and Allegro" (Pugnani-Kreisler).
8.40: A one-act drama, produced by Frank Hatherley, "The Girl" by Edward Peple. The people in the play: Fredk. Cawley, Bob Connell. "Krebs" Scene: The bachelor quarters of Cawley. Time: Present.
9.10: "Estrellita Trio"—
Estelle Mark, soprano—
"The Greatest Wish in the World" (Del Riego).
"My Land" (Gretsch).
Margot Sheridan, piano—
"Rhapsody in G Major" (Brahms).
Estelle Mark, soprano—
"Vorborgenheit" (Schubert Wolf).
Cecilia Kliduff, violin—
Sonata (Haydn).
Estelle Mark, soprano—
"Hush a Bye By Baby" (Grimshaw).
"Thou Art Like a Lovely Flower" (Schumann).
9.35: Ernest Sage, baritone—
"Gracious and Kind Art Thou, My Queen" (Brahms).
"Isabel" (Bridge).
"The Wanderer's Song" (Schumann).
9.45: Orchestra—
Suite, "Intermezz" (Rosse).
9.55: The Original "We Four Male Quartette"—
Three Negro Spirituals—
"Steal Away" (original arrangement).
"Swing Low, Sweet Chariot" (original arrangement).
"Kentuck Babe" (original arrangement).
10.0: Alan Adcock, entertainer—
"My Word, You Do Look Queer."
"I'm Bucked to Death, I'm Married."
10.5: Raymond Gilbert, tenor—
"Duna" (MacGill).
"Song of the Palanquin Bearer" (Martin Shaw).
"Oh, the Merry Frost-time" (Dubuc).
10.20: Orchestra—
Selection, "Mary" (Eirsch).
10.25: News from to-morrow's papers.
10.35: "The Rex" Dance Band.
11.30: Close down.

3AR

MORNING NEWS SESSION.

10.0 to 10.59: See Friday.
MORNING MUSICAL SESSION.
11.0: The Strad Trio. 11.10: Gladstone Gless. 11.20: Cecil Parkes. 11.35: Gladstone Gless. 11.41: Myra Montague, piano. 11.55: Gladstone Gless. 12.8: The Strad Trio. 12.20: British official wireless news from Rugby; announcements. 12.30: Close down.
AFTERNOON SESSION.
1.58: Description of the Hallow Hurdle Race, two miles, Melbourne Hunt Club Races, at Moonee Valley. 2.5: Suitable selections from the Seraphina. 2.28: Description of the Springvale Highweight Handicap, one mile, Melbourne Hunt Club races, at Moonee Valley. 2.35: Suitable selections from the Seraphina. 2.58: Description of the Dandenong Handicap, seven furlongs, Melbourne Hunt Club races, at Moonee Valley. 3.5: Suitable selections. 3.28: Description of the Melbourne Hunt Cup, two miles and a half, Melbourne Hunt Club races, at Moonee Valley. 3.35: Arias for afternoon tea. 4.8: Description of the Eborington Welter, six furlongs, Melbourne Hunt Club races, at Moonee Valley. 4.15: Suitable selections. 4.38: Description of the Clyde Handicap, six furlongs, Melbourne Hunt Club races, at Moonee Valley. 4.45: Close down.

EVENING SESSION.

6.0: Recordings. 7.10: News service. 7.20: Recordings.
NIGHT SESSION.
7.46: Captain Donald MacLean will continue his series of talks—
"The Conquest of Peru."
8.1: The 57th Battalion Band—
Selection, "Maritana" (Wallace).
8.15: Molly Mackay, Soprano—
"Ahl fors a lui" (Verdi).
8.22: The 57th Battalion Band—
March "The Bombers" (Engel).
"Fox Trot," "Hawaiian Butterfy" (Baskette).
Intermezzo, "Les Sylphides" (Cussana).
8.37: The Sundowners (Herbert Sanderson, Baritone; Tom Semple, Tenor; Robert Allen, Alto; and Robert Gillard, Bass)—
"The Birth of the Blues" (Henderson).
"O Sussanah" (Foster).
Tom Semple, Tenor; and Robert Allen, Alto—
"I Know the Place Where We Will Rest" (Van-nach).
8.44: Lindsay Belgins, Piano—
"Intermezzo E Flat Major" (Brahms).
"Intermezzo F Flat Minor" (Brahms).
"Intermezzo F Major" (Brahms).
"Romance in F Major" (Brahms).
"Refrain Berceuse" (Palmgren).
"The Swan" (Palmgren).
9.4: The Melbourne Philharmonic Society, transmitted from the Australian Church, Russell Street, Melbourne. Conductor, Professor Leonard Heinze. Accompanist, Miss Isabel Adams.
9.34: The 57th Battalion Band—
March, "The Blighters" (Kottau).
Waltz, "The Shades of Evening" (Rimmer).
9.44: Molly Mackay, Soprano—
"Snowflake" (Manson).
"The Cuckoo Clock" (Grant Schaefer).
10.1: The Sundowners—
"Mississippi Mud" (Barris).
"Souvenir" (Nicholls).
10.8: The Radio Revellers—
"I Can't Give You Anything but Love" (Fields).
"Revenge" (Lewis).
"She's Got a Great Big Army of Friends" (Nelson).
"Sonatique" (Katzman).
10.20: News service, announcements. Selections for to-morrow's races at Ascendale Park, on Wednesday, July 31.
10.30: The Radio Revellers—
"I Ain't Ever Been Kissed" (Leslie).
"You Went Away Once Too Often" (Bryan).
"Sweet Sue, Just You" (Harris).
"Roses of Yesterday" (Berlain).
"Cradle of Love" (Wayne).
"Anywhere is Heaven" (Brady).
"I'm Sorry" (Ballynahan).
"It's a Precious Little Thing Called Love" (Davis).
"Sweethearts on Parade" (Lombardo).
11.0: God Save the King.

4QG

EARLY MORNING SESSION.

7.43 to 8.30: See Friday.
MORNING SESSION.
11.0 to 12.0: See Friday.
MIDDAY SESSION.
1.0 to 2.0: See Friday.
AFTERNOON SESSION.
3.0 to 4.30: See Friday.
EVENING SESSION.
6.5: A law talk, "Criminal Law No. 3—Criminal Responsibility," by Mr. F. L. South (manager, Kodak, Ltd.).
NIGHT SESSION.
PART I.
BRISBANE APOLLO CLUB.
8.0: From the School of Arts—a short choral recital by the Brisbane Apollo Club, including—
"Defiance" (Attenuhofer).
"Old Farmer Buck" (arr. G. Williams).

"Windlass Song" (McFarren).
"O Peaceful Night" (German).

PART II.

WINDSOR ESTIDFOD WINNERS.
The second portion of to-night's programme will be provided by the winners of the various sections of the Windsor Estidfod.
8.30: From the studio—
D. Stirling (tenor)—
"Dolorosa" (Phillips).
Betty Holmes, pianist (winner Grice piano scholarship)—
"Sonata," Op. 31—last movement (Beethoven).
Misses J. M. Laren and T. Sanderson (piano and violin sonata)—
"Sonatina" Major, Op. 137, No. 1 (Schubert).
H. Blunt (cellist)—
"Cantabile" (Rabaud).
Miss Mowse (celocutionist)—
Winner Regent Eloquatory Scholarship.
Claire Matthews (violinist)—
"Humoresque" (Dvorak).
Miss D. Crookall (pianist), winner piano solo, 12-16 years—
"Rondo in C." Op. 51, No. 1 (Beethoven).
Iris George (winner girls' solo, 13-17 years)—
"The Fairies Have Never a Penny to Spend" (Brewer).
Peggy Woods and Patricia Croaker (violinists)—
Violin duet, "Minuet" (Slatter).
Betty Holmes and Evelyn Trenfield (pianists), winners piano duet, 14-17 years—
"Legenda" Op. 59, Book 1, No. 1 (Dvorak).
Dorothy Huxham and S. Ballinger (celocutionists)—
Duologue, "Quarrel Scene" from "School for Scandal."
Fred. Curtis (violinist), winner Kaeser violin scholarship—
"Canzona" (Raffi).
Cecil V. Woodland (baritone), champion vocalist.
Annie Green (celocutionist)—
Humorous recital, "Compositions."
Thelma Harris (pianist), champion pianist—
"Humoresque" (Dunhill).
Ray Stone (winner girls' solo, under 12)—
"Daddy's Sweetheart."
Noel Chandler (costume recital)—
"Nell Wynne."
Rene Marsden and L. Little (vocal duet)—
"Beyond" (St. Quentin).
Betty Holmes (pianist), winner piano solo, under 17—
"Arabesque in G" (Jephson).
Miss M. Mitchell (contralto)—
"Teach Me to Live" (Liddle).
L. R. Little (elocutionary champion)—
"Twenty Gallons of Sleep."
Cecil V. Woodland (bass-baritone)—
"Gladier" (Adams).
Eric Anderson and Eddie Cockburn (winners violin duet, 14-17 years)—
"Serenata" (Toselli).
Mrs. Hooper (mezzo-soprano)—
"Give Me the Meadow" (Carew).
Misses C. Birkbeck, C. Matthews, and A. McKinnon—
Instrumental Trio. "Trio in B Flat, First Movement" (Mozart).
Mrs. Cowell (soprano)—
"A Song of Sleep" (Somerset).
Noel Chandler (celocutionist)—
Monologue, "London Hill."
10.0: From the Studio—
News supplied by the metropolitan dailies.
Weather information.
Close down.

5CL

MORNING SESSION.

11.15 to 2.0: See Friday.
AFTERNOON SESSION.
3.0 to 4.30: See Friday.
EVENING SESSION.
5.50: 5CL's sporting service, including Gawler acceptances. 6.1: Birthday greetings. 6.25: Girl Guides. 7.1: Senior Birthday League greetings. 5CL's sporting service, including lacrosse and hockey notes. Stock Exchange. General market reports. 7.15: Under the auspices of the Workers' Educational Association, Dr. Eleanor A. Allen, B.A., will speak on "Vocational Selection." 7.30: Mr. R. C. Bald, Ph.D. (Assistant Lecturer in English at the Adelaide University), will continue his series of talks. 7.45: Dr. Herbert Basedow, M.H.A., an interesting Australian talk.
NIGHT SESSION.
8.0: Chimes. 8.10: From the Adelaide Town Hall, Adelaide Teachers' College eighth annual concert (under the direction of Mr. F. L. Gratton, A.T.S.C.)—
Prelude, "College Hymn."
College Choir (300 voices)—
(a) "Hymn of Praise" (Blackie).
(b) "Hallelujah Chorus" (Handel).
A. Slater, S. Edmonds, J. Whitburn, and E. Sexton, part song, "In Silent Mead" (Adams).
Jack See, pianist, "Risletto" (Liszt).
College Choir, part song, "Moonlight" (Eaton Fanning).
Oliver Abotomey, L.T.C.L., elocutionist, selected, College Choir, part song, "Strange Adventure" (Sullivan).
Ross Hawwood, vocalist, "Mate o' Mine" (Ellott).
College Choir, part song, "Finale Act 2," from "Lullaby" (Lamerson Hill).
9.1: Meteorological information, including Semaphore tides.

- 9.2: Overseas grain report.
- 9.3: Wilfrid Thomas, bass—
"Reuben Ranzo" (Traditional).
"Serenade" (Bussus).
- 9.10: From Adelaide Town Hall, continuation of
Adelaide Teachers' College concert.
Dulcie Moss, vocalist, "Ave Maria" (Mascagni).
Marjorie Cole, elocutionist, selected.
Jean Barry, vocalist, "A Summer Night" (Goring
Thomas).
Marian Hardy, elocutionist, selected.
- A. Slater, S. Edmonds, J. Whitburn, and E. Sex-
ton, plantation song, "Down in Alabama."
Organist, Mr. Fredric Finlay, L.A.B.
Pianists, Edith Long and Jack Sice
- 10.8: Wilfrid Thomas, bass—
"The Raven."
"Good-night" (Schubert).
- 10.15: General news.
- 10.20: Modern dance music, Columbia recordings.
- 11.0: Close down.

6WF

- 10.0: Tune in. Records. 11.0: Close down. 12.30:
Tune in. 12.35: Markets, news, etc. 1.0: Time sig-
nal. 1.1: Weather. 1.5: Luncheon music. 2.0:
Close down.
- 3.30: Tune in. 3.35: Musical programme. 4.30:
Close down.
- 4.45: Tune in. 6.45: Bedtime stories by Uncle
Duff. 7.5: Light music. 7.30: Commercial informa-
tion. 7.45: Talk by Dr. J. S. Baitysie, B.A., L.L.B.
8.5: Time signal. 8.1: Weather. 8.3: Concert. 8.30:
Late news, station announcements, ships within
range announcement, late weather bulletin. 9.5:
Programme continued from the studio. 10.30: Close
down.

104.5 METRE TRANSMISSION.

Simultaneous broadcast on 104.5 metres; of pro-
gramme given on 1250 metres commencing at 9.45
p.m.

7ZL

- 11.30: Musical selections. 11.34: Midlands
weather forecast. 11.35: Musical selections. 11.55:
Tasmanian stations 9 a.m. weather report. 12.0:
G.P.O. clock chimes the hour. 12.1: Shipping
information; ships within sales; telegrams; mail
notices; housewives' guide; commercial news. 12.8:
Record recital. 12.30: Announcements. 12.33:
Record recital. 12.35: News; British official wire-
less news; railway auction produce sales, held at
railway. 1.18: Record recital. 1.30: Close down.
- 3.0: G.P.O. clock chimes the hour. 3.1: Record
recital. 3.4: Weather information. 3.5: Record
recital. 3.45: Miss Joyce Walker will speak on
"Homercraft." 4.0: Record recital. 4.15: An edu-
cational talk on "Commercial Inquiries—Butter and
Eggs for Manchester." 4.30: Close down. 6.15:
Children's hour. 6.30: "The Story Lady" will tell
a story to the little ones. 6.45: Record recital.
- 7.1: Answers to letters and birthday greetings by
"Uncle David" and "The Story Lady." 7.15: News
session. 7.30: Richard Olds will speak on "Skins
and Furs." 7.45: W. Fuller will speak on
"Literary Lapses and Library Lists." 8.0: G.P.O.
clock chimes the hour. 8.1: Record recital. 8.15:
A programme of dance music supplied by the Discus
Dance Ensemble. 8.27: Wendell Hall, "Easy Goin'."
8.30: Dance numbers. 8.42: Harry Richman, "I
can't give you." 8.45: Dance numbers. 8.57:
Glen Wick, "Marie." 9.0: Dance numbers. 9.12:
Wendell Hall, "My Dream Sweetheart." 9.15:
Dance numbers. 9.27: Glen Wick, "Sally of my
Dream." 9.30: News. 9.45: G.P.O. Dance Num-
bers. 9.52: Slumber music. 10.0: G.P.O. clock
chimes the hour; close down.

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Three or more syllables operate the relay,
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A two-syllable order, such as "Back
Up," sends the engine backward; and one
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chatter without affecting the operation of the
train. The transmitter is particularly sensi-
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mitter the operator is able to check the en-
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Local Programmes, Wednesday, July 31

2FC

EARLY SESSION, 7 to 8.15 a.m.

- 7.0: "Big Ben" and weather forecast.
7.5: Early-rising music
7.40: Breakfast news.
7.45: Mails and shipping.
7.48: What's on to-day.
7.50: Birthday calls.
8.0: Music from the studio.
8.15: Close.

MORNING SESSION, 10.30 a.m. to 12.30 p.m.

- 10.30: Announcements.
10.32: General sporting talk.
10.45: From the State Theatre, recital on the grand organ by Edgar Stone.
11.0: Household helps. A talk on cooking and recipes, by Miss Ruth Furst.
11.10: The Light Orchestra
12.0: "Big Ben" and Stock Exchange.
12.5: A "Dickens" study, by Harry Thomas.
12.20: Midday market reports.
12.30: Close.

THE LUNCH HOUR, 1 p.m. to 2.30 p.m.

- 1.0: Lunch to music, with the station orchestra.
2.0: Stock Exchange, second call.
2.2: Popular education. A talk by W. S. Reay.

THE RADIO MATINEE, 2.30 p.m. to 5 p.m.

Note: Race results from Victoria Park will be transmitted as received.

- 2.30: The station orchestra
2.45: Robert Gilbert, baritone
2.53: Wilfred Arlom, pianist.
3.3: Brunton Gibb in a radio sketch.
3.15: The station orchestra.
3.30: John Andrews, tenor.
3.38: Wilfred Arlom, pianist.
3.50: Robert Gilbert, baritone.
3.58: The station orchestra.
4.10: Brunton Gibb, sketch.
4.20: The station orchestra.
4.28: Stock Exchange, final call.
4.30: John Andrews, tenor.
4.38: The station orchestra.
4.48: Sporting resume.
4.53: The station orchestra.
5.0: Close.

EARLY EVENING SESSION, 5.45 to 7.55 p.m.

- 5.45: Kiddies' "Good-night" Stories, told by Uncle Bas, assisted by Aunt Willa and Margerie.
6.45: The dinner orchestra.
7.30: Sporting news and views.
7.45: From the State Theatre, Mr. Price Dunlavy at the grand organ.

EVENING PROGRAMME, 8 p.m. to 11.30 p.m.

- 8.0: "Big Ben." From the State Theatre, radio presentation. Will Prior's symphony orchestra, Price Dunlavy at the grand organ, stage production by Clive Hood.
9.0: "Big Ben." From the studio, Etta Field, soprano.
9.7: The Turret Players, a short, modern play.
9.27: Mona Deutscher, contralto.
9.34: Vincent Aspey, violinist.
9.44: Vernon Sellars and Patsy Hill, duets
9.52: Compton Coutts, comedian.
10.2: A "talkie" trifle.
10.15: From the studio. To-morrow's programme and announcements. Official weather forecast.
10.20: Romano's dance orchestra, conducted by Fennie Abrahams.
11.30: National Anthem.

2BL

OPENING SESSION—8.15 to 11 a.m.

- 8.15: Music for every mood.
8.45: "Interest Item" on outstanding events of the day.
9.0: An old folks' programme.
9.30: British official wireless news.
9.40: A review of new records.
10.10: The Ladies' Club Hour—the Australian Women's A.B.C. Association.
10.30: Studio Light Orchestra.
11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

- 12.0: Station Orchestra.
1.0: Afternoon news service.
1.15: Women's "Interest Talk"—Miss Goodie Reeve.
1.30: Traders' "Selling the Set" music.
2.0: At the console of the Wurlitzer Organ at the Capitol Theatre—Mr. Fred Scholl.

AFTERNOON ENTERTAINMENT—2.30 p.m. to 5.45 p.m.

2.30: Business efficiency talks—a short lecture by a member of the N.S.W. Advertising Club.

2.45: The Magic Carpet—Travel and Adventure—a story of travel and adventure by J. H. Beynon.

3.0: Musical programme, including Eva Newbury, contralto; Turner Ross, entertainer; Len Maurice, popular vocalist; Hilda Sutton, violinist; dance music by the A.B.C. Dance Band.

- 4.45: "The Trade Hour."
6.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

- 6.15: The Dinner Orchestra.
6.45: Boys' Radio Club—Mr. Norman Lyons.
7.5: Markets.
7.20: Late news.
7.25: Dinner Quartet.
7.55: What's on the air to-night?

EVENING SESSION

8.0: G.P.O. chimes. An Hour of Comic Opera—Melodies and Memories; principals, Mabel Batchelor, Vernon Sellars and Patsy Hill. Choruses by the Wireless Singers. Selections by the Metropolitan Band.

9.0: G.P.O. chimes; Compton Coutts, comedian.

- 9.7: The Metropolitan Band.
9.17: Etta Field, soprano.
9.24: Gabriel Joffe, pianist.
9.34: A short sketch by the Turret Players.
9.44: The Metropolitan Band.
9.56: Mona Deutscher, contralto.
10.3: Vincent Aspey, violinist.
10.13: The Metropolitan Band.
10.25: To-morrow's programme and announcements; official weather forecast.
10.30: National Anthem.

2GB

- 10.0: Music. 10.10: Happiness talk by A. E. Bennett. 10.20: Music. 10.30: Women's session, by Miss Helen J. Beegling. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service by Mrs. Dorothy Jordan. 2.50: Movie Know All. 3.0: Labor-saving demonstration from Nock and Kirby. 4.0: Close down. 5.30: Children's session, by Uncle George. 7.0: Music. 7.45: Feature story. 8.0: Miss Kathleen Cracknell, contralto. 8.7: Symphony Orchestra. 8.15: Mr. Clement Q. Williams, baritone. 8.22: Instrumental Trio. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Gwladys Edwards, soprano. 8.45: Address. 9.0: Weather report. 9.3: Music from studio. 9.13: Miss Kathleen Cracknell, contralto. 9.23: Instrumental Trio. 9.33: Mr. Heath Burdock, Shakespearean recital. 9.43: Mr. Clement Q. Williams, baritone. 9.53: Music from studio. 9.53: Miss Gwladys Edwards, soprano. 10.8: Instrumental music. 10.30: Close down.

2UW

MIDDAY SESSION

- 12.30: Music. 1.0: G.P.O. clock and chimes; music. 1.15: Talk on homecraft by Pandora. 1.40: Request items. 2.30: Close down. 4.30: Musical programme.

EVENING SESSION

5.30: Childrens hour, conducted by Uncle Jack. 6.30: Close down. 7.0: G.P.O. clock and chimes; music. 8 to 9 p.m.: Violin, viola, and cello concert. 9.0: G.P.O. clock and chimes; comments on Foreign Affairs by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.

2KY

MORNING SESSION

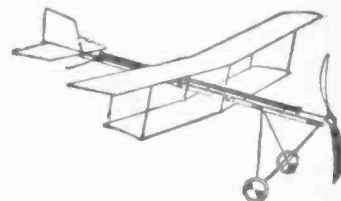
10.0: Tune in to the ticking of the clock. 10.3: Popular fox-trots. 10.15: Hawaiian steel guitar selections. 10.30: Request numbers. 10.50: Vocal items. 11.0: A few laughs. 11.5: Pianoforte selections. 11.15: Calls and announcements. 11.20: Musical interlude. 11.30: Request numbers. 11.40: Music and vocal items. 11.55: Where to go to-night. 12 noon: Closing announcements.

CHILDREN'S SESSION

6.0: Birthday calls, request numbers, and kiddies' entertainment—Aunt Jemima and Uncle Bert.

EVENING SESSION

7.0: Musical interlude. 7.15: Sporting feature—complete review of to-day's racing, Mr. Geo. A. Davis. 7.40: Health feature, Northey du Maurier. 8.0: Hawaiian steel guitar selections. 8.15: Tenor solos, Mr. Chas. E. Macdonald. 8.30: Banjo solos, Master Harry Weir. 8.36: Al Rosenberg at the piano. 9.10: Sporting feature—presented by Tooth and Co., Kent Brewery, from Sydney Stadium, full description of main 15-round event. 9.55: contralto solos. Miss Dorothy Fox.



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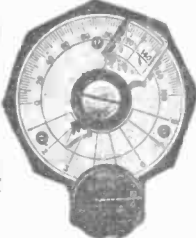
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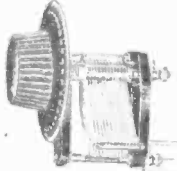
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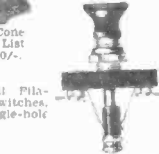
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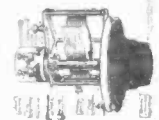


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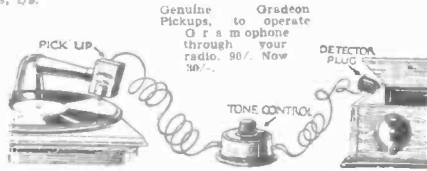


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Interstate Programmes, Wednesday, July 31

3LO

EARLY MORNING SESSION.

7.0: Time signals from Melbourne Observatory; weather forecast. 7.3: Early rising music. 7.40: Mails and shipping. 7.43: What's on to-day. 7.45: Birthday greetings. 8.0: Breakfast news and market reports. 8.15: Close down.

MORNING MUSICALS.

10.30: The thought for to-day, Dr. Loftus Hills, D.Sc. 10.35: Reproduced music. 10.45: Arnold Coleman, at the Wurlitzer organ. 11.0 to 12.15: 3LO Studio Orchestra, with Nina Seck, contralto.

NEWS SESSION.

12.15: To-day's news; rates on 'Change; weather forecast.

MIDDAY SESSION.

12.30: National Broadcasting Orchestra, under direction Wm. G. James; conductor, Percy Code—Overture, "Lurline" (Wallace), Scherzo "The Flight of the Bumble Bee" (Rimsky-Korsakov), Ivy Davis, soprano, Orchestra, "Two Spanish Dances" (Mussorgsky), March from "Sylvia" Ballet (Debussy), Luteocheon music, supplied by the National Broadcasting Orchestra, under the direction Wm. G. James; conductor, Percy Code.

THE LECTURETTE SESSION.

2.0: Miss Alice Smith, "Common Errors in Pronunciation." 2.15: Reproduced music. 2.25: Prof. K. H. Bailey, B.A., B.C.L., "United States and the British Empire." 2.40: Reproduced music. 2.45: Dr. A. E. Floyd, "Characteristics of Composers," illustrated.

THE RADIO MATINEE.

3.0: National Broadcasting Orchestra, under the direction of Wm. G. James; conductor, Percy Code—Overture "The Water Carrier" (Cherubini), "The Old Refrain" (Kreutzer), 3.10: Guy Moore, tenor— "At the Mid-hour of Night" (Cowen), "The Fucania Tree" (Gullier), "There is a Lady Sweet and Kind" (Worcester), 3.20: A short violin recital by Alfred Ackland, 3.30: Millicent Desmond, soprano— "The Blackbird's Song" (Cyril Scott), "Bend Low 'Tilne Eye" (Maurice Beesley), "There are Fairies at the Bottom of Our Garden" (Lehmann), 3.40: Orchestra—Trumpet solo "My Dreams" (Tosti), soloist, John Geary "Music Box" (Prini), "A Musical Snuff-box" (Laloux), 4.0: Frank Pearson—Dramatic monologue "A Pullen Star," character study "An Old Bachelor," 4.10: A piano recital by Dorothea M'Massey—Bosnia, Op. 27, No. 2 "Moonlight" (Schubert), Second and Third Movements "Noel" (Balfour Gardiner), Scherzo in B Flat Minor (Chopin), 4.20: Orchestra—Soloist "A Southern Maid" (Sanctus), 4.30: Close down.

THE CHILDREN'S CORNER.

4.45: "Little Miss Kookaburra" will tell her Tiny Kookaburrites a nice little story about "Fairly Wallpaper." 6.5: "The Mouth Organ Man" will blow some cheerful melodies. 8.15 to 7.30: Dinner music, provided by the 3LO Studio Orchestra. 7.30: To-day's news; rates on 'Change; market reports.

NIGHT SESSION.

7.45: National Broadcasting Orchestra, under direction of Wm. G. James; conductor, Percy Code—Inclusion music to "Merchant of Venice" (Rossini). "Cantoretta and Berceuse" (Prini). 8.0: Studio presentation of "Cavalleria Rusticana," by Mascagni, under the direction of Wm. G. James. Characters— Santuzza (a young peasant girl), Saffo Arnav, Turiddu (a young peasant), Horace White, Lucia (his mother), Gertrude Hutton, Alfio (a carrier), J. Alexander Browne, Lola (his wife), Beth Roberts. Musical Numbers— Prelude and Sicilliana "O, Lola, Pretty One," Opening Chorus "Ahi! Sweetly the Birds" (Rossini), Scena (Santuzza and Lucia) "Tell Me, Mother Lucia," Alfio's Song and Chorus "Gail! Go My Horses Fleet," Scena and Prayer "Oh, Rejoice that the Lord," Romance and Scena (Santuzza and Lucia) "Mother, You Know," Scena (Santuzza and Turiddu) "What Then, Santuzza," Lola's Song "Oh, Gentle Flower of Gold," Duet (Santuzza and Turiddu) "So Thou Seest," Intermezzo, Scena and Chorus "Now Homeward," Drinking Song "See the Merry Wine" Finale— Duet (Turiddu and Alfio), "Ahi! My Friends, I Salute You," Duet (Turiddu and Lucia) "Mother," 8.15: An Instrumental Trio, The Proctor Trio— "Dummy Trios" (Dvorak), Op. 90—No. 1 in E Minor, No. 3 in A Major, "Miniature Trios" (Frank Bridge), Minuet in G Major, Valse in B Minor, Saltarello in A Minor. 8.35: Syd, Extol, tenor— "The Lilac Tree" (Gartlan), "Audaclity" (Eville), "Gather ye Rosebuds" (Sanderson). 9.45: Orchestra— Selection of Sullivan's Opera, 9.55: Margaret Kerr will entertain. 10.5: Orchestra— Selections from Musical Comedy, 10.20: News from to-morrow's papers. 10.30: "The Rex" Dance Band. 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.0 to 10.59: See Friday.

MORNING MUSICAL SESSION.

11.0: The Strad Trio, 11.30: Cecil Parkes, 11.55: Myra Montague, 12.5: The Strad Trio, 12.20: British official wireless news from Rugby; announcements. 12.30: Close down.

AFTERNOON SESSION.

2.13: Description of the Hurdle Race, two miles, Ascendale Park Races. 2.20: Breezy Ballads. 2.43: Description of the Maiden Plate, five furlongs, Ascendale Park Races. 2.50: Description of the mid-week football, Yellow Cabs v. Police, at the Collingwood Football Ground. 3.13: Description of the Ascendale Park Handicap, one mile and a quarter. 3.20: Description of the mid-week football, Yellow Cabs v. Police, at the Collingwood Football Ground. 3.30: Breezy Ballads. 3.43: Description of the Ascendale Park Handicap, one mile and a quarter. 3.50: Description of the mid-week football, Yellow Cabs v. Police, at the Collingwood Football Ground. 3.58: Description of the Ascendale Park, seven furlongs, Ascendale Park Races. 4.20: Breezy Ballads. 4.43: Description of the Viceroy Handicap, one mile and a quarter. 4.50: Description of the mid-week football, Yellow Cabs v. Police, at the Collingwood Football Ground. 5.10: Close down.

EVENING SESSION.

6.0: Recordings. 7.10: News session.

NIGHT SESSION.

8.0: Out of the past. 8.1: The Strad Trio— "Trio O Major" (Mozart). 8.18: J. Howard King, Bass-baritone— "The Carnet" (Sanderson). "Gulet" (Sanderson). 8.23: Cecil Parkes, Violin— "Kol Nidrei" (Max Bruch). "Traumerli" (Schumann). 8.32: Ray Carey, Tenor, and J. Howard King, Bass-baritone— "The Moon hath Raised" (Benedict). "Fairings" (Easthope Martin). 8.39: The Strad Trio— "Adagio" (Schubert), "Crescive Lullaby" (Anon.), "Menuet from Septet" (Beethoven). 8.40: Under the direction of Madame Elsie Davies, Melbourne Grand Opera Quartette and Company, will present

"NORMA" (by Bellini).

Musical conductor, Charles Evans.
Norma Elsie Davies
Edoleta Isabel Burroughs
Clotilde Ida Park
Pollione John D. Sullivan
Flovia Frederick Earp
Corvozzo Charles Evans
Chorus of Druids, Priestesses, and Warriors.
Plank Ida Evans
9.45: Certain Donald MacLean will continue his (interesting series of talks on— "The Conquest of Peru." 10.0: Ray Carey, Tenor— "Frisby Love Litz" (Kennedy Fraser), "The Lost Hour" (Kramer). 10.7: Frank Johnston, Cello— "Hungarian Rhapsody" (Brahms). 10.14: The Sandowners, Tom Semple, Tenor; Herbert Sanderson, Baritone; Robert Gillard, Bass; and Robert Allen, Alto— "Redskin" (Zamecnik). Tom Semple, Tenor; and Herbert Sanderson Baritone— Duet, "O Lovely Night" (Landon Ronald), "Nigger Nonsense" (Anon.). 10.20: News service; announcements. 10.30: Ern, Hall's Radio Revelers— "Where do the Sky Little Violets Grow" (Kahn), "I Don't Care" (Dowell), "You'll Recognise My Baby" (Cohn), "Glad Rag Doll" (Ager), "That's Her Now" (Ager), "Only a Rose" (Prini), "Can You Plann' Me" (Goodwin), "Casablanca" (Evans), "Melancholy Mama" (Sherwin). 11.0: God Save the King.

4QG

7.43 to 8.30: See Friday.

MORNING SESSION.

11.0 to 12.0: See Friday.

MIDDAY SESSION.

1.0 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 4.30: See Friday.

EARLY EVENING SESSION.

7.45: Lecturette by Mr. J. W. Howle (Queensland Agricultural High School and College).

NIGHT SESSION.

8.0: Alf, Featherstone and His Orchestra— Rhythmic Paraphrases— "Tannhauser" (arr. Lange), "June" (arr. Lange).

8.10: Shirley Radford (soubrette)— "There's a Rainbow Round my Shoulder," "Sonny Boy." 8.20: Alf, Featherstone and His Orchestra— Fox Trots— "Sentimental Baby" (Palmer), "In My Bouquet of Memories," 8.30: Harry Borrodale (soloist)— Selected humorous items. 8.35: Alf, Featherstone and His Orchestra— Jazz waltzes— "Yesterday" (Wilhite), "Hallo, Little Girl of My Dreams" (Berk), 8.45: Ella Howle (contralto)— "Kathleen Mavourneen" (Couch), "My World" (Jordan), 8.55: Metropolitan weather forecast. Movements of lighthouse steamers. 9.0: Alf, Featherstone and His Orchestra— Fox trots— "I Don't Care" (Dowell), "Where the Sky Little Violets Grow" (Warren), 9.10: The Rio Grande Serenaders— Hawaiian Melodies. 9.20: Mary L. Spauler (contralto)— "Down Here" (Brahe), "Waltz 'D'Harleloti," 9.30: Alf, Featherstone and His Orchestra— Fox Trots— "I'm on the Crest of a Wave" (Henderson), "Pickin' Cotton" (Henderson), 9.40: The Rio Grande Serenaders— More Hawaiian Music. 9.50: Alf, Featherstone and His Orchestra— Jazz waltz— "Was it a Dream?" (Batten), 10.0: News supplied by the metropolitan dailies. Weather information. 10.15: Alf, Featherstone and His Orchestra— Dance music. 10.30: The Hoot Owls. 11.0: Close down.

5CL

MORNING SESSION.

11.15 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 4.30: See Friday.

EVENING SESSION.

6.0: Resume of race results. 8.2: Birthday greetings. 7.1: Senior Birthday League greetings. 5CL's sporting service, including Ascendale Park race results.



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ALL RADIO DEALERS

and Railway Institute activities. Stock Exchange market reports. 7.20: Rev. E. S. change. General information: talks. Miss M.A. B.D. will continue his educational talks. Wright's talk will be about "The Petition of Right." This document ranks with "Magna Charta" in the annals of British liberty, though it was immediately followed by 11 years of arbitrary rule. 7.35: An address to Boy Scouts. 7.45: SCL Blue Bird Girls' Club. **NIGHT SESSION.**

- 4.0: Chimes.
- 4.10: A Breede evening. "A Surprise Party to Mother on 10th Birthday." Characters: Mother, Mother Francis; Old Friend of Family, William Davies; Sec. Jack Burgess. Baby of Family, Jean Pimby (pianist); Cousins (Jean and Bruce), Jean Pimby (pianist); and Anglo Demosde (mandolinist); Jack's Friend, Luigi Patrucco (2.90 harmonica); School Pals, the Madrigals. (Under the conductorship of Maurice Perkins).
- 4.1: Meteorological information, including Semaphore signs.
- 4.2: Overseas grain report.
- 4.3: Announcements.
- 4.10: Fireside evening continued.
- 10.15: General news. SCL's sporting service.
- 10.30: Modern dance music.
- 11.0: Close down.

6WF

- 10.0: Tune in. Records. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin. 1.3: Talk. 1.29: Music. 1.30: Close down.
- 3.30: Tune in. 3.35: Music. 4.0: Sealing Wax Craft talk by Miss Hoyle.
- 4.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Perth Piano Trio. 7.45: Commercial and general information. 7.45: Popular science talk, by Mr. Hal McKail. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Orchestra programme. 8.50: Late news. 9.5: Orchestra programme. 10.30: Close down.

104.5 METRE TRANSMISSION.

Simultaneous broadcast on 104.5 metres of programme given on 1250 metres commencing at 6.45 a.m.

7ZL

- 11.30: Selections. 11.34: Midlands weather forecast. 11.35: Selections. 11.55: Tasmanian stations' 9 a.m. weather report. 12.0: G.P.O. clock chimes the hour. 12.1: Shipping information; ships within wireless range; mail notices; housewives' guide; commercial news. 12.8: Selections. 12.30: Announcements. 12.33: Selections. 12.55: News service; British official wireless news; railway and bus produce sales, held at railway. 1.10: Selections. 1.30: Close down. 3.0: G.P.O. clock chimes the hour. 3.1: Selections. 3.4: Weather forecast. 3.5: 1.1: Selections. 4.4: Weather forecast. 4.5: Selections. 4.15: Readings. 4.30: Close down. During the afternoon running description will be given of the Ascendale races, held at Ascendale Racecourse, Ascendale, Victoria. 6.15: Children's hour with Bertha Southey Brammall. 7.15: News session. 7.30: Mr. Roberts, of the Government Tourist Bureau, will answer questions on "Port Arthur." 7.45: Belle St. Laurence will give a "Travel Talk." 8.0: G.P.O. clock chimes the hour. 8.1: Selections by the Melody Masters. 8.6: A Columbia recital, including latest releases; specially arranged by Fidelity's Music Warehouse. 9.30: News session. 9.45: Columbia recital (continued). 10.8: G.P.O. clock chimes the hour; close down.

Teaching Listeners How to Save

An interesting series of talks has lately been broadcast through 2BL in advocacy of the principles of saving and thrift in the home. The talks, given on Wednesday mornings by Miss Jane Mitchell, director of the Thrift Department of the Government Savings Bank, point out to listeners (most of whom at that time of the day are women) how to make their incomes yield the maximum value in comfort, good living, and provision for the future by the application of system and business methods to household finance. She explains the principles of economical purchasing and consumption to replace haphazard expenditure.

Miss Mitchell urges women to budget for their household expenses over a period of a year, making a conservative estimate of income. Then she asks them to make a definite regular appropriation for savings for every salary period. Set this money aside into the saving fund immediately on receipt of salary or wage. "Bank before you spend" is her motto, even if one can afford only a few shillings a week.

The Thrift Department of the Government Savings Bank, of which Miss Mitchell has charge, invites listeners to call and receive help on all these lines. The bank has found that almost every person can save a little (or a great deal) if they manage their accounts properly, and the Thrift Department is always ready to advise as to the best means of controlling the household expenditure with a view to obtaining the best results.



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"Specialists in all matters pertaining to the Science of Radio."

Local Programmes, Thursday, August 1

2FC

EARLY SESSION, 7 to 8.15 a.m.

- 7.0: "Big Ben" and weather forecast
- 7.5: Early-rising music.
- 7.40: Breakfast news.
- 7.45: Mails and shipping.
- 7.48: What's on to-day?
- 7.50: Birthday calls.
- 8.0: Music from the studio
- 8.15: Close.

MORNING SESSION, 10.30 a.m. to 12.30 p.m.

- 10.30: Announcements.
- 10.32: The Racing Observer.
- 10.45: From the State Theatre, recital on the grand organ by Edgar Stone.
- 11.0: Household helps. Domestic notes
- 11.10: The light orchestra.
- 12.0: "Big Ben" and Stock Exchange.
- 12.5: "With the Poets," by Eleanor Ross, Professor of Elocution at the State Conservatorium.
- 12.20: Midday market reports.
- 12.30: Close.

THE LUNCH HOUR, 1 p.m. to 2.30 p.m.

- 1.0: Lunch to music with the station orchestra.
- 2.0: Stock Exchange, second call.
- 2.2: To-day's acceptances by the Racing Observer.
- 2.12: Popular education. "Spoken English," by C. N. Baeyerz, late Professor of Languages at the Christchurch University.
- 2.25: A glance at the afternoon papers.

THE RADIO MATINEE, 2.30 p.m. to 4.30 p.m.

- 2.30: The station orchestra.
- 2.42: Nora Hill, Irish soprano.
- 2.50: The Janetski Trio.
- 3.0: Thelma Houston, contralto.
- 3.8: The station orchestra.
- 3.20: Nora Hill, Irish soprano.
- 3.28: Marcus Burkitt, blind pianist.
- 3.38: The station orchestra.
- 3.50: Thelma Houston, contralto.
- 3.57: The Janetski Trio.
- 4.7: Marcus Burkitt, blind pianist.
- 4.17: The station orchestra.
- 4.28: Stock Exchange, final call.
- 4.30: Close.

EARLY EVENING, 5.45 to 7.55 p.m.

- 5.45: Kiddies' "Good-night" Stories, told by the "Hello Man," assisted by Uncle Ted and "Sandy."
- 6.45: The dinner orchestra.
- 7.30: Sporting news and views.
- 7.45: From the State Theatre, Mr. Price Dunlavy at the grand organ.

EVENING PROGRAMME, 8 p.m. to 11.30 p.m.

- 8.0: "Big Ben" Foreword.
- 8.8: From the Victory Theatre, Newcastle. Grand concert. Symphony orchestra of 75 players. Alfred Cunningham, Madame Lillian Gibson. Items for orchestra: "Coronation March" (The Prophet) (Meyerbeer). "William Tell" (Rossini). "Invitation Valse" (Weber). "Norma" selection (Bellini). "Symphony No. 10 in C" (first movement), (Schubert). "Romance in F" (Beethoven). "Gavotte, Mignon" (Thomas). "Zampa" (Herold).
- 10.15: From the studio. To-morrow's programme and announcements. Official weather forecast.
- 10.20: from the Hotel Australia. Cec Morrison's dance band.
- 11.30: National Anthem.

2BL

OPENING SESSION—8.15 to 11 a.m.

- 8.15: Music for every mood.
- 8.45: "Interest Item" on outstanding events of the day.
- 9.0: A melange of mirth and melody.
- 9.30: British official wireless news.
- 9.40: A review of new records.
- 10.10: The Ladies' Club Hour—the Australian Women's A.B.C. Association.

- 10.30: Studio Light Orchestra.
- 11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

- 12.0: Station Orchestra.
- 1.0: Afternoon news service.
- 1.15: Women's "Interest Talk"—a chat on Mothercraft by Matron M'Millan.
- 1.30: Traders' "Selling the Set" music.
- 2.0: At the console of the Wurlitzer Organ at the Capitol Theatre—Mr. Fred Scholl.

AFTERNOON ENTERTAINMENT—2.30 p.m. to 5.45 p.m.

- 2.30: Business efficiency talks—a speaker from the Rotary Club.
- 2.45: The Magic Carpet—Travel and Adventure—a story of travel and adventure by F. H. Raward.
- 3.0: Musical programme, including Celine Hooper and Ellie M'Donald, vocal duets; Googs Hanlon, novelty pianist; Reg Harrison, comedian; Roy Scrivener, baritone; Romano's Dance Band.
- 4.45: "The Trade Hour."
- 5.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

- 6.15: The Dinner Orchestra.
- 6.45: Girls' Radio Club—Miss Gwen Varley.
- 7.5: Markets.
- 7.20: Late news.
- 7.25: Dinner Quartet.
- 7.55: What's on the air to-night?

EVENING SESSION

- 8.0: G.P.O. chimes; from the Capitol Theatre—Radio presentation. Capitol, Ted Henkel's Orchestra, Fred Scholl at the Wurlitzer Organ.
- 9.0: G.P.O. chimes; from the studio—the Frisco Novelty Trio.
- 9.12: Sydney Calland, baritone.
- 9.19: H. W. Varna and partner, a short radio play.
- 9.29: Josef Kaartinen, saxophonist.
- 9.36: Fred Gooch, comedian.
- 9.43: Frisco Novelty Trio.
- 9.55: H. W. Varna and partner—a short radio sketch.
- 10.5: Josef Kaartinen, saxophonist.
- 10.12: Fred Gooch, comedian.
- 10.19: Sydney Calland, baritone.
- 10.25: To-morrow's programme and announcements: official weather forecast.
- 10.30: National Anthem.

2GB

- 10.0: Music.
- 10.10: Happiness talk by A. E. Bennett.
- 10.20: Music.
- 10.30: Women's session, by Miss Helen J. Beegling.
- 11.45: Close Down.
- 2.0: Music.
- 2.5: Women's Radio Service, by Mrs. Dorothy Jordan.
- 2.50: Movie Know All.
- 3.0: Address.
- 3.30: Gardening talk.
- 3.45: Close down.
- 5.30: Children's session, by Uncle George.
- 7.0: Music.
- 7.45: Feature story.
- 8.0: Miss Thelma Lansdowne, contralto.
- 8.7: Instrumental Quartette.
- 8.15: Mr. Leon Cavallo, tenor.
- 8.22: Miss Ada Brook, pianiste.
- 8.30: Mr. Jack Win and Miss Nora Windle in a dramatic sketch.
- 8.40: Miss Gwen Selva, soprano.
- 8.50: Music from studio.
- 9.0: Weather report.
- 9.3: Address.
- 9.15: Miss Thelma Lansdowne, contralto.
- 9.25: Music from studio.
- 9.35: Mr. Leon Cavallo, tenor.
- 9.45: Mr. Jack Win and Miss Nora Windle in a humorous sketch.
- 9.55: Miss Gwen Selva, soprano.
- 10.5: Instrumental music.
- 10.30: Close down.

2UW

MIDDAY SESSION

- 12.30: Request numbers.
- 1.0: G.P.O. clock and chimes; music.
- 1.15: Talk on homecraft by Pandora.
- 1.40: Music and request numbers.
- 2.30: Close down.
- 4.30: Musical programme.

EVENING SESSION

- 5.30: Children's hour, conducted by Uncle Jack.
- 6.30: Close down.
- 7.0: G.P.O. clock and chimes; request numbers.
- 8.15: Garden talk by S. H. Hunt.
- 8.30: Famous songs and their stories, to 9 p.m.
- 9.0: G.P.O. clock and chimes; comments on Foreign Affairs by Mr. J. M. Prentice.
- 9.10: Music and request numbers.
- 10.30: Close down.

2KY

MORNING SESSION.

- 10.0: Tune in to the ticking of the clock.
- 10.3: Popular fox trots.
- 10.15: Hawaiian steel guitar selections.
- 10.30: Request numbers.
- 10.50: Vocal items.
- 11.0: A few laughs.
- 11.5: Pianoforte selections.
- 11.15: Calls and announcements.
- 11.20: Musical interlude.
- 11.30: Request numbers.
- 11.40: Music and vocal items.
- 11.55: Where to go to-night.
- 12.0 noon: Closing announcements.

CHILDREN'S SESSION.

- 6.0: Birthday calls, request numbers, and kiddies entertainment. Aunt Jemima and Uncle Bert.

EVENING SESSION.

- 7.0: Musical interlude.
- 7.5: Birthday calls.
- 7.15: Request numbers.
- 7.30: Hawaiian steel guitar selections.
- 7.45: Humorous interlude.
- 8.0: Orchestral selections.
- 8.10: Tenor solos, Mr. G. Mason.
- 8.17: Bert Warne presents a humorous interlude.
- 8.30: Frederick Holt presents a recital of Australian Compositions and artists, with musical and vocal illustrations.
- 8.45: Selection of humorous records.
- 9.10: Request numbers.
- 9.40: Continue record recital.
- 10.0: Closing announcements.

Uncle's Tale Wags

FOR the past week or two Uncle Bas has beamed on everyone—on artists who come late, on reporters who borrow money, on badly-written market reports, and on everything on which it is usual for one to beam, and on everything on which it is unusual for one to beam.

Why does Uncle Bas shine so brightly on the world these days? Uncle Bas shines so brightly on the world these days because he has actually beaten Mr. C. N. Baeyerz, that meticulous teller of amusing stories, at his own game. In WIRELESS WEEKLY'S story-telling competition Uncle Bas' two tales of mistaken identity beat Mr. C. N. Baeyerz' anecdote of Pelorus Jack.

Uncle Bas told his story in an easy, familiar way. Mr. C. N. Baeyerz was careful, accurate, and grammatical. You felt you had only to reach inside the loud-speaker to pull out the commas.

The victory has another side. Some time ago Mr. C. N. Baeyerz regularly criticised the faults of diction and pronunciation of all the New South Wales announcers. Everyone came in for his share of spankings. So you can understand that, even though he lost a shilling bet to us on the result of the competition, Uncle Bas is feeling remarkably cheerful. For the next year Uncle Bas will be able to look any critic in the eye with the expression of a Bishop Blougram; and if he should see even such a man as Mathew Arnold in the street he will think nothing of going up to him—"Good-day, Matt! How's the whiskers?"

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OR STANDING ON YOUR SET

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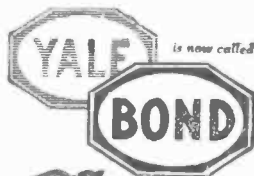
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3LO

EARLY MORNING SESSION.

7.0: Time signal from Melbourne Observatory; weather forecast. 7.5: Early rising music. 7.40: Mails and shipping. 7.43: What's on to-day. 7.45: Birthday greetings. 8.0: Breakfast news and market reports. 8.15: Close down.

MORNING MUSICALS.

10.30: The thought for to-day—Mr. Charles Nuttall. 10.35: Reproduced music. 10.45: Arnold Coleman at the Wurlitzer organ. 11.0 to 12.15: 3LO Studio Orchestra, with Moran Hilford, bass.

MIDDAY SESSION.

12.30: National Broadcasting Orchestra, under the direction of Wm. G. James; conductor, Percy Code—Overture "Mirala" (Gounod). "Serenade" (Herbert). Dolly Burdett, contralto. Orchestra, Suite "In Arcady" (Nevin). 1.0 to 2.0: Luncheon music, supplied by the National Broadcasting Orchestra, under direction Wm. G. James; conductor, Percy Code.

THE LECTURETTE SESSION.

2.0: Mr. R. H. Gilbert, "The Things We Drink"—Coffee. 2.15: Reproduced music. 2.25: Dr. E. Sweetman, M.A., Litt. D., "Recent Discoveries of Ancient Civilisations." 2.40: Reproduced music. 2.45: Professor W. E. Agar, F.R.S., "Heridity in Man."

THE RADIO MATINEE.

3.0: National Broadcasting Orchestra, under the direction of Wm. G. James; conductor, Percy Code—"Suite for Strings in G Major" Gavotte, Bourée, and Gigue (Bach). J. Barille, flute, "The Harmonists." Two Old English Folk Songs. Tasma Tierman, cello. "Nina" (Pergolesi). Orchestra, Suite (Haydn). "Farandole" (Bizet). "The Harmonists." Two Victorian Songs. Orchestra. "The Blue Danube" (Strauss). Estella Sheehan, piano. "Polchinelletti" (Rachmaninov). "Minuet" (Frank Bridge). "Hornpipe" (Pauer). Jack Hocking, "The Sighing Serenader." "Up-to-the-minute Melodies." Orchestra, Fox-trot. "Fiorella" (Francesco) 4.30: Close down.

THE CHILDREN'S CORNER.

4.45: "Bobby Bluegum" songs and stories from other lands. 6.5: "Clever Clarice" at the piano. 8.15 to 7.30: Dinner music, supplied by the 3LO Studio Orchestra—"How Many Hired Servants" (Sullivan). "Aïe! de Matin" (Pessard). "Dear Love, Remember Me" (Marshall). "Requiem" (Homer). 7.30: To-day's news; rates on 'Change; market reports.

NIGHT SESSION.

7.45: Orchestra—"Preciosa" (Weber). Selection "H.M.S. Pinafore" (Sullivan). 8.0: John D. Sullivan, tenor. 8.10: A cello recital by David Zisserman, late cellist with Madras Favourites Orchestra. 8.30: Dorothy Humphries, soprano—"The Wind Song" (Rogers). "Twas April" (Nevin). "If I Were a Lark" (Clutsam). 8.40: Orchestra—"Spanish Serenade" (Perrom). "Rustle of Spring" (Sindling). 8.45: "Nicht in Venice" musical presentation by the "A.B.C. Studio Gleesingers"—Chorus, organ, and chimes. "Ave Verum" (Gounod). Chorus "Moonlight on the Lake." Chorus "Serenade" (Donizetti). Chorus "Venetian Song" (Tosti). Duet: "A Night in Venice" (Lucantoni). Solo and Chorus: "Drinking Song" (Offenbach). Orchestra: "The Barcarole" from "Tales of Hoffman" (Offenbach). Duet: "O. Lovely Night" (Landon Ronald). Song: "Matinata" (Tosti). Song: "A Summer Night" (Goring Thomas). Finale: "Punculi Puncula" (Denza). 9.25: Orchestra—Suite "From India" (Popy). 9.35: Tom M'Pherson, baritone—"Vagabond's Song" (Vaughan Williams). "Bright is the Ring of Words" (Vaughan Williams). "A Warwickshire Wauling" (Wm. G. James). 9.55: "The Super Six"—"In Mirth, Music, and Mummery." 10.20: News from to-morrow's papers. 10.30: "The Rex" Dance Band. 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.0 to 10.59: See Friday.

MORNING MUSICAL SESSION.

11.0: The Strad Trio. 11.35: Cecil Parkes, Violin. 11.52: Frank Johnstone. 12.8: The Strad Trio. 12.20: British official wireless news from Rugby; announcements. 12.30: Close down.

AFTERNOON SESSION.

2.35: Description of the Public School football, Geelong Grammar School v. Xavier College, on the Geelong Cricket Ground. 2.50: Cheery Chirpings from the Seraphina. 3.7: Description of the Public School football, Geelong Grammar School v. Xavier College, on the Geelong Cricket Ground. 3.17: Afternoon tea atlas. 4.15: Description of the Public School football, Geelong Grammar School v. Xavier College, on the Geelong Cricket Ground. 4.25: Cheery Chirpings. 4.35: Final description of the Public School football, Geelong Grammar School v. Xavier College, on the Geelong Cricket Ground. 4.45: Evenson, transmitted from St. Paul's Cathedral, Melbourne. 5.30: Close down.

EVENING SESSION.

6.0: Sweet solace with the Seraphina. 7.10: News session. Announcements. Acceptances and barrier positions for the V.A.T.C. races at Caulfield on Saturday, 3rd instant. 7.20: Some more solace.

NIGHT SESSION.

7.46: Captain Donald MacLean will continue his series—"The Conquest of Peru." 8.1: The Radio Revellers—"Dada, Dada" (Gardner). "Pickin' Cotton" (Henderson). "I'm on the Gro of a Wave" (Henderson). 8.9: Charles O'Mara, Irish Comedian—Komicallies. 8.12: The Radio Revellers—"The Magic Violin" (Leslie). "Shinanki Da" (Cole). "Where the Shy Little Violets Grow" (Kahn). 8.21: Julie Russell, Soprano—"Indian Love Call." "Rose Marie" (Friml). 8.24: The Radio Revellers—"I Don't Care" (Dowell). "You'll Recognise My Baby" (Cohn). "Glad Rag Doll" (Ager). 8.33: Arthur Douglas, The Hilander—"D'ye Ken This One?" 8.39: The Radio Revellers—"That's Her Now" (Ager). "Only a Rose" (Friml). "Can You Blame Me?" (Goodwin). 8.47: Charles O'Mara, Irish Comedian—"Laugh and Be Merry." 8.50: The Radio Revellers—"Casablanca" (Evans). "Melancholy Mama" (Sherwin). "Shake That Thing" (Jackson). 8.55: Julie Russell, Soprano—"My Life is Love." "Maid of the Mountains." 9.2: The Radio Revellers—"She's Funny That Way" (Moret). "Chilly Tom Tom Pee" (Biyani). "Carolina Moon" (Burke). 9.11: Arthur Douglas, The Hilander—"Roaming in the Gloaming." 9.14: The Radio Revellers—"Thinking of You" (Ruby). "Up in the Clouds" (Ruby). "I Kiss Your Hand, Madame" (Ruby). 9.23: Charles O'Mara, Irish Comedian—Just for Fun. 9.26: The Radio Revellers—"My Mother's Eyes" (Beer). "I Paw Down and Go Boom" (Brockman). "In a Little Town Called Home Sweet Home" (Donaldson). 9.35: Julie Russell, Soprano—"Piper June" (Carew). 9.38: The Radio Revellers—"My Angelina" (Wayne). "The Wedding of the Painted Doll" (Brown). "What d'ya Say?" (Brown). 9.47: Arthur Douglas, The Hilander—Aberdonosities. 9.50: The Radio Revellers—"Sonny Boy" (Jolson). "Sally of My Dreams" (Kernell). "Paradise and You" (Packay). 9.55: Charles O'Mara, Irish Comedian—Straight from Old Erin. 10.2: The Radio Revellers—"Oh, Isabella" (Schuster). "Forty-seven Ginger-headed Sailors" (Sarony). "That's How You" (Davis). 10.11: Julie Russell, Soprano—"Thoughts Have Wings" (Lehmann). 10.14: The Radio Revellers—"Marie" (Berlin). "Ain't She Real Cute" (Hamy). 10.20: Age news service. Announcements. 10.30: The Radio Revellers—"By the Laz River" (Packay). "My Castle in Spain is a Shack in the Lane" (Friend). "That's What I Call Sweet Music" (Meskill). "Felt Head over Heels in Love" (Thayer). "Deep Night" (Henderson). "Shivering" (Doody). "Stay at Home Girl" (Hagen). "Can't Give you Anything but Love" (Fields). 11.0: God Save the King.

4QG

EARLY MORNING SESSION.

7.43 to 8.30: See Friday.

MORNING SESSION.

11.0 to 12.0: See Friday.

MIDDAY SESSION.

1.0 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 4.30: See Friday.

EARLY EVENING SESSION.

6.0 to 7.45: Lecture—"Talk on Sheep and Wool by J. Carew, Instructor in Sheep and Wool."

NIGHT SESSION.

PART 1.—MR. ARCHIE DAY'S PARTY. A classic programme arranged by Mr. Archie Day. 3.0: Nancy Multhead (soprano)—"Elizabeth's Prayer" (Wagner) ("Tannhauser"). Archie Day (pianist)—"Intermezzo in E Flat Major" (Brahms). "Jocund Dance" (Cyril Scott). Fred Homer (baritone)—"I was in the Glorious Month of May" (Cox). "Since My Love now Loves Me Not" (Cox). "The Butterfly and the Rose" (Cox). Morris Cran (violinist)—"Hungarian Dance No. 2" (Brahms). Nancy Multhead (soprano) and Fred. Homer (baritone)—Vocal duet—"And He Arose and Went to His Father" (Sullivan). Nancy Multhead (soprano)—"An Attempt on Love's Sickness" (Purcell). Nancy Multhead (soprano)—

- "Come, Then, Finish, Peevish Lover" (Vincent).
- "I Know a Bank" (M. Shaw).
- Morris Cran (violinist).—
- "Tambourin" (Romeau-Kreisler).
- "Eldin Dance" (Haydn Wood).
- Fred Homer (baritone).—
- "Like to the Damask Rose" (Elgar).
- "The Old Black Mare" (Soutire).
- Morris Cran (violinist) and Aggie Day (pianist)
- Duet for violin and piano.—
- "Sonata in F Major" (Beethoven).
- PART II.
- 9.0: Metropolitan weather forecast.
- 9.1: Movements of the Travelling Dental Clinic.
- 9.3: Stanley Wardle (scoloutionist)—
- "The Last Token" (Andrews).
- 9.12: E. Ryberg—
- Mouth Organ Solos.
- 9.17: E. S. Mackay (baritone)—
- "The Wonders of the Deep" (Jude).
- 9.20: Mrs. R. G. Allen (soprano)—
- "Believe Me if all those Endearing Young
Charm" (Ronald).
- 9.25: R. Ryberg—
- Mouth Organ solos.
- 9.30: A short recital of electric records.
- 10.0: News supplied by the metropolitan dailies.
- Weather information. Close down.

5CL

- MORNING SESSION.
- 11.15 to 2.0: See Friday.
- AFTERNOON SESSION:
- 2.0: General programme, see Friday.
- EVENING SESSION.
- 5.0: Chimes. 6.1: Birthday greetings. 7.1: Senior
Birthday League greetings. 5CL's sporting service.
11.5: Dr. G. H. Wright, M.A., will continue his series
of literature talks. 7.30: Mr. E. T. Fisher will speak
on "Motor Cycling Activities." 7.45: Mr. A. M.
Whitesbury, hints to poultry breeders.
- NIGHT SESSION.
- 8.0: Chimes.
- 8.10: A presentation, by request, of the famous
operas. "The Characters": Gilda, Marcelle
Opera. The Duke of Mantua, Dino Pelardi; Rigolo:
Mto. Fred. Gustor, Bert Woodley; Montserme, Bert
Woodley; Sparafucile, Fred. Gustor; Maddalena, Gwen
Woodley; Don Juan, Contessa Ceprano, Ann Young;
Cosme, Dino Pelardi; Marullo, Ceprano, Bert Wood-
ley, and chorus. Explanatory remarks by Horace
Levy and chorus. Explanatory remarks by Horace
Levy and chorus. A.M.U.A. Music by Operatic Or-
chestra.
- 10.15: General news.
- 10.30: Modern dance music.
- 11.0: Close down.

6WF

- 10.0: Tune in. Records. 11.0: Close down. 12.30:
Tune in. 12.35: Markets, news, etc. 1.0: Time signal.
1.1: Weather bulletin, supplied by the Meteorolo-
gical Bureau of West Australia. 1.3: Organ. 1.5:
1.15: Community singing. 1.50: Programme
continued from the studio. 2.0: Close down.
- 3.30: Tune in. 3.35: Music. 4.30: Close down.
- 4.45: Tune in. 4.45: Bedtime stories by Uncle
Duffy. 7.5: Light music by the Perth Piano Trio
7.30: Commercial information. 7.45: Talk by Pro-
fessor A. R. Baker. 8.0: Time signal
8.1: Weather bulletin. 8.3: Programme by the Perth
City Band, conducted by Mr. Les. Price. Items by the
"Morland Instrumental Duo." 8.50: Late news
weather bulletin. 9.5: Programme continued from
the studio. 9.45: "Health" talk, by Mr. H. Hinton
10.30: Close down.

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p.m.

7ZL

- 11.30: Record recital. 11.34: Midlands Weather
forecast. 11.35: Record recital. 11.55: Tasmanian
stations' 9 a.m. weather report. 12.0: G.P.O.
clock chimes the hour. 12.1: Shipping information;
ships within wireless range; commercial news;
housewives guide. 12.8: Record recital. 12.30:
Announcements. 12.33: Record recital. 12.55:
"Mercury" news service; British official wireless
news; railway stations produce sales; news at railway
stations. 1.0: Record recital. 1.30: Close down. 3.0:
G.P.O. clock chimes the hour. 3.1: Record re-
cital. 3.4: Weather information. 3.5: Record
recital. 4.15: A representative of the Child Wel-
fare Association will speak on "The Toddler." 4.30:
Close down. 6.15: Children's hour, with "Uncle
Duffy" and "The Story Lady." 6.45: Una Gariand
will recite to the wee folk. "Foolish Question." "Tit
for Tat." 7.0: Answers to letters and birthday
greetings by "Uncle Duffy" and "The Story Lady."
7.11: News session. 7.30: Under the auspices of the
"Come to Tasmania." E. Dwyer-Gray will speak
on "Tasmania for Tourists." 7.45: W. H. Chalmre
on "Boccer." 8.0: G.P.O. clock chimes
the hour. 8.1: Record recital. 8.15: 7ZL's old-
time night; music by 7ZL's Allia Polacca Orchestra
—Waltz. "Post away Peasant" (Kendall). 8.20:
Selections. 8.23: Barn dance. "Rinking" (Poole).
8.25: Selections. 8.31: Highland Schottische, "Keel
Row." 8.32: Selections. 8.41: Landers. "Songs
of a Soldier" (Clifford). 8.51: Selections. 8.53:
Selections. "The Merry Widow" (Lehari). 8.59: Selec-
tions. 9.2: Schottische. "The Empire." 9.7:
Selections. 9.10: Varsoviana, "Varsoviana." 9.15:
Selections. 9.18: Two-step. "Denham" (Code).
9.22: Selections. 9.28: "Valeta, Ever Thine" (New-
man). 9.32: News session. 9.42: "Pa. a. Divis."
(Rofler). 9.47: Selections. 9.50: Waltz. "The
Honey-moon Waltz" (Renault). 9.55: Slumber music.
10.0: G.P.O. clock chimes the hour, close down.

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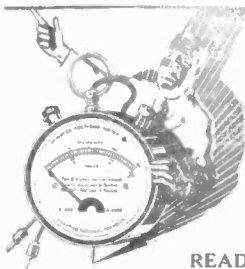
LET US DEMONSTRATE IN YOUR HOME. NO OBLIGATION ON YOUR PART.

C. A. Holmes & Co.

515 GEORGE STREET, SYDNEY.

Phone: M 3903.

3 Readings on 1 Dial



PRICE GREATLY REDUCED 8/6

It is a genuine 3-valve set, with a dialled black finish. Nearly half a million sold in Great Britain.

READINGS

WATES 0-150 Volts
three in one
VOLT-AMP 0-6 Volts
RADIO TEST METER 0-30 Milliamps

Selling Agents Wanted

An exclusive agent for the distribution of the instrument illustrated above to handle sales in Australia required. Applicants should have an existing organization capable of dealing with sales of instruments in the most effective manner, and would be required to suitably advertise the line. Every help will be given to assist in developing sales on the lines in which it has been most successfully marketed in Great Britain. Applicants should apply to the Patentees with the fullest particulars.

Standard Wet Battery Co.,

Dept. W.W. Australia,
181-188 Shaftesbury Avenue,
London, W.C.2. ENGLAND.

WIRELESS TALKS

From Station 2GB

SUNDAY, JULY 28TH

9 a.m.: MARY RIVETT, M.A.: Psychological Sources of Power.

9.30 a.m.: VICTOR E. CROMER: Power From On High.

9.30 p.m.: VICTOR E. CROMER: The Power of Peace.

These talks deal with different aspects of the study of certain of man's finer forces, and aim at furnishing a meeting point for critical scientific thought and spiritual intuition in regard to the reality and efficacy to heal of such powers.

This All-Electric Business

Let us supply you with the parts for the "Standard A.C. Four" (now being described in WIRELESS WEEKLY):—

Philips E442 S.G. Valve	40/-	Radiokes Screening Box	15/-
Philips E424 Detector Valve	35/-	Pilot Drum Dials	21/-
Philips Super-Power Valve	15/-	Formo Twin Condensers	27/6
Pilot UY Socket	3/-	Pilot Variable Resistors	5/6
Pilot UX Socket	3/-	Ferranti AF5 Transformers	57/-
		Ferranti OP1 Output Transformer	41/-

And Everything Else for the "A.C. Four."

BUT, before building, don't forget to call or write for our book, describing the subject fully, with circuits for different sets, base-board plans, cost, etc., all in simple language. Another "Wallace" Booklet.

PRICE 1/-

"ELECTRIFIED RADIO"

(By ALAN BURROWS.)

POSTED 1/3

We are Specialists in Electric Sets

Same day service for
Country Clients

"The Wireless Shop"

Miss F. V. Wallace,

6 Royal Arcade, Sydney

THE OLDEST RADIO FIRM IN TOWN

Established 8 Years.

'Phone, MA 5543—Two Doors from George Street, opp. Q.V. Markets.

Money Back
Guarantee

Completing the Standard A.C. Four

(Continued from page 18.)

the whole of the dial is a matter involving much greater difficulties. There are required, in the first place, four coils which are really matched. Then, four condensers which match up at all settings are absolutely essential. To be quite frank, we must admit that such condensers are apparently not yet available in Australia. The condensers used in the receiver permit a very close approach to the matching of the four circuits all the way across the dial, but the builder of the receiver must not be disappointed if he finds that an adjustment which gives maximum selectivity and sensitivity at the top of the band does not serve to give the absolute maximum effectiveness at the bottom of the band. As a matter of fact, this did not prove to be a real disadvantage in our case, since the only stations in other States which are putting programmes into Sydney sufficiently above the noise level to be enjoyable are all towards the upper part of the band. The four condensers were, therefore set so that the most effective amplification was obtained at these wavelengths.

The actual procedure involved in adjusting the condensers includes the loosening of the set screws on the drum dial shaft and on the couplings between the condensers and the individual adjustment of the rotors to give maximum amplification. In order to do this, the front panel and the front of the two shields are removed, and the rotors manipulated with the fingers. It is well to tune first to some loud signal, then

"twiddling" the condensers carefully, until a distant station is heard. At this time a half-hour of very careful adjustment will be well worth while. Just as soon as all circuits are believed to be definitely in tune the set screws can be tightened, and the drum dial turned to tune the receiver to some other station on another part of the band. In doing this the tuning may be found to broaden out, or the receiver may break into oscillation. In such cases it will be as well to re-adjust the condensers at the wavelength of some station other than that for which the first adjustment was made. In this way it probably will be possible to arrive at an adjustment which will serve effectively across the whole band. The chief thing to remember is that the adjustment is one which influences the whole operation of the receiver; that it is an adjustment to which a great deal of attention may well be given.

Another matter which has not been given much mention is the aerial. The actual aerial with which the receiver has been operated is a single wire about 60 feet long and approximately 15 feet high. This aerial permits sufficient selectivity to avoid interference between any two Australian stations operating on their allotted frequencies, and it is possible that an even larger aerial could be used effectively. At locations where there is no station within 50 or more miles it is probable that an even larger aerial could be employed with advantage.

Still another matter which has not yet been treated is the speaker. This, of course, is a most important matter. With the present low standard of "musical quality" to be had from our broadcast stations, there is not a great deal of difference to be noticed between a poor speaker and a good one. With the improvements in transmission that undoubtedly will come in the near future, however, the poor speaker will be revealed in all its wretchedness.

We definitely recommend the use of a high-grade moving coil speaker, in conjunction with the Standard A.C. Four, or with any other receiver designed for the reproduction of real music. Failing this, we suggest the use of a high-quality cone-type speaker of the usual "magnetic" type. With such a speaker the output transformer mentioned in the list of apparatus for the receiver will serve. If the moving-coil speaker is to be used a special high-ratio output transformer will be necessary. Most speakers of that type have the output transformer "built-in." It is then only necessary to connect the input leads to the speaker in the plate circuit of the power valve.

When correctly built and adjusted, and when fitted with a suitable power valve correctly biased, the receiver is capable of an excellent performance. It can be said truthfully that the only important limitations on its performance are the result of weaknesses in the broadcast stations to which we are obliged to listen.

The WIRELESS WEEKLY RADIO INFORMATION SERVICE

Under the direction of Ross A. Hull

K.W.R. (Eastwood)—Wind fifty turns 24 gauge wire on a three inch diameter former. Connect wire to first turn, and also to fixed plates of a series variable condenser. Connect last turn of coil to moving plates of condenser, and also to aerial terminal of receiver.

C.R. (Gerrinstown)—Sorry, we have no blue prints of this receiver. Phillips Ltd. may be able to supply.

G.W.C. (Queensland)—Prom Megars. Selby's Ltd., Building Place, Sydney.

T.S. (Nellbird)—Obviously an open filament circuit. Look to switch and also to rheostat. Wind-up may be broken, or end of rheostat wire may not be making contact with its terminal.

GENERAL.—Can any reader supply copies of WIRELESS WEEKLY for filling orders. They will be paid for. Copies required are: Vol. 12, Nos. 21, 22, 23, 24, 25, and 26, and 35. Address, Norman Head, 76 Lane Cove Road, North Sydney.

GENERAL.—Mr. R. Beresford, 346 Wollstonecraft Road, Arncliffe, writes: "I have the following back numbers of WIRELESS WEEKLY for 1928: February numbers 1, 2, 3, 10, and 24; October 5; November 1, 8, 15, 22; August 3, 10, 17, 24; March 5, 12, 19, 26; April 5, 12, 19, 26; May 3, 10, 17, 24; June 7, 14, 21, 28. Any reader desiring these copies may write to above address, enclosing two stamps, and I will be glad to post copies."

W.F.S. (Mitcham)—"Some time ago I sent you queries, and by same letter had in stamps for WIRELESS WEEKLY of February 13, 1929. My queries were answered and no information re copy was returned."

Editor: Effort was being made to obtain a copy for you but we have been unsuccessful to date. A notice will appear in these columns in the hope that some reader may be able to oblige.

(1) Where can I obtain a book containing information which will enable me to operate an experimental station?"

Answer: Angus and Robertson will forward you a list on application. Follow "Proving Radio." The A.O.P.C. Course has just been started.

(2) Can an 80-90 volt Neon lamp be obtained? If so, where?

Answer: Doubtful. 120-240 volt only. Osgilim lamp. Behlie type.

(3) "By means of a S.W. set would the television described in WIRELESS WEEKLY be able to receive KDKA?"

Answer: No. This was for experimental purposes only and can be seen. Even were the television perfect, the distortion would be very great, and it would not be possible to receive KDKA.

GENERAL: Can any reader please supply W. F. Saunders, Scotch College, Mitcham, South Australia, with a copy of WIRELESS WEEKLY dated 26th April, 1929?

C.K. (Karr Kurri)—"I am contemplating building a three-valve set and want the best. Is this a Remark? Will this set bring in Japanese and New Zealand stations on the loud-speaker?"

Answer: Reimatz is a good type of three-valve set, but you cannot expect to get these results. At least five valves will be necessary, and even then it will not follow that you will be able to get the Japs and N.Z. on the speaker.

(4) Where can I procure a back-of-panel wiring diagram or blue print, and how much will it cost?"

Answer: See Moore, Economic Radio, and Larsson's, Price 1/6.

(5) "If you have a copy of WIRELESS WEEKLY with this circuit in it, will you please forward to me a copy? I enclose stamps for cost and postage."

Answer: We have a few copies left, but no stamps were enclosed in your letter. We are, therefore, awaiting your reply.

R.A.P. (Drummond)—"Regret we have no copies of the Countryman's One-valve letter. See below."

GENERAL:—A reader please supply Mr. H. A. Piddock, 17 Bromley Road, Drummond, N.S.W., with a copy of WIRELESS WEEKLY containing the Countryman's One or the Countryman's Two receiver?"

F.H. (Wollongong)—"I did not commence reading your paper till April, and have therefore missed a number of your 'Proving Radio' instalments. I have, however, gathered all the series of which follow: December 28, 1928; January 11, 1929; March 25; January 25; February 1; March 15; January 29. Can you supply these? If not, can any of your readers supply? I am willing to pay full value and postage on receiving same."

Answer: Regret we cannot supply these numbers, but perhaps some reader may be able to oblige. The inquirer is Mr. Frank Hockley, c/o A. J. Davis, Rosemont Street, Wollongong, South Coast, N.S.W.

E.D.L. (Lithgow)—"I want advice re gramophone amplification. I desire to improve the tone and reproduce the low notes on a gramophone, and I understand a magnetic pick-up amplifier and loud-speaker combination will produce the desired result. Volume required to fill an ordinary sized drawing-room. It is desired to work direct off the 240-volt A.C. mains. Will a magnetic pick-up with a loud-speaker if connected directly? If not, why?"

Answer: A good amplifier will be necessary. The subject is too be given detailed treatment in WIRELESS WEEKLY in the near future.

C.R.M. (Haberfield)—"My receiver is not selective. I have tried fixed condenser in series with aerial, which has been shortened till it is now only 20 feet long. The valves have been changed as have also the grid leak and condenser."

Answer: Decrease coupling between primary and secondary. If this fails to remedy the trouble, a wave-trap will be necessary. The above device appeared in these columns from time to time. Perhaps the design of the receiver is at fault.

J.E. (Miller's Point)—"As I intend to sit shortly for the A.O.P.C. I would like you to answer the following questions, which I saw in WIRELESS WEEKLY some time ago: (1) Using copper foil and mica, how can I construct a capacitor required to construct a 0.05 fixed condenser. Take the S.I.C. of mica as 5, its thickness as .002in., the area per dielectric as one square inch. I know how to find the capacity, but the above has got me beat."

Answer: Actually it is very simple. If over you strike any "round-bottom" questions like this, the best way to find out how the sum should be done is to use simple figures in place of the formula, and then to represent the number of dielectrics required to construct a 0.05 fixed condenser. Take the S.I.C. of mica as 5, its thickness as .002in., the area per dielectric as one square inch. I know how to find the capacity, but the above has got me beat."

(2) "Explain the use of a counterpoise."

Answer: A counterpoise acts in much the same way as an earth. It really forms one element of a condenser, the ground being the other.

(3) "How would you tune a counter-plate?"

Answer: By means of a variable condenser placed in series with the "lead-in" end of the counterpoise. The same is done with the capacity of this condenser in most types of receivers and transmitters. It is 500mmfd, incidentally, one-half of a "Hertz" transmitting aerial is often wrongly called a counterpoise.

A.D.C. (Burwood)—"Thanks for replying to my query re life of batteries in my portable set, especially as I omitted to enclose coupon. The 'A' batteries are a Columbia Ignitor dry cell, but I do not know enough about valves to give name of these. Will try and obtain this information, and will advise when received."

Answer: Pleased to be of assistance. Thanks for the coupons. The names of the valves will be shown on the glass or on the base, together probably with some of their characteristics. Forward this information.

BRIEF REPLIES.

D.C. (Victoria)—"Build as per circuit you mention. Coil data, etc., will be the same as per the original I.C.C.O. with the exception that the primary coil should be little larger than usual, say about twenty turns."

R.C. (Wauchope)—"Your letter has been forwarded to Messrs. Angus and Robertson, who will probably get in touch with you shortly."

E.M.K. (Five Dock)—"Poor circuit. Build the Zig Zag Crystal Receiver. There is no connection between the aerial circuit and the secondary circuit. See also remarks to 'R.C. (Wauchope)'" above.

J.W. (North Bondi)—"You must get a transmitting licence before you make your transmitter and power transformer. See A.R.R.U. Handbook. Your letter handed to Angus and Robertson."

A.K.F.W. (Clovell)—"I have a crystal set, and set 22L very plainly but cannot hear any other stations at all. Could you tell me if it is possible to improve this set in any way, so that other stations may be received. The aerial is an indoor one, of 20 feet long. The coil is about 4 inches diameter, with 100 turns."

Answer: You are very near 22L, remember. The circuit you are using is evidently a very old one, and was probably made originally to tune to 2FC, when they were on 1000 metres. Suggest you re-build the set. The "Kug" crystal receiver tunes quite sharply. An outdoor aerial about 50 feet long is almost essential for a crystal receiver.

A.R.W. (K. Asquith)—"Probably KCO testing. Very hard to say definitely, as there are so many stations on this band. Perhaps Maki have been S.W. Your change of address has been noted."

W.S. (Wollongong)—"No, not necessary to get permission to advertise, but a receiving licence must be held."

D.A.C. (Mitchell)—"Valve O.K."

E.T. (Granville)—"Two inner connections of jack to primary of transformer, and one outer connection to plate of preceding valve, and other 3 is plus (this for D.C. jack). For filament jack, connect as usual, but run filament lead through jack in place of switch. Yes, eliminator can be used on set. To connect 'C' battery, disconnect leads from F negative terminals to A negative, then connect F negative terminals of transformer to C negative of 'C' battery, and C plus to A negative. Thanks for your remarks."

E.T. (Granville)—"I am keeping my copies of WIRELESS WEEKLY for readers who ask for back numbers through your paper. An enclosing a reply received which I greatly appreciate for the little service done by answering an S.O.S. call of a 'Radio Brother' in distress in Queensland."

Answer: Thanks, E.T. Perhaps there are some other readers requiring back numbers, so will reply to your address—Mr. E. Taylor, 210 William Street, Granville, N.S.W.

A.G.S. (Marrar)—"Will you please tell me what Phillips' valves to use in a six valve Neurodyne stage?"

Answer: A25 valves in R.F. stages.

(2) "What Phillips' valve (4-volt type) could I use in last stage?"

Answer: A405

F.E. (Kensington)—"Have enclosed circuit of S.O. Marco Four, instead of using 1 mfd. by-pass condensers for C1 and C2 can 2 mfd. condensers be used?"

Answer: Yes.

(2) "What number of turns will I need for the aerial coil 'L1' when L2 is 47 turns on a three-inch diameter former?"

Answer: Twenty turns.

(3) "Could I use a .0005 midget condenser for 'reaction control' if so how many turns of wire will I need for the reaction coil, if wound on a three-inch former?"

Answer: Yes, midget can be used. Place a fixed condenser of .00025 or less in parallel with it. Excitement may be necessary to arrive at best value. No need to alter coil if this is done.

(4) "Is it necessary to earth the shielding?"

Answer: Yes.

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QUERY COUPON. If you are in difficulties about reception or set-construction, let us know, and we will endeavor to give you a right to the point, and, where possible, show layout and wiring design Under circumstances, we will answer to queries by letter or by telephone. All answers will appear in the columns of this department. Please answer the queries in order to facilitate the information service. I enclose the coupon in order to facilitate the information service. I enclose the coupon in order to facilitate the information service. I enclose the coupon in order to facilitate the information service.

Answer: Yes.

51 "Is it necessary to shield the detector stage as well as the R.F. side?"
Answer: It is preferable.

H.A.A. (Arimdale).—Is receiver screened efficiently? This may be cause of trouble with the S.G. valve.
J.S. (Braidwood).—Probably local interference on the same frequency as the station.

M.C. (Balmain).—"I have an 'Improved Countryman's One Valve' published in WIRELESS WEEKLY of June 21, and wish to add one stage of audio amplification for loud-speaker results. Please advise me how to do so."

Answer: Circuit of Countryman's One, with stage of audio added, appeared in queries columns quite recently.

GENERAL.—Mr. W. B. Henry, "Philomena," Inverness Street, Waverley, writes: "Would some reader who has built the All-Empire short-wave receiver described in 'WIRELESS WEEKLY' on July 27, 1928, please get in touch with me. If possible, I should like to hear from a reader in Bronte, Waverley, Olovelly, Randwick, or Coogee."

E.V.D.C. (Arncliffe).—"I have a five-valve neodyne, and as I find it much too expensive to electrify the receiver, will you please advise if I could use a Philips' B and C eliminator and an Emmco A eliminator, working off the one plug?"

Answer: Yes, quite O.K. One only matter—in your letter you said "Emmco filament transformer." I took this to mean "A eliminator." If you do refer to the filament transformer, this arrangement cannot be used unless you rectify the output from the transformer, and filter it—a very difficult

proceeding. The transformer is made to supply A.C. for the filaments of A.C. valves.

READER (Maitland).—"I have a five-valve Neodyne, but find I cannot separate two stations, who are within five metres of each other. Will you please advise."

Answer: Try midget condenser in series with aerial, or decrease coupling between primary and secondary.
GENERAL.—Can any reader please supply Mr. J. A. Angel, "Glengarry," Merimal, via Rockborough, Queensland, with copy of "WIRELESS WEEKLY" dated January 11.

J.A.A. (Queensland).—January 15 copy forwarded. See also above. S.G. valves O.K.

GENERAL.—Mr. S. L. Carter, of May Street, Dangar Village, Narrabri, wishes to obtain a copy of "WIRELESS WEEKLY" containing the 1928 Browning Drake circuit. Can any reader oblige, please?"

N.Z. Amateur Experimenters

BELOW appears a complete list of all the New Zealand amateur call signs and addresses. This list, used in conjunction with the supplement recently issued, will make the record complete.

Kilocycles.	Approximate Metres.	Conditions of Use.
1.750—2,000	150—172	Open to all amateurs.
3,500—4,000	75—85.7	Do. Do.
7,000—7,300	41.1—42.9	Permission required from District Radio Inspector.
14,000—14,400	20.83—21.43	Do. Do.
28,000—30,000	10—10.71	Do. Do.
56,000—60,000	5—5.36	Do. Do.

AUCKLAND.

- | Call Sign. | Licensee. | Address. |
|------------|---|--|
| ZL1FP | G. S. Anchor. | 8 Queen's Avenue, Frankton Junction. |
| ZL1AN | H. B. M. Arthur. | 34 Lawrence Street, Herne Bay. |
| ZL1FZ | Auckland Grammar School (G. M.B. Salt, Science Master). | Mountain Road, Mt. Eden, Auckland. |
| ZL1AY | N. S. Barnaby. | 51 Grange Road, Mt. Eden, Auckland. |
| ZL1AL | R. G. Bartrum. | 5 Russel Street, Devonport. |
| ZL1BB | R. Beazley. | 19 Alexandra Avenue, Mt. Albert. |
| ZL1AC | C. L. Button. | 20 Tainui Road, Devonport. |
| ZL1AK | W. H. Claxton. | Parawal, Thames. |
| ZL1FO | E. R. Cooper. | 8 London Street, Ponsonby, Auckland. |
| ZL1FY | N. C. Curtis. | Whataro, Northern Wairoa. |
| ZL1FS | L. R. Dickson. | 3 Gorry Avenue, Epsom, Auckland. |
| ZL1AA | C. N. Edwards. | 7 Arnold Street, Grey Lynn. |
| ZL1FV | A. Evans. | Wairoa Road, Papakura. |
| ZL1FC | S. Goodwill. | Jocelyn Street, Te Puke. |
| ZL1FR | G. T. Guide. | Hospital Hill, Opoitiki. |
| ZL1FC | N. O. Guide. | Hospital Hill, Opoitiki. |
| ZL1FK | S. M. Y. Hamlin. | Mt. Wellington Highway, Ellerslie. |
| ZL1FR | L. W. Harris. | 103 Princes Street, Onehunga. |
| ZL1AH | Messrs. Hartle and Gray. | 7 Alten Road, Auckland. |
| ZL1BH | A. H. Hudson. | 15 Mt. Hobson Road, Remuera. |
| ZL1AM | J. C. Isherwood. | 17 Clyde Street, Whangarei. |
| ZL1BJ | R. M. Jackson. | National Bank of N.Z., Ltd., Queen Street, Onehunga. |
| ZL1AD | Leys Institute. | St. Mary's Road, Ponsonby. |
| ZL1FG | J. Lonsdale. | 11 Anne Street, Devonport. |
| ZL1AW | R. Lyons. | Mangatawhiri Valley. |
| ZL1BE | E. K. McKay. | Selwyn Road, Kohlmarama, Auckland. |
| ZL1AR | L. M. Mellars. | 18 Station Road, Remuera. |
| ZL1BC | W. E. F. Mickelborough. | 204 Great North Road, Grey Lynn. |
| ZL1AX | R. J. Orbell. | 10 Beaconsfield Street, Devonport. |
| ZL1BF | A. L. Pattelov. | 52 Brighton Road, Parnell. |
| ZL1AV | F. C. Reardon. | 1544 Hobson Street, Auckland. |
| ZL1AG | F. Roberts. | 24 Kimberley Road, Epsom. |
| ZL1AE | R. V. Roberts. | 59 Hepburn Street, Ponsonby. |
| ZL1FJ | W. J. Sexton. | 14 Ethel Street, Edendale, Auckland. |
| ZL1AJ | N. C. Shepherd. | 1 Norths Road, Whangarei. |
| ZL1FH | J. Steele. | "Linwood," Earnoch Avenue, Takapuna. |
| ZL1AT | G. S. Swain. | Maheo Street, Te Awamutu. |
| ZL1BA | R. J. Taylor. | 2 Fremont Street, Parnell. |
| ZL1BG | Dr. B. G. Thompson. | Sanatorium Grounds, Rotorua. |
| ZL1FX | J. H. L. Trenwith. | 19 Bellwood Avenue, Mount Eden. |
| ZL1BJ | J. R. Turnbull. | 47 Beresford Street, Bayswater. |
| ZL1BD | W. H. Wadham. | 16 Dunkerron Avenue, Epsom. |
| ZL1FT | N. N. Wadding. | 64 Hepburn Street, Ponsonby. |
| ZL1FM | J. E. B. Warn. | Gorrie Avenue, Epsom. |
| ZL1AQ | White Island Products Ltd. | Sulphur Point, |

- Tauranga.
- ZL1FA—White Island Products Ltd., White Island.
 - ZL1FU—G. D. White, Bridge Street, Opoitiki.
 - ZL1FF—L. W. White, 3 Veronica Avenue, Mt. Albert.
 - ZL1AO—R. G. White, 9 Veronica Avenue, Mt. Albert.
 - ZL1FW—E. Whately, 1 Haiston Road, Dominion Road.
 - ZL1AP—N. J. Winch, Broady Street, Te Awamutu.
 - ZL1FE—A. F. Wood, P.W. Station, Waihou.

WELLINGTON.

- ZL1GD—B. R. Adair, 120 Sheehan Street, Gisborne.
- ZL1AP—J. L. Armstrong, Mangataniwha, Wairoa.
- ZL1BY—C. T. Berry, 20 Rata Street, Wanganui.
- ZL1GH—J. V. Berry, 74 Harrison Street, Wanganui.
- ZL1EY—F. D. Bitossi, 49 Durham Street, Wellington.
- ZL1BX—R. G. Black, 21 Karepa Street, Brooklyn, Wellington.
- ZL1AS—H. R. Boyle, 370 Main Road, Karori, Wellington.
- ZL1AA—A. S. Brown, 14 Grant Street, Dannevirke.
- ZL1GG—C. H. Brown, 70 Wallace Street, Wellington.
- ZL1AM—W. F. Bulst, cnr. Collins and High Streets, Hawera.
- ZL1AV—R. G. Chaffield, 42 Raroa Road, Keiburo, Wellington.
- ZL1AW—C. R. Clarke, 91 Apu Crescent, Lyall Bay, Wellington.
- ZL1AK—A. M'D. Cooper, 32 Upland Road, Keiburo, Wellington.
- ZL1AQ—M. W. Coutts, Goldfinch Street, Taihape.
- ZL1BA—F. T. Cropp, 17 Mason Street, Lower Hutt, Wellington.
- ZL1BO—H. C. Dixon, 36 Devon Street, Wellington.
- ZL1BU—J. F. Donald, 27 Marion Street, Wellington.
- ZL1GJ—K. L. Elliott, Hadfield House, Collegiate School, Wanganui.
- ZL1GO—H. G. G. Fowles, 110 Riddiford Street, Wellington South.
- ZL1GI—M. T. Gabriel, 80 Grey Street, Palmerston North.
- ZL1BZ—O. W. Gillion, 17 Wilson Street, Hawera.
- ZL1GS—H. E. M. Green, Clifford Road, Johnsonville.
- ZL1GR—W. S. Green, 13 Washington Avenue, Brooklyn.
- ZL1BH—W. M. Hall, 46 Tarakaka Street, Ngaio, Wellington.
- ZL1GC—A. Howarth, 12 High Street, Dannevirke.
- ZL1GQ—F. I. R. Hunt, 221 Clifford Street, Gisborne.
- ZL1GA—J. Johnson, Fortunatus Street, Brooklyn, Wellington.
- ZL1BJ—A. V. Jury, Papawai, Greytown.
- ZL1AX—J. V. Kyle, 30 Waldegrave Street, Palmerston North.
- ZL1BR—K. V. Lambert, Belmont, Tayforth, Wanganui.
- ZL1BV—F. J. K. Lane, 31 Manawatu Street, Palmerston North.
- ZL1BI—C. G. Liddell, 45 Puru Crescent, Lyall Bay, Wellington.
- ZL1BB—J. A. Lynn, 414 Lyndon Road, Hastings.
- ZL1GI—E. L. MacGregor, Windsor Hill, Waipawa.
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- ZL1GE—G. E. Tyler, Chamber Street, Napier.
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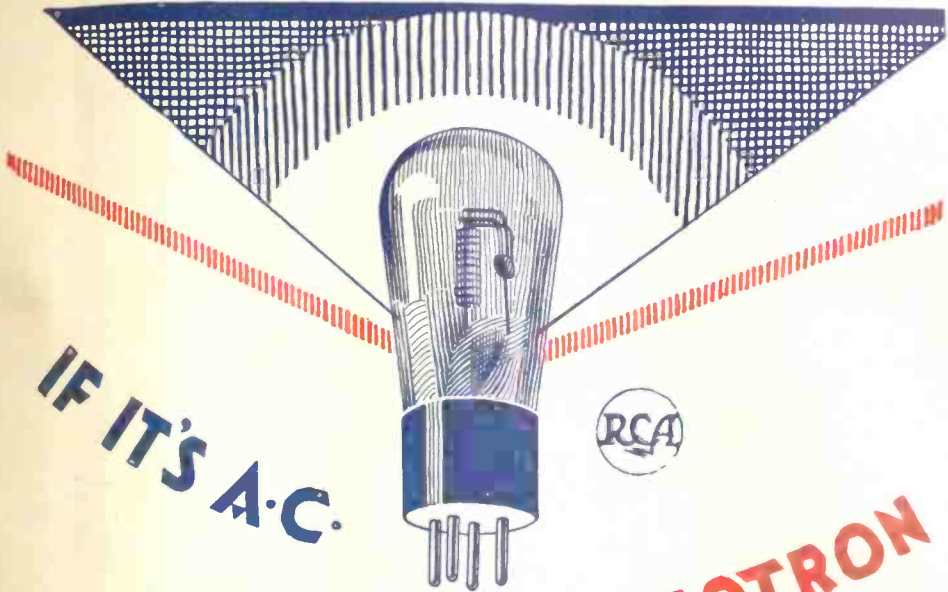
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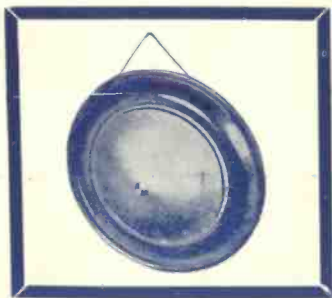
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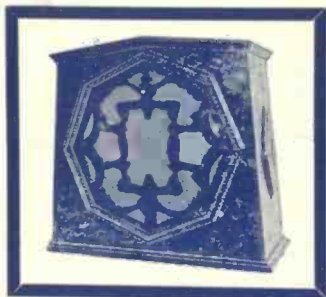


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