

Ross A. Hull (Late QST), New Technical Editor

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PHILIPS

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E415

**GENERAL
PURPOSE**

How to Make
Your Receiver
PERFORM

By ROSS A. HULL

—
THE DEVELOPMENT
OF THE RAYCO-PHONE

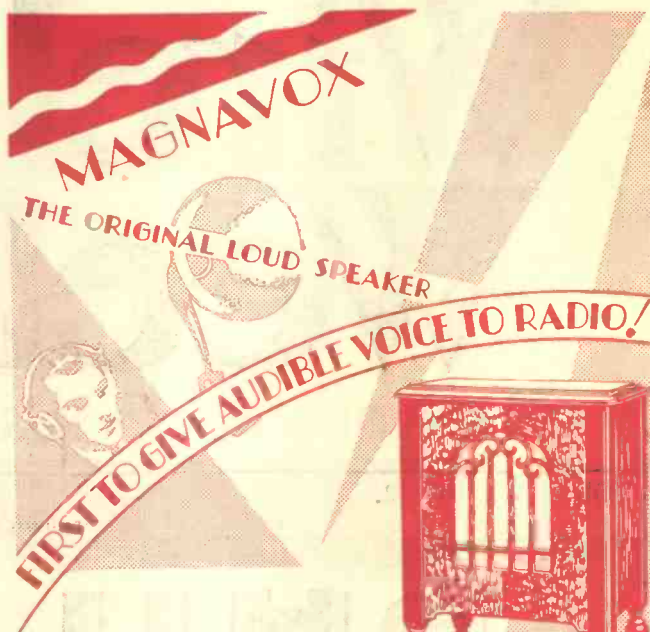
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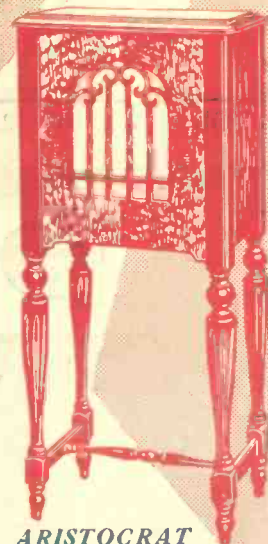
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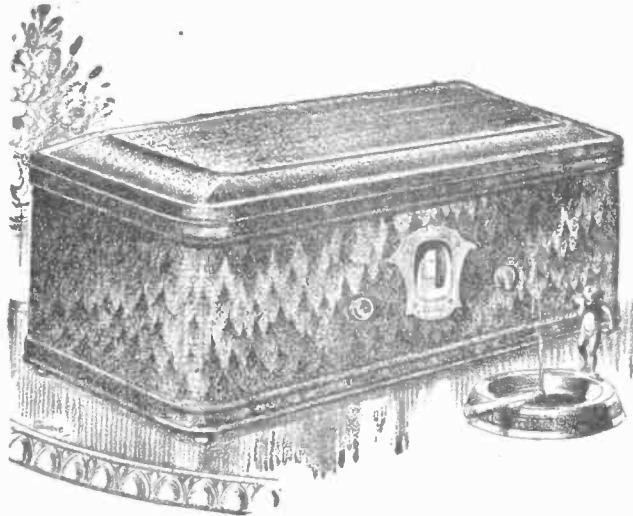
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(Signed) Frank Doble

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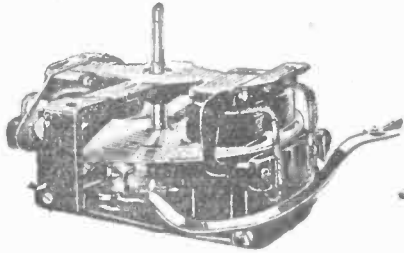
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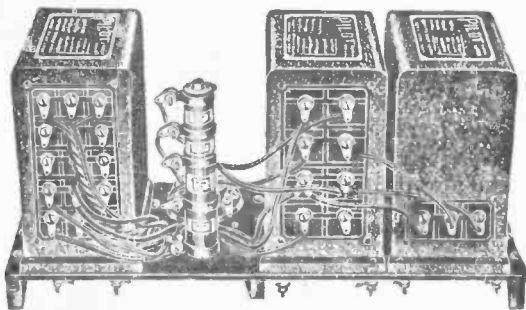
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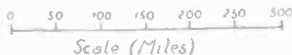
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PLANNING RELAY STATIONS



Where will the N.S.W. Relay Stations be situated, and how soon will they be operating? This pertinent question is on the lips of all country listeners to-day.

By H. W. JOHNSON

The towns shown above have been mentioned as centres for proposed relay stations. A circle, 150 miles (maximum service range) has been drawn around each to indicate area which would be covered.

THE long expected preliminaries of the introduction of the Government scheme of broadcasting have been taken. A contract has been let for the programme services, and tenders have also been accepted for the construction of new stations. At least two stations are to be established, so the official announcement indicates. It also appears that three or four other stations are to be established during the next year or so.

The establishment of relay stations is probably the reason for the acceptance of the tenders referred to, and although no official announcement has been made regarding the districts which are to secure the relay stations, speculation is rife in the matter, and the claims of different districts are being urged.

The importance of stations in the country districts has been stressed from time to time in these columns, and it is encouraging to listeners generally to see that the Government is regarding the matter in the same light of urgency. Listeners in or near the capital cities are receiving a good service from the stations so far as transmission is concerned, but the country listeners cannot claim that the service they receive is a satisfactory one.

What is meant by a "satisfactory service"? Undoubtedly it means a service which enables an average receiver to reproduce the music louder than any extraneous noises, with the exception of abnormal atmospheric disturbances.

In order to ensure this volume of music in the loud-speaker, or signal strength as it may be technically termed (although not correctly stated in reference to the loud-speaker output), the only safe step to take is to bring the receiver nearer the transmitter. Hence the practice which has grown up in countries of establishing relaying stations, or regional stations, or subsidiary stations, as they are variously called. From these subsidiary stations the programme of the main station or stations is broadcast simultaneously, having been

relayed over telephone lines to the subsidiary stations. Thus in England a considerable portion of the service of a whole of the 21 stations is known as "S.B."—that is, simultaneous broadcasts from all stations of a programme from the London studios. Also in America, the National Broadcasting Corporation arranges a backbone of programme in its New York studios, which programme is relayed over thousands of miles of telephone wires to different stations in the various States.

In the Australian States, the number of subsidiary or relay stations that would be required to enable all listeners to come within a reasonable service area of the station would be prohibitive financially. For instance, there are some listeners in the outback, who are hundreds of miles from any settled group of population, and obviously it would be impracticable to bring all those listeners within a service area guaranteeing reasonable signal strength.

In America and in England the grades of service constituting excellent, good, and fair service have been determined in terms of signal strength, and generally it is assumed that no station, whatever its power, will give a good service beyond a distance of 150 miles from the transmitter. Such a statement will seem surprising to many people who listen to our capital city stations at distances ranging up to 1000 miles. A SERVICE, however, means a service which is reliable day and night throughout the year, and as there is a period during the summer months when the noise level, that is, the volume of atmospheric and other noises, is very high, the conditions demand a higher signal level than may be needed in the winter months, when the noise level is lower.

The reason for taking a distance of 150 miles as the limit of satisfactory service is based mainly on the occurrence of the annoying feature of fading, which is so prevalent after sunset. Except on the long wave lengths, that is over 700 or 800 metres, the fading of signals from broadcasting stations is practically incurable, owing to the fact of the indirect radiation reflected from the Heaviside layer. Whether the station be of 5 or 50 kilowatts in the aerial, this fading effect will occur, and, consequently, it is necessary in an ideal system to ensure the every listener is within 150 miles from a fairly powerful transmitter.

From time to time references have been made to the suitability of certain towns for the establishment of relay stations. The New South Wales Broadcasting Company frequently expressed its desire to establish relay stations, and has indicated at least indirectly an opinion that the stations should be in one or more of the following districts:

Grafton, Tamworth, Dubbo, Goulburn, and Wagga.

Such a distribution of stations indicates a careful study of the conditions, and would probably result in the whole of New South Wales being well served, with the exception, of course, of isolated localities where, owing to distance or peculiar local conditions, the signal strength would not be entirely satisfactory. The final determination of the proper location of the stations would no doubt be made after closer consideration of conditions relating to the practicability of obtaining suitable electric power, the local geological conditions which might affect detrimentally the radiation from the station, and the relation between the population to be served and the location of the station.



BETWEEN YOU AND ME AND THE MICROPHONE

*Sing a Song of Tenders,
Tenders low and high;
Broadcasting Tenders—
Departmental Pic!*

*Now the Pic is opened;
Soon the Birds will sing
We hope they'll all be Songsters
To set before a King!*

THE Nerve Centre of Broadcasting," ran the manifesto, "so far as its future in Sydney is concerned, has now been definitely established at the Film House, Pitt Street."

We were always interested in Nerve Centres; also, Men Behind the Guns; also, They Who Work while the City Sleeps. So we raced round to Film House, Pitt Street, went up in the lift to the second floor, stepped off on a nice-looking piece of grey concrete, and looked about, anxiously, for a Sign. There it was, on the right-hand side — "Australian Broadcasting Company, Limited (In Formation)," painted neatly on a slice of cardboard, neatly tacked to one of the brown swing doors. We drew our breath in the best manner of the Detective's Young Assistant. Behind those doors hung the future of Australian Broadcasting. Behind those doors palpitated the Heart of a New National System, which was just forming itself into life, in preparation for overrunning the whole community and speaking its daily words of cheer and information to an eager Public. Behind those doors . . .

As we were saying, behind those doors is a long corridor of grey concrete. On the one side is a wall, on the other side are partitions of brown wood and glass. We noticed, as we hurried down the corridor, a door marked "Board Room," with a sign neatly painted on a slice of cardboard. And

then we were looking into someone's eyes, and she was looking into ours.

"Mr. Anderson in? Mr. Williams in?" we double-barrelled. "Just a moment I'll see," she slurred. "Goodoh!" we grunted. "Where's he from? What's he want?" said Mr. Anderson's voice through the partition. "Tellm Wilssweekly," we snapped. "Wilssweekly," she echoed. "Tell it to come in," sighed Mr. Anderson. We put our head round the door and drew ourselves after it.

The room was just about as long as from here to there, and not quite so wide. Two tables were placed back to back under the window, and Mr. Anderson sat at one side, and Mr. Williams sat at the other, so that they faced each other, thus ensuring themselves pleasant views when a lapse in their labors gave them time to look up. Mr. Anderson's secretary, Miss Harris, typed busily oppo-



liams; but we knew he was too great a gentleman to make any objection. True, he did answer our question. "Yes; a fine radiator—when you feel it"; but, well, anyhow, we remained where we were. Hide—you ask Mr. Stuart Doyle, if you dare—is the chief requisite in people who write. We make the most of our small endowment.

Mr. Anderson finished writing and signing things as though his life depended on it and said, "Well, what can we do for you?" If he had said, "Well, HOW can we do for you?" we might have believed him. Anyhow, we talked together of various dark and secret things, and of plans and arrangements and ideas and artists—he had just finished dealing with six hundred artists' applications—and we talked of programmes and times, and New Ideas and New Movements—all things which it were better we should not disclose. Then we rose, looked regretfully at the radiator, smiled sweetly to Mr. Anderson, who was warming his hands in front of it; said good-bye to Mr. Williams, who was pursing his lips over a long sheet of figures, and passed out. In the corridor we paused. There were partitions on all sides, and all kinds of offices. We supposed that office with the light on was the home of the mysterious man with the thin black hair, who had looked in several times during our past conversation. Was anyone in the Board Room? Should we have seen someone we didn't see? Should we have asked something we didn't ask? What on earth was happening behind those partitions? Pity Mr. Doyle wouldn't make some more announcements about his staff! "Are you wanting anything?" asked the girl.

We went out through the swing doors. We passed through the swing doors on the
(Continued on Page 8.)

Listeners We All Know—No. 5



HERE is a portrait of the Radio Fan—a fine conception. Here you see the Radio Fan listening-in to one hundred stations, one after the other; we mean; for to hint that he gets more than one station at the one time is to strike at the foundations of the Radio Fan's respectability.

He keeps the dials moving all day and all night; and classifies each new station as it comes in, and writes some sort of strange formula on a strange card to each strange station he receives. He likes to tell his friends. "JOBK came in well last night." Or "WSKN was lifting the roof off yesterday morning." He says, "What were they playing?" He says, "Mississippi Mud," on the Wurlitzer.

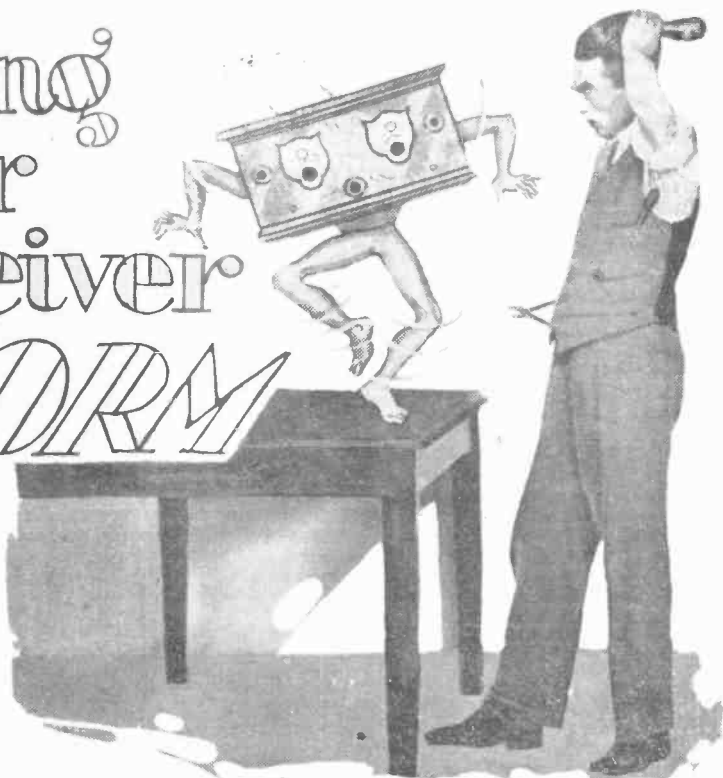
His friends, and relatives who live with him, wear the expectant air of people who are waiting to hear the end of something. If you whistle them an air they say, "Oh, I wondered if it would end like that! I heard the first part of it (or the middle or last part of it, as the case may be) last night; but Bill (or Bob or Jack or Henry) tuned it out. He said it was time to get London."

"Wireless Weekly" is afraid that Radio may bring up a generation of people who will be able to recognise music only in scattered bars!

sitate the door; and Miss Fay, dainty fayry, Mr. Williams's secretary, typed just as busily at the side of the door.

"Good day, Wireless Weekly," said Mr. Anderson. "Oh, it's you? What's the best news?" said Mr. Williams. "This is a beautiful radiator," we said, and drew up a chair right in front of it, because it was a cold day. We noticed that, sitting in front of the radiator as we were, we were diverting all the heat from Mr. Wil-

Making Your Receiver PERFORM



Your radio should reproduce MUSIC in all its brilliance and charm. This article outlines the problems involved in lifting radio reproduction to a status in keeping with our day and age.

By ROSS A. HULL

LET us start by stating that this is not to be one of those "change the grid-leak and if that doesn't help try increasing the grid bias" sort of articles. We feel that the making of a dead set operate, or the fixing of a poor set to yodel as it was supposed to yodel, has been very well detailed in the recent past—so well detailed that nothing we could say at the moment would be a worth-while addition.

We are concerned this time with the bigger issue—that of making the receiver perform in the very best sense of that word "To perform" at least means to render, represent, or reproduce. Its significance, in musical circles at any rate, also includes a few extra considerations. "To perform" in that case means to render, represent, or reproduce splendidly—with a devil of a lot of brilliance, charm, and beauty. "Well, if that is the meaning of perform," some may say, "how in the world can you talk of a radio set with one hand and a performance with the other." And that is just what we are getting at.

LIMITING PROGRESS.

Australians in general have the idea that a radio set is a device suitable for making noises like people singing and playing, and because of that (and also since it gurgles race results and bedtime stories) it is a good sort of thing to have around the place. We plan to insist most emphatically, and to continue to insist as long as we are able, that this impression, deeply encrusted on the minds of most listeners, is all wrong—that is most unfortunate, and that it is one important factor which is to-day limiting the progress of broadcasting in this country.

Since our return from America we have managed to hear a considerable quantity of the sort of stuff that is still considered to be

interest they took in the thing that was.

good performances for a radio receiver. With two possible exceptions it was just—well—noises like people singing and playing. It was certainly no more. Which, in other words, is just what it was in Australia three or four years ago, and in America, and probably Europe. I should guess, during the radio stone age.

Of course a great deal of the responsibility has been with the broadcasting stations. No receiver can be expected to "perform" when the people in the studio are only "playing," particularly when the transmitter itself is also taking a chunk out of the little charm that did exist. At the same time it is quite evident that the receivers have been doing their share in making reception the pitiful thing it is. They have not even been equipped to render, represent, or reproduce faithfully the little that is received.

The stations could again be held responsible for this, of course, since it could be said (and is) that listeners have not been prepared to pay the price of real reproduction, when even that wouldn't have been genuinely pleasurable.

PERFORMANCE POSSIBLE.

We have very excellent reasons to believe that in the future broadcasting from a technical standpoint, will be lifted to a status somewhat in keeping with the year and age in which we live. At that time—we wax enthusiastic at the prospect—it will be possible for broadcast reception to come into its own as pure entertainment, and Australians will, we think, come to feel surprised at the in-

This revolution in mental attitude will never be possible, however, without a drastic clean-up of present receiving gear, for the representative Australian set in use to-day is capable of revolving no one's mental attitude, even if the receiver be fed with the acme of broadcast perfection. The Australian receiver must be taught to perform—with that word used in its most emphatic and brilliant sense.

We have already suggested that a good performance is something of brilliance and charm, but, since we are to do a lot of talking about the thing in this and future issues of WIRELESS WEEKLY, we will have to

VIBRATION AND PITCH.

detail it in radio language.

Sound, the thing that makes or unmakes music, is, of course, the effect on our ears and brain of vibrations or oscillatory pressures in the air. The number of these vibrations in a given space of time is the thing that governs the pitch of the sound. Thus, if the air is caused to vibrate or oscillate 28 times in a second, the pitch of the sound would be very low—about as low as that produced by the bottom note of a piano. If the frequency of the vibrations is 256 per second the sound will correspond in pitch to middle C on the piano. A vibration of five or six thousand per second will produce a pitch of sound equivalent to that of the highest notes of the piano. Should the frequency be run still higher the pitch will continue to go higher until the point is reached (usually at about ten or eleven thousand vibrations or cycles per second) where it will go out of audibility.

HAVE OUR EARS BECOME ACCUSTOMED

COLOR IN INSTRUMENTS.

But this is only part of the story. It is well known that two notes having the same pitch may differ completely in quality or timbre. A note on a saxophone is quite different, for instance, from the same note on a cornet. All the instruments of an orchestra could make sounds of the same pitch, but each of them could be distinguished by a listener at all familiar with them. The reason for this distinction between the sounds generated by different musical instruments, or by different voices, is that the sounds are caused not only by the air vibration that determines the pitch, but also by other vibrations superimposed on them.

The vibration that sets the pitch is termed the fundamental, while the other vibrations responsible for the quality or timbre are called harmonics or overtones. The frequency of the latter vibrations is always higher than those of the fundamental, and for this reason, as we are to see later, they are of the greatest consequence in any consideration of radio reception. The chief thing to be kept in mind is that in musical rendition vibrations are generated which vary in frequency all the way from about 28 cycles per second up to about 10,000—that if the receiver is ever to perform it must be capable of responding satisfactorily to all of these frequencies.

DISTORTION, AND HOW!

Radio receivers of several years ago (and most outfits in present use in Australia) were capable of responding to frequencies between about 150 and 5000 cycles per second. Most of them respond, to any satisfactory degree, only between about 200 and 4000 cycles. In almost every case there is a band of frequencies at about 2000 cycles, to which the set responds with particular violence.

The net result, irrespective of how excellent the broadcast transmission may be, is music and voice noises which are thin, shrill, and tinny. The fact that the receiver drops the low and high frequencies means that the men with the bass saxophone, the bass violin, and the stack of drums don't amount to a row of beans. It means that the studio grand might as well have had its ends broken off by the furniture movers. It means that whatever charm of quality or timbre existed in the original rendition has been squelched by that curse of all curses—a poor radio receiver.

The chief difficulty (we see it quite clearly) is that of convincing the average listener that all of this is true. We have the pleasure of knowing, for instance, some sincere folks who have been ardent and quite typical listeners for some years. At the present time they have the very same receiver and speaker that they had four years ago, and no amount of talking will convince them that the miserable raucous noises that the thing

produces do not constitute music. Through constant listening to the wretched stuff they have developed a distorted sense of hearing that apparently makes music out of junk.

The very same thing, of course, was common a few years ago in connection with the gramophone—an instrument which then had about as few musical possibilities as Australia's present radio sets. If gramophone enthusiasts of those days had been told that the noises they enthused about were shrill and horribly distorted versions of the original music they would have been emphatic in their defence of their machine and its "music."

Any such individuals who have become used to the enormously improved output of the modern gramophone, with its electrical reproduction or exponential type horn, undoubtedly shudder, as we do, when we hear a machine of the old type with its mechanically recorded discs. They are surely amaz-

"It is quite an interesting game listening to radio reproduction and endeavouring to guess what frequencies are missing, and which are particularly accentuated," writes Mr. Hull. This article will make you conscious of defects in reproduction.



ed, as we are, that we ever thought the old stuff music. The relationship between the average present-day Australian reception and the average American reception is about the same as that of the old and the new type gramophone. Is it to be wondered at that we are prone to let our enthusiasm run wild on the matter of radio reproduction?

SATISFYING THE EAR.

Of course, it is to be admitted that very few receivers in this or any other country actually provide even reproduction of all audible frequencies. The human ear is not very susceptible to changes in the strength or amplitude of air vibrations, and it is possible for the receiver to respond twice as well to some frequencies as to others without the untrained ear noticing the fact.

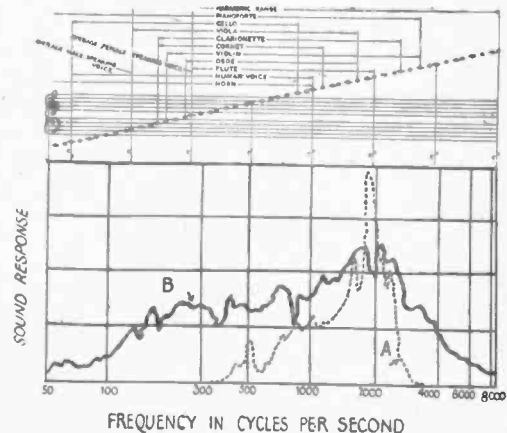
Let us consider the actual response of a very good modern receiver fitted with a desirable type of moving-coil speaker. The curvy line shown in the diagram under the musical scale is the technical

way of representing such a response. It is just a simple graph, with the frequency of the air vibrations in cycles per second shown along the bottom line. The response of the moving-coil speaker is indicated by the solid line its height above the bottom line at any particular frequency being equivalent to its response to a note of that pitch. It can be seen that the response at 50 cycles (a low note) is very much less than at 300 cycles (a medium note), while the response at about 2000 cycles (a high note) is higher than at any other point. Such a curve, though quite a representative one, need not be disturbing, since a speaker with those characteristics would be considered a very fine one indeed. When used with a modern receiver to listen to a real broadcasting station it would perform splendidly. Let us contrast it with the old type of horn speaker, a representative response of which is indicated by the dotted line.

In this case all the low frequencies are lost completely; all the high frequencies, so valuable in the creation of quality and timbre, are missing, while at about 2000 cycles a terrific peak exists. The output of this speaker, even from the best broadcasting, would be thin, tinny, and nasal. The response curve depicted by the curve "B," in which all frequencies from at least 8000 down to 50 are reproduced with a fair degree of similarity, would permit full and mellow reproduction of music so long as all of these frequencies were being passed by the equipment at the broadcasting station. If the low frequencies were reproduced poorly (even frequencies below about 150 cycles), the music would lose fullness and body, while if the frequencies above about three or four thousand were weak or missing the reproduction would be lacking in crispness and distinctness.

THE MISSING FREQUENCIES.

It is quite an interesting game listening to radio reproduction and endeavoring to guess what frequencies are missing and which are particularly accentuated. If measuring



FREQUENCY IN CYCLES PER SECOND
This graph and diagram illustrate frequency characteristics of a modern loud speaker contrasted with that of an old horn type.

TO POOR RECEPTION ON RADIO SETS?

equipment is available with which to check up the guesses, some striking deductions may be made. It is found, for instance, that there is a sort of centre frequency above and below which a balance must be maintained if pleasing reproduction is to result. When a loud speaker has insufficient response to the low frequencies and a high response to the high frequencies it sounds shrill and thin. If, however, the response to the high frequencies is cut back the reproduction sounds much more pleasing, the effect being similar to that of increasing the output for the low frequencies.

Of course, the net result, though pleasing, cannot be considered a good performance, since the process has merely been one of introducing one form of distortion to offset another. The old idea of shunting transformers with condensers "to improve reproduction" was nothing more than this clipping of high notes to mellow down the result.

A great many receivers have been sold to unsuspecting buyers just because this balancing of distortion made the noise a pleasant one. The noise, though pleasant, is in reality dead, uninteresting, and muffled, as the unfortunate buyers often realised after a few hours. Another stunt which is used by some set manufacturers to make their receivers sound well is to introduce a definite peak in the reproduction of frequencies of the order of 200 cycles. This peak gives the first impression that all low frequencies come through well, and that the receiver is, therefore, of a modern design.

After a short time, however, it is found that the reproduction is drummy and booming in character. Certain notes are found to be tantalising by their continual loudness. Yet another stunt is to add to this low frequency peak a high frequency one at about 3000 cycles. The effect in this case is to relieve the booming to some extent, but to add a crispness which, after prolonged listening, shows up as a roughness and a rattle on the high notes. The point

interesting study, but one which is essential to enthusiasts who hope to bring the reproduction of their old receivers up to a high standard.

SCRAPPING OLD SPEAKERS

The first necessity, if the receiver is to be made to perform, is a fine speaker. At the moment this means a speaker of one of three types. If the very finest reproduction is the object a moving-coil cone type speaker is to be preferred. If such a unit is beyond the price limit there is no need to be disheartened. A good cone speaker of the ordinary type, preferably fitted with a baffle, can still be considered in the "performer" class. Then there is the exponential type of horn speaker (a small version of the speakers used in the "talkies"). Such a speaker is bulky, perhaps, but if it is fitted with a high-grade reproducing unit, it, too, is capable of a performance in the best sense of the word.

A high-grade speaker is an absolute es-

it must include valves of a type for which the transformers were designed—valves operating with exactly the plate and grid voltages specified by the makers. Further, it must include, as the output amplifier, a valve capable of producing a considerable undistorted power output. The actual power necessary varies with the type of speaker, and the size of the room in which it is to be operated. If the speaker is one which has a

good response to the low frequencies, however, and if it is to be used in a medium-sized room, it is certain that the output must be at least 500 milliwatts, or one-half watt. In engineering circles even this figure is

considered too low. Almost all modern American factory-built receivers are being provided with output valves, which permit an undistorted output of at least two or three watts, and often five! It is not that five watts of output are required to produce a normal volume of sound on the medium frequencies, but that they are essential if the low tones are to be produced in proportion to the others without distortion.

In case these figures are meaningless to the reader, it can be said that the smallest possible output valve in a modern receiver must be at least the equivalent of a large three-element power valve of English or Continental type, a UX-171-A of the American type, or a large pentode. Valves of lesser power may permit pleasant reproduction, but they will not allow the receiver to perform in the sense of the word that we are to use.

A great many other considerations enter into the business of attaining a performance. There is, for instance, the design of the output circuit of the power valve—the apparatus used to couple it to the speaker. Then there is the location of the speaker in the room. Getting back to the receiver itself, there is the arrangement and adjustment of the detector valve, the provision for by-passing and filtering in the high-voltage leads, and the details of the plate supply system.

Then, even the radio frequency amplifier may limit the attainment of fine reproduction. It is possible (though not very probable here) that the receiver is too selective—that the high frequencies transmitted from the broadcast station are never permitted to reach the detector. Obviously it is impossible to treat these matters in detail in the one article. They are all matters, however, in which we are to interest ourselves deeply. They are matters on which we hope to write frequently and at great length. The solution to the problems of making receivers perform is to be our chief objective. "Reproduction" is to be our middle name.

"The first necessity, if the receiver is to be made to perform, is a fine speaker," writes Mr. Hull, and enlarges upon various types of reproduction. His advice is invaluable to the radio enthusiast who wants first-class reception.



"The men with the bass sax, the big violin, and the stock of drums, simply don't amount to a cup of beans."

essential in any modern receiver, but that is not all. The very finest moving-coil unit can be hitched on to the typical Australian receiver, indeed, and the results can be most disappointing. I know of several individuals who have already tried such speakers, run them for a few evenings, and then classed them as another of "those new-fangled, useless ideas." The point is that the speaker can only function as well as the amplifier and the output circuits of the receiver will permit. If the amplifier is poor, even the very best speaker cannot justify its existence. The amplifier as well as the reproducer must be able to respond fairly evenly to all the audible frequencies, and an amplifier that will do this is quite different from the average present-day affair.

HIGH-GRADE TRANSFORMERS AND VALVES

The amplifier must include, for instance, transformers of the very highest grade. Then



"Those 'DX' nights, when distant stations garbled their call signs way down in the larynx of the loud speaker—"

that we are getting at through all this is that there is an infinite variety of distortion types to be met, which not only form an in-

3DB WILL BE MAINLY A NEWS STATION

IT was first thought that broadcasting would be merely a new form of entertainment, but when the novel and attractive service began to make its advance, the broadcasting companies saw possibilities of usefulness as well as of entertainment in the new medium. And among other services which they set out to give was that of informing their listeners of the latest news. This still forms an important feature of the programmes.

The management of the principal stations have always maintained news services of good quality; in the composition of the items of news and in the completeness of it, there are not many cities where the broadcast news is so well conducted. Early morning sessions, midday sessions, and the night sessions of news are features of the programmes that have come to be recognised as essential. If by any unfortunate chance they were cut out, there would be a chorus of complaints and protests to the Government. Thus, so quietly and unobtrusively has the service grown, that it is to some people more important than most other items in the programme.

In various parts of the world, many newspapers conduct their own broadcasting services. The latest to enter this important field of radio development is the "Herald," which now controls 3DB, Melbourne.

Strange but familiar voices are heard every day from 3DB now. Listeners are wondering why this and why that, and all kinds of rumors are broadcast in train and tram, and in the office and shop, and over the afternoon cup of tea. The well-known voice of "Bobby Bluegum" was spirited away from 3LO to 3DB overnight, and now he is heard no more at 3LO, but delights the children from 3DB. Frank Hatherley and "Little Miss Kookaburra" are also heard from 3DB. Arthur Stigant, the well-known comedian, was the first announcer.

After the first week Stigant sat back and "took stock" of his efforts. This is how he summed up the position:—

"Since I started this job of broadcasting, I have received letters from a lot of people who tell me how to become a really good announcer. I have been told that I should take a course of voice culture, personality, dramatic art, foreign languages, and eurythmics. One correspondent suggests that I would improve my style if I became a vegetarian. Another says that my voice would improve if I took on Dr. Dale's diet. After thinking it all over, I prefer to be a bad announcer."

Acknowledged as the best child impersonator in Australia, Pat McLean, well known to listeners of 3LO, has been broadcasting from 3DB with great success. Pat has added several new numbers to her repertoire since her trip to 5CL recently, and she is heard from 3DB with that delightful charm so characteristic of her efforts at 3LO.

Australian Reports

THE British short-wave experimental station, 5SW, has been transmitting short-wave programmes for the past two years, and the British authorities are anxious to learn how the programmes have been received in Australia.

They are particularly interested in the strength and quality of reception, the times of day the transmissions are received in summer and in winter, and whether they are received regularly or spasmodically.

The British authorities have issued an appeal asking listeners to report to Amalgamated Wireless, Sydney, on reception of 5SW. Amalgamated Wireless will collate the reports and forward them to the British authorities.

Between You and Me and the Microphone

(Continued from page 4.)

opposite side. We went in to see Miss Yahl, Mr. Doyle's secretary. Was Mr. Doyle in? Yes; but there was a board meeting. Would we wait on the seat outside? We waited for three-quarters of an hour; then Mr. Doyle saw us. The office is comfortable, and contains many desks and a dictaphone, and all those sorts of things. Carpets, pictures of yachts and motor launches, clocks, photographs—Will Prior, Price Dunlavy, Fred Scholl, Ted Henkel—all the boys. We sat down, at Mr. Doyle's invitation, very much in a heap, very subdued, very careful; wondering what in the hell we wanted to ask before we came in. Mr. Doyle asks us what we wanted to ask. We say something about nothing. Then we remember. We wanted to ask about future appointments. But dare we? Can we? Should we? Are there any? Is it worth while? What a peculiar clock that is, set in a ball of glass! "Yes, Mr. Doyle. We were wondering if there were any more appointments made yet. You see, our readers . . ."

We go out, feeling wonderfully well. Mr. Doyle has talked to us. Mr. Doyle has smiled with us. Mr. Doyle has understood our point of view. Mr. Doyle has shaken us by the hand. Mr. Doyle has asked us what we think about it all. Us! Humble Us! We walk happily down the corridor, throw open the swing doors, and float out into the street.

Then we come back to WIRELESS WEEKLY. "Got anything?" asks the editor. We tell him what we've got. "Good Lord!" says the editor, "we'll have to get more than that! Why, I've heard that . . . Didn't you get anything about that?" Then we become deflated. Then we sit down at our little desk, and write what you have just been reading.

If Life is all a Questioning, it's hardly justified by results.

James

:: BROADCAST ENGLISH ::

(By C. N. BAEYERTZ)

Mr. C. N. BAEYERTZ founded the "Triad," and edited it brilliantly for over thirty years. He is the author of a standard work, "Correct English Public Speaking, Elocution, and Voice Production," and of "Voice Culture for Speakers and Singers." The following is a brief summary of his remarks during a talk from 2FC, on "Broadcast English; Recommendations to Announcers," published by the B.B.C., and reprinted by the New South Wales Broadcasting Company, Limited.



IT seems that certain lewd fellows of the baser sort have, with a plentiful lack of knowledge, ridiculed the recommendations to announcers published by the B.B.C. which were made as the result of the advice of a committee consisting of the Poet Laureate, Bernard Shaw, Forbes-Robertson, Pearsall Smith, Daniel Jones, and Lloyd James—a committee speaking with authority, and not as the scribes.

There is a widespread superstition that the pronunciation of English words is fixed by the dictionary. Even the Oxford English Dictionary, that monument of scholarship, that court of ultimate conjecture, as it were, of what was correct when each successive section went to press, cannot stabilise pronunciation of English—the richest in vocabulary of all languages, living or dead.

All living languages are moobile. Neither their idiom nor their pronunciation is stereotyped or susceptible of stabilisation. The good dictionary can merely record the current usage of good speakers, and when that usage differs, the dictionary records the several variations of stress or of vowel sounds. For example, acoustic (a-koos-tik or a-kows-tik), ascetic (a-set-ik or a-seet-ik); laboratory or laboratory, but not lab-rato-ri; envelope or onvelope, and so forth.

On the other hand, there is only one correct pronunciation for many words—the pronunciation, indeed, recommended by the

committee; ate (past tense of eat, et, not ate); bade (past tense of bid, bad, not bade); culinary (kewlinary); gondola, gustatory, inexorable, hejira (hej-via—Mohammed's flight from Mecca to Medina); iodine, short i; lodyne, long i; irreparable (i-rep-arable); lute (lyout); negotiate (ne-go-shi-ate); threnody (three-no-dy, song of lamentation); victualler (vit-ler), and so forth.

Our own patois is certainly not pretty. A few years ago, I submitted to a Sydney magazine editor an article satirising the dictional defects which are so common and so abominable amongst us. The editor read the screed to its somewhat bitter end. Then he straightened himself into a portentous stiffness of conscious virtue, and he said, "It's a mis-ty-eek to sup-powz way spake loike that. We down't."

You may remember the Cockney story of the mother who took her daughter to task before company.

"You musn't s'y 'am 'n heggs. You mus'y 'am 'n heggs."

In an amused aside, the father of the child whispered to the visitor.

"Ain't it a treat! She thinks she's s'yin' 'am, but she ain't. She's s'yin' 'am, too."

It seems to me that sound-blindness or tone-blindness is by far more common than color-blindness; and that is why you hear so much less about it. The color-blind man is the exception; but the tone-blind man is an average fellow.

Developing the RAYCOPHONE

By **RAY ALLSOP**

(Associate Technical Editor, Wireless Weekly.)

How a young Australian wireless engineer produced the first all-Australian talkie installation. This outfit is now being operated in a number of city and suburban theatres and compares more than favorably with British and American machines.



The vital part of the Raycophone is indicated by the arrow. Enclosed here is the sensitive photo-electric cell.

which are amplified and reproduced through loud speakers.

With the disc method of operating talking films the disc machinery is geared to the electric motor which runs the cinematograph; and, as a result of this carefully calculated gearing the synchronisation is again perfect, and the sound is taken out through the same amplifying channels as are used for the amplification of the sound-track film.

So it will be seen that synchronisation is obtainable with quite simple devices. And once you have attained to perfect synchronisation there is nothing more to that branch of the machinery. The whole trouble with talkies is not synchronisation; but amplification. You have to fill enormous theatres with the sounds taken from a revolving disc, or a strip of film. This involves deep problems of reproduction and acoustics, on which it would be impossible for me to touch in the limited space available. It is enough to say, that by careful experimenting, we have evolved amplifiers and loud-speakers which compare more than favourably with overseas productions, and are now manufacturing complete outfits for sale throughout Australia.

There is yet plenty of room for improvement in the reproduction of talking pictures, most of this will come through the careful adjustment of every outfit to the special acoustic properties of individual theatres, and we hope to be in the vanguard with these improvements and adjustments.

What I should like to see would be all-Australian talking pictures. Australian theatres, Australian machines and Australian Films; but I am afraid I have not yet advanced far enough to produce our own films. Nevertheless, the opportunity is here; and as I am convinced that the future of the film world will lie in talking pictures, I think there should be ample scope for the energy of Australian producers

EIGHT years ago I became interested in the synchronisation of sound effects with photographic moving film; and proceeded with a series of experiments towards designing an efficient machine, capable of reproducing behind the screen the sounds associated with the actions of the shadow people. I was working on the principle now known commonly as the "Vitaphone;" which reproduces sound effects and speech by the wax disc medium. I was succeeding with these experiments; but eventually abandoned them. They were necessarily dilettante dabbings at the time, because

- (a) There were no facilities for making synchronised films;
- (b) Loud speakers and amplifiers were not then efficient enough; and
- (c) It couldn't be considered as a commercial proposition.

With new mechanical ideas it is always the same; either the mechanisms or their raw materials are behind hand in coming forward. The first stages of all new productions are retarded by the dead weight of one or other of their complements. Look at broadcasting. It's development has been a constant see-saw between the engineering shops and the studio. At present, I should say that the engineering shops have reached the higher plane of efficiency; there is yet a great deal to be done towards bringing the standards of radio programmes nearer perfection. These things will come.

At any rate, broadcasting was a better proposition eight years ago than Synchronised Films. But when I found that Synchronisation had succeeded over the other side so well that it constituted a menace to the silent film, and that talking films on both disc and sound track bases were being manufactured in commercial quantities, and that these innovations were coming out to Australia, I decided to attempt bringing my old plans to fruition, and worked on them during my spare time.

The synchronisation of sound with films was a comparatively easy matter. With sound-track films this was managed by adding a reproducing unit under the projecting chamber of the cinematograph. This consists of three small compartments. In the first, there is a powerful exciting lamp, the light from which is taken through lenses into the second compartment. When it emerges here it is a thousandth part of an inch thick. The film is drawn through the sound-gate, and the fine stream of light plays on its sound track, which is a fine strip of the film itself, corrugated with small black lines. These small markings correspond with the varied indentations on the track of a gramophone record. Modified by these markings the light passes on to the third compartment, wherein is located the photo-electric cell, which is sensitive to the modifications and variations in the density of the light, and which transforms these modifications into electric frequencies,

PACIFIC RADIO NETWORK EXTENDS

Australian erected and operated stations are gradually extending over the whole of the South Pacific. New stations are to be erected at Lord Howe Island, The Friendly Islands, and New Zealand.

THE need for better wireless communication over longer distances in the Pacific has for some years past been recognised. As early as 1922 representations were made to the Right Hon. L. L. Amery, then First Lord of the Admiralty, by Mr. E. T. Fisk, managing director of Amalgamated Wireless (A/sia) Ltd., who suggested that Amalgamated Wireless should take over from the Imperial Government all British wireless stations in the Pacific with the object of modernising them, enabling direct communication to be effected with the Australian wireless network. Only by so doing can the enterprising activities of the other nations be effectively met.

As a result of negotiations, an agreement was completed between the Imperial Government and Amalgamated Wireless (A/sia) Ltd., and early last year the company took over the wireless stations in the Fijian group. Modern high-power wireless equipment, designed by Amalgamated Wireless engineers, and manufactured at the company's works at Sydney, has been installed at Suva Radio, and the wireless communication system of Fiji is now one of the most important in the Pacific.

Another Pacific island which has awakened to the need of better wireless communication facilities is Tonga, in the Friendly Islands, arrangements having been entered into for the supply and erection of a modern short-wave wireless station.

Lord Howe Island is also to be equipped with a modern radio installation. The plant, which was despatched by Amalgamated Wireless from Sydney by the Makambo last week, consists of a 500-watt transmitter and a commercial receiving set. The transmitter is designed for telegraphy, and will work on short waves between 20 and 40 metres, and on long waves between 450 and 750 metres. It is similar to the transmitters used for communication between Noumea and Sydney.

The plant was designed and manufactured in Sydney. It will be erected and ready for service by the middle of July.

Often there is some difficulty in obtaining operators for wireless stations in the lonely spots of the earth, but one of Amalgamated Wireless's operators was born at Lord Howe Island, and has made the island his home. He falls into the position of radio operator quite naturally.

The New South Wales State Meteorologist, Mr. Mares, is of the opinion that the station will be a valuable aid for broadcasting weather conditions.

"At the present time," he said, "weather reports from only a few ships are received, mostly at the week-end, and during the week there are over a million square miles of ocean from which only occasional reports from stray ships are received.

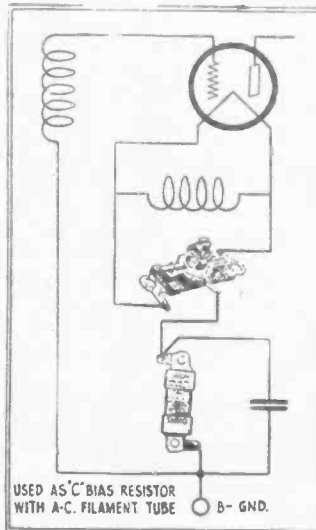
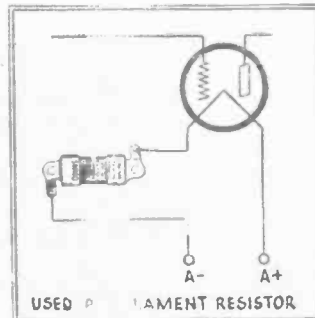
"A storm would develop without my knowing anything definite about its form, intensity, or direction of movement. Lord Howe is usually in the track of N.S.W. disturbances, such as cyclones, and the news of them will help N.S.W. forecasts."

THE NEW ZEALAND high-power wireless stations at Awanui and Awarua, which have been in operation for over fifteen years, will shortly be superseded by a new high-speed short-wave wireless telegraph station to be erected by the New Zealand Government at Tinakori Hills, Wellington. The wireless apparatus is being supplied by Amalgamated Wireless (A/sia), Ltd.

Mr. E. T. Fisk, managing director of that company, states that the set, which is of Australian design and manufacture, and complete with every modern wireless device, is a further indication of the high esteem in which the products of A.W.A. in the field of radio communication are held by the sister Dominion, particularly in view of the fact that this order was obtained in the face of competition from other parts of the Empire and foreign countries.

Australia already has a very complete system of short-wave transmitters, which have all been designed and built by Australian engineers, at the A.W.A. radio-electric works at Sydney. The most notable of these transmitters is 2ME, the world-famous high-power telegraph-telephone transmitter installed at Radio Centre, Pennant Hills. It is this transmitter which has been used in connection with all the overseas telephone tests, including those to Holland, Germany, America, Java, and Fiji, and telegraph tests to France, Germany, Japan, U.S.A., England, Canada, Siam, Java, and Holland. Other short-wave transmitters are installed at the company's radio centres in the capital cities of Australia, and at Fiji and Rabaul, thereby placing Australia in the position of having one of the most modern and up-to-date systems of wireless communication of any country in the world.

SIMPLE GRID and FILAMENT CONTROLS

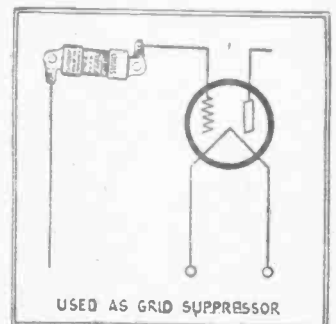


WITH the standardisation of valves, so that the radio-set builder is reasonably certain of having matched characteristics in going from valve to valve of the same type, it becomes possible to employ inexpensive fixed resistors.

If a fairly steady source of filament current is available the filament may be regulated by a fixed resistor of proper value, in certain valves, particularly the screen-grid, a fixed resistance is employed in addition to the rheostat. It is possible to obtain the desired low-voltage grid bias by placing the resistor in the positive lead for the detector valve, or in the negative lead for the amplifier, as shown in the first diagram.

As a means of stabilising a radio-frequency valve with the least trouble and expense, the grid suppressor method leaves little to be desired. Although such a resistance is usually non-inductive, good results may be had with the inexpensive strip resistor of a value of from 300 to 800 ohms—the value is not very critical. The arrangement is shown in the second diagram.

Grid biasing the heater type A.C. valve is readily accomplished by inserting a strip resistor in the B— lead, as shown in the third diagram, and depending upon the voltage drop for the biasing effect. These and many other applications are possible with the inexpensive resistors, such as the strip resistors now available on the Australian market.



PEOPLE *in the* PROGRAMMES

Mr. Fred Scholl

ENTRANCE to Mr. Fred Scholl's boulevard is down many flights of red concrete steps from the stage door of the Capitol. When you get right down, you walk as far as you can between boards and doors and what-nots, as Mr. Huit might put it, until you come to the end of the section. On the one hand is a revolving belt, driving the ventilation system. On the other is a door marked "Fred Scholl." You push it open, as Mr. Scholl pulls it open.

"How'd you do, Mr. Scholl? We've come to see you by appointment, you know."

"Waal, yes. Come in, won't you? I've gah't to play the Finale. Won't be lahng!" And the ponderous Mr. Scholl disappears towards his organ; and you go in and sit down on a leather couch, admiring the bright blue wall decoration, and the birds of many colors painted about everywhere. And you ponder on the American language. While Australians say just plain "got," Americans say "gah't." They say it very charmingly, too. All Americans seem to have soft, misty voices. When they speak, it sounds like variations on the first movement of the "Moonlight Sonata." And it is very catching. For instance, Mr. J. Knight Barnett. He spent abah't a yeah dah'n art the Cahpitol, and he sure hars gah't the idiom, boy. What we mean to say is, after hearing Mr. Fred Scholl speak American, we feel inclined to revise our opinions on American pronunciation.

Then Mr. Fred Scholl comes back, and tells you his life story. He was born in January, 1891, which shows he is just about 38 years old. Many people talk about him as an old man; but the reason was, that the wrong light was used to show him up during his organic operations. This light has now been silenced. In fact, he looks quite a young man. We were surprised. We also had been under the old-man impression.

The Scholl Neighbors.

His home town is 120 miles north of Chicago, in the State of Wisconsin, on the Canadian border, where it is often extremely cold in cold weather. He was a sickly child, and the hopes entertained for his future weren't; so he was left rather much to himself. Nevertheless, or perhaps therefore, he drove the neighbors wild with an old cottage organ. His first teacher of the piano was his next-door neighbor in that little town "She died recently in Chicago," said Mr. Scholl. "She persuaded my father to buy me a piano to practise on, and gave me my first lessons."

He was soon playing the piano in a dance orchestra, at the same time playing the piano in a moving picture show. The orchestra consisted of the piano, the drum, and the bass fiddle, a most unusual combina-



tion. "You'd laugh if you could see those shows to-day. I suppose I was in the picture business as early as anyone. Those were the days of the Biograph pictures of D. W. Griffith, the now-famous producer. I remember, I played for Mary Pickford's first featured part—that was in 'Pippa Passes.' I think that was taken from Browning. You could look it up. The great star of those days was Florence Lawrence—you don't hear about her now; but I saw her playing the mother part in one of Buster Keaton's comedies recently. Then there were Arthur James, John Bunny, and Flora Fish—all forgotten.

"They used to call picture shows 'Electric Theatres.' We played waltz numbers all through the serious films, and 'rags' through the comedies. They didn't synchronise the music with the film in those days. I used to sing the illustrated songs, too. They were very raw; but they have developed to-day into our novelty slide numbers. And I gah't about a guinea for the week's performance."

He worked his way through high school playing the piano in dance orchestras and at the pictures; and even had some experience as leader of a vaudeville orchestra. He still regards the vaudeville musician's job as the hardest in the realms of the showman. When he had worked his way through high school, he wanted to become a doctor; but circumstances were against him, and he continued playing; ultimately going west to Portland, Oregon. One claim is that picture playing originated in Portland. That is, playing the mood of the picture. And the other claim is that all the famous organists and picture showmen originated in Portland. Jesse Crawford, Ted Henkel, Henry Murtagh, C. Sharp, Minor, and Wallace, of "Hindustan," and many others, all studied the musical requirements of the film industry there.

Began Wurlitzing 1919.

He left Portland for San Francisco, Los Angeles, and points east of those towns. He studied the organ in 1911, but made his first bow to the Wurlitzer in 1919. The Wurlitzer Company took care of him for seven years, and he took a trip east to visit the Wurlitzer Factory at Tonawanda. Then he went all over the place—San Francisco, Ta-

coma, Sacramento, and came south to O.S.A. with the "Egyptian Theatre," Hollywood, which was then the theatre most coveted by all American organists. He played there four years without a holiday—Sundays, holidays, and all; then went over to the Forum Theatre, where Ten Henkel and he were united after several years' wanderings apart. It is worth noticing that he opened with three new Los Angeles theatres—the Egyptian, the Cathay, and the Chinese—theory went back to the Egyptian. Matters stood thus when Will Prior, just returned from Australia, recommended him for the Capitol Theatre out here, with Ted Henkel.

He almost collapsed laughing when we asked him what he thought of Australia. "I knoo you were going to ask me that!" he gasped. "I was just waiting for you to ask me that! They all ask me that, and I was wondering whether you could possibly be an exception. Waal, I like Australia very much. I've just bought a noo car; so you can see I intend to stop here." Curse it all, we HAD to ask him what he thought of Australia. We are a self-respecting Australian journalist, and er—but, anyhow, we changed the subject, and asked what he thought of Australian audiences.

"Much better than American audiences," said Mr. Scholl. "American audiences are too blasé. They DARE you to entertain them. They've been spoiled. But out here they seem to come into the theatre fresh—ready to be amused. Enthusiastic. I tell you it's been an absolute rejuvenation to my work to come out here and play to Australian audiences. I like to make the audience feel to home when they come into the theatre. I always play to an imaginary person between the stalls and the circle; and I like to get everyone in, if possible. Have I anything to say about Wurlitzers? Waal, the Wurlitzer's easy to learn to play; but the audience isn't. When you play, your knowledge of Wurlitzers is taken for granted; but you're not playing Wurlitzers, only—you're using the Wurlitzer to play your audience. You've gah't to keep your audience with you—keep 'em to home. You've gah't to be able to make 'em sing with you; and make 'em unafraid to sing with you. Are you afraid of singin' in public? I am. You've gah't to get over that fear in your audience. You've gah't to make 'em feel to home. THAT'S where the trick in playing the Wurlitzer comes in."

Literary Lapses.

Mr. Scholl's favorite hobby is reading. He reads everything—has just finished Tolstoy's "Kreutzer Sonata" and "Dracula." But his reading is mostly serious. Uncle Peter Barnett told us some time ago in an awed whisper that Mr. Scholl read from Voltaire! But this lacks confirmation. However, we had a literary discussion on Wilde's plays, which are now interesting Mr. Scholl. It went like this—

FRED SCHOLL: Ah'm readin' Oscar Wilde's plays just now. "Woman of No Importance," "Importance of Being Earnest," and so forth.

WE: Don't like 'em very much. Lost their punch for this generation.

FRED SCHOLL: Didn't you like 'em? I did.

WE: You liked 'em? (This was after we had expressly stated we didn't like 'em, mind you!)

FRED SCHOLL: Yes, I liked 'em.

WE (superciliously): Oh! And have you any outdoor sports, Mr. Scholl?

Mr. Scholl's "favorite dissipation" is driving a car. Not into the wild bush around La Perouse; he prefers the good roads.

He very rarely practises. He does all his practising in his head. This means that, before he goes onto the stage, he knows exactly what he is going to do. His daily tussles with the Wurlitzer have made him quite sure he will be able to do it, so long as he's got it all mapped out beforehand. His greatest embarrassment lately, was when he rose out of his well to play a solo—rose right to the top, playing away, till the organ coughed and stopped dead. What would YOU do in those circumstances? asks Mr. Scholl. He did a very sensible thing himself. He pulled the lever and let himself down again.

He never talks music outside the theatre. He often gets bored with people who want to

talk shop. He is a professional musician, he confided, not an artist.

But he is quite satisfied with being a musician now. He has no longer any longings to be a doctor. If he had his choice now, he would want to be a writer of stories. As it is, he corresponds with people all over the globe.

It was growing late in the afternoon, so Mr. Scholl prepared to go out. He drew our attention to the wall decorations. I had the walls done the same color as the roof of the theatre; but there seemed to be something lacking. So I called Ted Henkel in. He said I needed some birds painted on to give the correct effect. That's his idea of a joke—giving me the bird—see? Well, I got our decorator to paint birds during the week-end. I just said to go ahead and paint birds on the wall; and he did. But he painted lyre birds! Perhaps that may make a good ending for whatever you're goin' to write.

It may provide a check on a good few of the things I've told you."

We went outside, and Mr. Scholl discoursed on fame. "I can't get lost here," he said. "You come round with me, and I'll show you what it's like." We went round to the front of the theatre, where a man was selling papers. Mr. Scholl presented his twopence. "Papers for you, Mr. Scholl? Here they are, Mr. Scholl. Cold night. Mr. Scholl! Here they are, Mr. Scholl. Thank you, Mr. Scholl. Mr. Scholl. Mr. Scholl. It faded into the distance as we walked back. "Very embarrassing," said Mr. Scholl. "Wall, gabye; I'm goin' over to get my dinner." And so he walked away, in his black hat and grey coat, and bow tie and shirt, with the buttons chasing themselves down past the waistband, until he merged into the evening mist. At least, we suppose he did; we were in too great a hurry to wait and watch it happen.

New A.B.C. Personalities Are Old Friends

Mr. H. G. Horner

WE understand that Mr. H. G. Horner has been appointed to the chief executive position of the national network of the Australian Broadcasting Company.

For some time Mr. Horner has been associated with Sun Newspapers Limited in an executive capacity. During this period, for over twelve months, he also occupied the position of acting manager to Broadcasters, Sydney, Ltd. (2BL), which company he succeeded in placing in a sound financial position. At the time of the amalgamation between 2FC and 2BL, Mr. Horner was offered an executive position with the new South Wales Broadcasting Company, Limited, but decided to resume his duties at the SUN, in a position offered to him as assistant secretary.

Since the beginning of this year Mr. Horner has been actively associated with the management of Wireless Newspapers Limited. The staff of WIRELESS WEEKLY offers its congratulations to Mr. Horner on his attainment to this high and responsible position.

Mr. Oswald Anderson

MR. OSWALD ANDERSON, after a varied and successful career, which included service with an insurance company as clerk, accountant, and inspector, the composing and publishing of songs, demonstrating and acting as agent for a pianoforte firm, producing plays and operas, and managing concerts, and accompanying Peter Dawson (in England), was attracted by the possibilities of wireless, and induced Paling's, with whom he was then connected, to spend sufficient money to establish a radio service. Ray Allsop looked after the mechanical side; and concerts were given from Paling's Concert Hall, two and three nights a week. Roy Agnew, Laurence Godfrey Smith, Lee White, Clay Smith, and many other leading artists contributed; and Mr. Anderson was actually the first public announcer in Australia.

In 1924, the Commonwealth Wireless Regulations came into force; and this closed Mr. Anderson's wireless activities until 1925, when he joined Farmer's broadcasting service. He has been there ever since; first, as manager for 2FC; then, as manager for the New South Wales Broadcasting Company, Limited.

Mr. Anderson possesses both musical ability and a keen business sense—a most unusual combination. He comes of musical stock; a great-grandfather, Andrew Anderson, is famed in Scotland as a composer;



MR. H. G. HORNER,
General Secretary of the Australian
Broadcasting Company.

—Howard Harris Photo.

and the standard of his own work may be judged from the fact that many of his songs are sung regularly by such artists as John McCormack, Peter Dawson, Robert Radford, Walter Kirby, Alfred O'Shea, and Malcolm McEachern.

Last time we saw Mr. Anderson, he was working very hard in his new office, signing documents like anything, and following the signatures with his tongue. He told us they had over five hundred applications to answer already, and it was hard work; so we didn't say much more; but, before we went Mr. Anderson told us it had been decided that, if anything, the hours worked by the Sydney stations of the new company would be even longer than the hours at present being worked, although the terms of the company's tender allowed for hours considerably less than the number now being worked. Also, there will be music from one or the other stations from morning till night; and the first artists on the programme will appear at ten o'clock in the morning.

Mr. H. P. Williams

MR. H. P. WILLIAMS, who, in association with Mr. Oswald Anderson, has joined the Australian Broadcasting Company, Limited, has been in control of the utility side of broadcasting, first with Farmer's and 2FC, then, after the amalgamation, with the New South Wales Broadcasting Com-

pany, Limited, for the past four and a half years.

Prior to entering the broadcasting arena (sic), Mr. Williams was engaged in journalism, and also took a very active part in State and Federal politics as campaign director of the Country Party. It was with the commercial and financial sides of journalism that Mr. Williams' activities were mainly concerned; and for some years he represented the large American and English financial organisations in Australia.

Mr. Williams has had an opportunity of studying broadcasting in no fewer than 28 different countries, as, during a recent tour abroad, he visited broadcasting stations in North and South America, Great Britain, and various European and Asiatic centres. He has been known to his subordinates as "H.P.," otherwise "Horsepower."

Model Planes of Two Types

THERE are two kinds of aeroplane models: scale and "flying stick." Boys who are following "Wireless Weekly's" aeroplane model articles will learn to build both kinds.

The scale model is an exact reproduction, in miniature, of some large ship. It gets its name because it is constructed exactly to scale. The builder of a scale model learns the design of big ships. He is striving for neat workmanship, and perfect reproduction, in miniature, of the large plane he is copying. The scale model doesn't fly.

HOW THEY FLY!

The "flying stick" is so called because the fuselage is usually a single stick of wood. The Baby R.O.G., that you've just learned to build, the indoor pusher, the indoor endurance, and the outdoor twin pusher—all of them to be described—are "flying sticks." They bear less resemblance to a large ship than the scale model, because they're designed purely for long distance flying. And how they will fly! The indoor endurance has a record of nearly three minutes, and the outdoor has flown for 10 minutes and 14 seconds!

Recently, another classification of models has come into existence—the commercial model. This resembles a scale model in that it has a built-up fuselage, and is made to resemble an actual ship. But it is powered with a rubber motor so that it will fly. When it's flying, it looks just like a big ship, except that its wing is farther back. That's because it has no engine to make it nose-heavy, and therefore the wing must be farther back to balance the plane.

Constructing each of the three types of plane teaches the builder its own lesson, either of ship design or flying quality.

SESSIONAL NEWS



COOKING SESSIONS



ON Saturday next Mrs. Cranfield will discourse from 2BL on the delightful subject of pancakes and fritters. Pancakes and fritters have always held prominent positions in domestic affairs. Pancakes are of two varieties—the edible and inedible. We prefer the edible. Fritters are of many varieties. Our space only permits reference to meat fritters (generally served on Mondays, or days after joint night), banana fritters, which can always be trusted to go down with the public; and apple fritters, for which we always displayed an extreme partiality. Mrs. Cranfield will fritter away some little time on these subjects, and it is expected that a good deal of ground will be covered.

On Tuesday, Mrs. Cranfield will speak on "Cleaning Clothing and Removing Spots." This lecture should be of great interest to New South Wales people, as we noticed several people getting about Sydney in spotted and stained clothing. Our lift mechanics, for instance, will doubtless listen in to this talk; and the bottle-oh, who comes so very often to our home, will also be advised by us to listen in.

On Wednesday, Mrs. Cranfield will dire and sinister. She will give some "More Recipes for Using up Cold Joints." Cold joints are well known to the public; but meat pies, sausage rolls, potato pies, etc., etc., are excellent disguises. However, Mrs. Cranfield knows even more disguises for cold joints, and, during the Wednesday session, will disclose her information. Husbands who wish to keep up with modern domestic developments, for their own advantage, should listen in.

MISS VARLEY'S SESSION



THE 2BL Women's Association's first birthday, which Miss Varley has underlined with some show of spirit, proved a tremendous success. It was held last Wednesday, June 28, in the auditorium of David Jones' Ltd. Over three hundred women were present, representing Mosman, Waverley, Strathfield, Chatswood, Ashfield, Kogarah, Bexley, Coogee, Manly, and Balgowlah tennis clubs; also golf, swimming, needlecraft, handicraft, dancing, and bridge clubs. Added to these were two large tables of non-members, who were welcomed into the heart of the association.

At the special table the president (Mrs. Roland Conway), vice-presidents, hon. treasurer, and secretary entertained Mrs. Albert Littlejohn and a number of the speakers of the 2BL session.

At 2.30 p.m. each club had two representatives to decorate its tables, and in a brief half-hour the tables were transformed into fairylands, which seems very remarkable.

Mrs. Albert Littlejohn, escorted by Mrs. T. C. Norton, judged the tables, and announced Bexley to be the winners after afternoon tea. Mrs. Littlejohn presented a pennant to the captain of the club—a navy pennant bearing the words, "2BL Annual Meeting," in white lettering.

The reports were read by Miss Varley, honorary secretary, and Mrs. O. Raz, honorary treasurer. Both gave evidence of a very good year. Activities had been numerous, the association had proved itself very alive and popular, and there was a credit balance of £22/3/2.

Mrs. Roland Conway expressed her appreciation of the enthusiasm of the members, and wished everyone great success in the clubs for the coming year. Mrs. Albert Littlejohn gave an excellent speech on the vital importance of the movement to the women of Sydney. Other speakers were Mrs. A. W. Roberts, Mrs. Glandfield, Miss Janet Mitchell, Mrs. Horace Buck, Mrs. Price Conigrave, and Miss V. M'Kee.

The decorations of the winning table were carried out in the form of a tennis court. Mothballs tried to look like tennis balls; there was a string net, and a summer-house with a red roof. Little celluloid dolls played tennis, and the club colors of blue and heliotrope predominated everywhere.

READING SESSIONS



TO-DAY, Friday, Captain Stevens will talk about picturesque India. India—the Picturesque, or The India Picturesque—have it your own way. As the title hints, India has not one, but several beauty spots of which it is pleasant to speak and not fatiguing to hear. Our own idea is that Ceylon is the most beautiful spot in India. Ceylon, of course, is not in India, but Captain Stevens may convince us otherwise on Friday afternoon.

To-morrow, Saturday, Captain Stevens' talk will be about "Making Good Resolutions." This subject has been considered dead since Doctor Johnson made his celebrated remark about the pathway to Hell; nevertheless, Captain Stevens and Doctor Johnson are different personalities, and it will be interesting to compare their ideas on this interesting question.

On Sunday the Captain's church service will be a recital from St. George's Chapel, Windsor, by the Chapel Royal Choir. Full choral service. And the Woodbine Willie sermon will be concerned with "Lies and Nature."

Captain Stevens will continue reading, during the morning sessions of next week, from his book of historical romances.

Mr. Cochrane

MR. COCHRANE continues to provide interesting readings from 2FC at about thirteen minutes past twelve every day of the week. On Thursdays, he gives a special Dickens reading, which has drawn many expressions of pleasurable satisfaction from listeners.

Mr. Halbert

MR. HALBERT reads from 2FC every afternoon in the week at three-forty-five. He chooses short stories generally; and prefers sharp, pithy narratives with point and ideas to back them.

MR NORMAN'S SESSION



MR. NORMAN'S SESSION continues to grow. On 2BL's last Sunday night under the control of the New South Wales Broadcasting Co., Limited, Mr. Norman will say good-bye to all his friends between six and seven o'clock, in company with Uncle Bas, Uncle Steve, Uncle Frank, Aunt Willa, and Cousin Marjorie.

There will be no more excursions before 2BL is taken over by the new company.

Mr. Norman doesn't know what will happen to his session when the new company takes over, but we suppose many of his young friends will be anxious to know.

COMING!

THE STANDARD ALL-ELECTRIC FOUR

Under development in WIRELESS WEEKLY'S newly instituted laboratory is the first of the new series of modern receivers. At the moment, the set is fast nearing its final form, and after a few days probably will be ready for its last rigorous performance test. The construction of the receiver, described in a wealth of detail, will be the subject of an article by Ross A. Hull in the early future.

Wireless Weekly

Incorporating "Radio In Australia and New Zealand."

FRIDAY, JULY 5, 1929.

The Promise of Superlative Programmes

IN a week or two, beginning on July 17 to be exact, we shall hear the first of the programmes of the national broadcasting service, supplied by the Australian Broadcasting Company.

These first programmes will be tuned-in by every listener-in. If the listeners are dissatisfied with them the new company will have lost a great deal of the listeners' confidence; and are sure to receive a great deal of criticism.

For, by some means, the idea that something outstandingly new in the way of broadcast entertainment will be heard has been circulated. Its source would, perhaps, be difficult to trace, but no doubt in some quarters it was believed that it would serve to evoke curiosity in the new programmes. But it is one thing to stimulate pleasurable anticipation and another to realise it. And it is fairly certain that it cannot be realised in these first programmes.

What new broadcaster can present a programme startlingly, outstandingly different? In the past five years of broadcasting every available artist and feature has been broadcast, and the most a new entrepreneur can do is to concentrate the best of the past features into the first few weeks.

And then, can any new broadcaster afford to discard the old features, to make a clean sweep of all past presentations? Most of the present listeners listen because certain well-known features please them, whatever they may say of the remainder of the programmes. The bedtime-storytellers, the racing commissioners, the popular talkers, the new sessions, can any new broom risk sweeping these out of the programmes?

No, the first few programmes of the new broadcasting service will not be as different, as startlingly new, as some may hope. The most that can be expected is a few weeks of concentrated good features, and only as licenses warrant it in later months can the promise of superlative programmes be fulfilled.

Under these circumstances listeners, in order to give the new company a fair trial, should dismiss the idea that the new programmes are going to be extraordinary.

Mechanical Music in Broadcast Programmes

WHEN broadcasting first began, in its amateur and experimental stages, the programmes were obtained from gramophone records. De Forest, who was the first broadcaster—his experimental transmissions having been heard even before the late war—started with records.

It was only natural that he should begin in that way. Up to that time, wireless consisted in the sending and receiving of telegraph signals—dots and dashes of the Morse Code, as we hear to-day from ships. Then efforts were made to send ordinary speech, that is wireless telephony. It followed that a gramophone record of speech was more convenient in the sending tests than continually talking into the microphone. And records of songs and instrumental selections would naturally be the next step. Moreover, it gave more prominence to the new idea, and made it more interesting for the listeners co-operating in the tests to hear some music.

In England in 1920, the first notable transmissions were from the Marconi experimental station, and, of course, gramophone records and pianda rolls were used. It was at this station, shortly afterwards, that Madame Melba gave her historic rendition, which was heard in different parts of Europe.

Later on, when broadcasting developed more on commercial lines, the programmes included a large share of mechanical music. No objection was taken to this by listen-

ers, but as they became accustomed to the services, they became more critical. As a result of the objections then raised, mechanical music was eliminated or severely curtailed by regulation. Probably the cause of this action was the indifferent quality of the records.

Radio helped the gramophone. The records were improved, however, mainly as a result of wireless research. Very close and deep attention was given to the improvement of the wireless valve, and, strangely enough, one result was that assistance was given to the competitor: The gramophone industry regarded broadcasting as a competing industry, and actually felt the competition severely for a while. Research on the microphone also aided the phonograph; it was the main cause of the revival of interest in the records. Much improved pick-up arrangements—electric recording, by means of the radio microphone—and better quality loud speakers led to that revival. Now we find broadcast listeners indicating an insistent and general desire for gramophone records in the programmes. With the excellent quality pick-up devices for connecting the records with the studio microphone amplifier (eliminating the microphone previously necessary in the transmission of records), splendid items are obtainable. And as they include practically all the world's musical celebrities—vocalists, instrumentalists, choirs, bands, and orchestras—it is not surprising that Australian listeners show a preference for them against some of the local artists.

THE FIRST SET

No. 2



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.

Gramophone Recitals

Dear Sir,—Noting remarks appearing in a certain part of the newspaper re gramophone records appearing in broadcasting programmes and condemning same, I would like to mention that I consider them one of the best features of the programmes. At my home we tune in to the recital of records at 3AR every night. I hope that under the new control of broadcasting at least one station will give an evening recital; such a recital would be more appreciated if items could be set out in programmes.

When the new management take over they should, when taking a referendum of listeners' desires, ask if listeners are in favor of record recitals. I think the result would greatly favor recitals.

I find that solos of all kinds come over the air much better than choruses, particularly vocal and flute items. Brass bands are very good. I wonder why the flute is so neglected? It comes over better than any other instrument.

Yours, etc.,

RADIO.

Cessnock

Competitions

Dear Sir,—As one of the many listeners who enjoy the various programmes submitted from the different Sydney broadcasting stations, I beg to offer my sincere thanks and appreciation to WIRELESS WEEKLY for the delightful and amusing competitions which you so kindly arrange periodically for all listeners. An untold amount of pleasure is given in trying to solve the winners in their respective order.

Thanking you for giving us such novel entertainments, which were most interesting to listen to, because of the fact that they covered such a wide and different range of subjects, and wishing you every success, and congratulations to the winner of this recent competition.

Trusting we shall have the pleasure of another competition in the near future.

Yours, etc.,

UNA FOSTER.

Drummoyne.

Wireless Here is Heaven.

Dear Sir,—In reply to "Country Listener" in your issue of June 21, I would like the above-mentioned person to accept my sympathy. I was formerly a resident of Brisbane, and a forced listener to 4QG, and can rightfully say that 4QG is not on the air enough, and Queensland is badly in need of another A class station.

I am now a Sydneysite, and I must say that wireless here is heaven compared with the service supplied to listeners in Queensland. As a lover of popular music I must say that if left to the local A class stations one's wish would not be granted. I therefore tune-in to the B class stations, and have nothing to growl about.

Yours, etc.,

SYDNEYITE.

Marrickville

"Give 'Em Muck!"

Dear Sir,—Listeners in who are also music lovers, and who fondly imagined that the standard of programmes was to be raised under the control of the new company, must have felt disappointed on learning that the old broadcasting management is to be maintained.

There is little evidence to show that it has done anything to foster the love of good music. On the contrary, it is a well-known fact that it has no sympathy with orchestral or instrumental works, and has instructed the artists to sing twopenny-halfpenny ballads. The present state of broadcasting is deplorable, and the old management must be held responsible for much of the inferior stuff that has been put on the air.

(We were told that the object of uniting the two A class stations was for the betterment of programmes, and there would be no duplications, but, unfortunately, we have still many grounds for complaint. The programmes for the past few months have been shocking. Taking the programmes for an average week-end period from Friday evening to Sunday evening, what do we find? Friday evening given to jazz and racing; Saturday afternoon and evening given up to racing or jazz; Sunday morning, after an hour and a half of church, to the wallings of Woodbine Willy by an amateur person who is otherwise a rampant militarist. It is time A. C. C. Stevens gave up playing with his radio church records. It is certain that we do not get an hour of good music for practically three days.

There is still far too much racing and jazz, as the Commission reported eighteen months ago. The first thing for the directors of the A.B.C. is to form a permanent orchestra worthy of the name. We very rarely hear good orchestral playing in this city, nothing like the University Orchestra in Melbourne, for example. Picture house orchestras do not broadcast successfully for various reasons.

The playing of the Studio Quartette leaves very much to be desired; it is to be hoped that the present performances will not be taken as a standard for the future. The old management has ventured on a comparison with the British Broadcasting Corporation, and I challenge them to prove their figures.

What listeners want is good music, and not the hotch-potch programmes that we have been given from both stations in Sydney: If we must have two stations, give us a real choice of programmes. We ought to be able to have at least one or two hours of beautiful music every day. Picture house orchestra transmissions are not successful—the little scraps of this, that, and the other, with shrieks from the audience, do not form music, and the less said about the Wuriltzer organ the better. This machine is about as musical as the old steam organ at a country fair.

The old methods will not do. Other listeners think as I do, and we are awaiting the names of the local advisory committee.

Yours, etc.,

GEO. OLDERHAM.

Cremorne.

Hard to Tune-in

Dear Sir,—Regarding W. Hearn's letter, my knowledge of technical terms is nil. Therefore I am ignorant as to what Mr. Hearn means by modulation; but I do know this: I have a five-valve set which brings in all Inter-State A and B class stations—such as 5KA, 3DB, and 3BY, without any difficulty, but I always find 2UW hard to tune in in a way that is pleasant to the ear, and for that reason we rarely, if ever, listen to them. I would be interested to know if any other set owners find this difficulty.

While writing, let me say a word of sincere praise for 2UE. Many times when the A programmes do not please we tune in to 2UE, and are assured of a well-chosen, entertaining programme of records, and a consistent transmission. We have spent many enjoyable hours listening to 2UE.

Yours, etc.,

M. COLEMAN

Rockdale.

Modulation of A Class Stations

Dear Sir,—I would very much like to express my complete endorsement of the remarks made by Mr. W. Hearn re the comparatively poor modulation of our A class stations.

It would be a great pity if the good effect of the high-class programmes, which we are to have soon, were nullified by weak or otherwise imperfect modulation. In this respect I would suggest that the Government give over the technical side of the transmission to those very excellent engineers who are responsible for Station 2UW.

Why does a perfectly good band sound like a glorified concertina on Station 2BL, while a gramophone record of a military band on 2UW is entirely realistic?

It is quite a well-known fact among radio engineers that a 5 kilowatt station with full modulation will not be a great deal louder than a 1½ kilowatt station without the essential bass notes. This means that it is more economical to suppress the bass, and so give a greater signal for a given input. Is economy the reason for our poor stations? Anyhow, who pays? And who profits?

Yours, etc.,

A. GILLESPIE.

Botany.

Performance!

Dear Sir,—Please allow me space in your valuable paper to show these wireless cranks a really good set. I have an interstate three-valver, and my log is as follows:—

2FC, 2BL, 2KY, 2UE, 2GB, 2UW, 3LO, 3AR, 3UZ, 3DB, 4QG, 5CL, 5DN, 5KA, 7ZL, 1YA, 2YA, 3YA, and 4YA. JOBK. JOKF, JOAK.

All these come in on the loud-speaker any time of the night. The following amateur stations also come in on a clear night:—VK3AM, VK3AF, VK3EN, VK3EF, and VK4RM.

Yours, etc.,

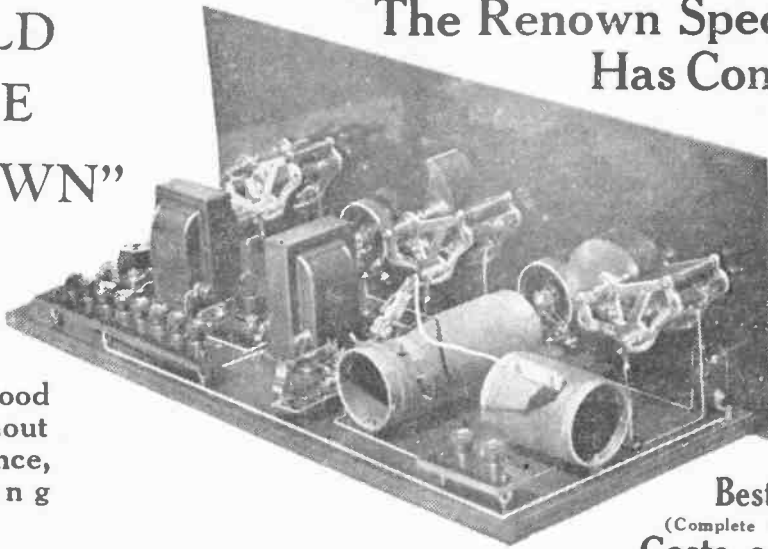
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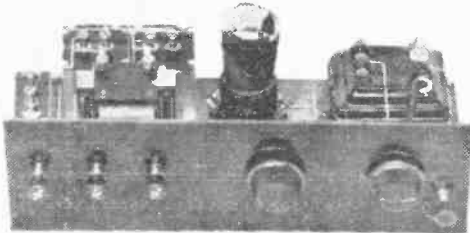


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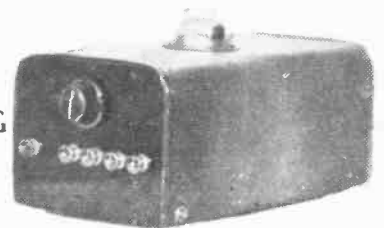
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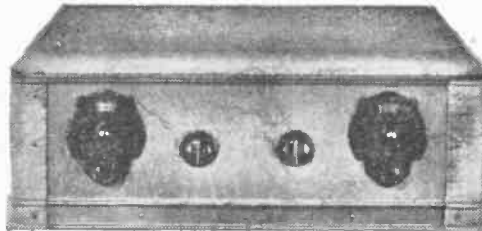


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CONSTRUCTIONAL HINTS

For The Home Builder

SET builders who propose using the new screen grid valve should pay strict attention to its shielding if the best results are desired. Careful shielding is the secret of success in using the screen grid valve. While the grid to plate capacity is practically eliminated in this valve, inter-stage coupling is not. Each radio frequency stage must be enclosed in completely interlocking heavy shields. Aluminium shields should be at least .08in. thick; copper not less than .05in. thick. The use of copper facilitates soldering of joints. Best results are secured by putting "cans" on the valves and by enclosing the lead which connects the plate from one valve to the coil of the next in a small grounded metal covering. Radio frequency chokes and by-pass condensers are necessary in the plate circuits to prevent coupling through the battery or eliminator circuits. For a three-stage amplifier it is also advisable to include chokes in the screen grid leads of each stage. The use of heavy shielding, solid construction, and cushion sockets minimise microphonic noises.

REGENERATION CONTROL IN SHORT-WAVE RECEIVERS.

The great secret in short-wave reception is a smooth control of regeneration. In the first place, the set must oscillate at all wavelengths within the band covered; and in the second place, the regeneration must be smoothly variable, and not in steps. Many of the short-wave kits and sets now in use have a troublesome way of suddenly breaking into full oscillation. Just a point below that there is insufficient sensitivity. The regeneration control is moved a hair, and the set breaks into oscillation, which ruins the modulation or sound component of a radio telephone signal.

For smooth regeneration control it is desirable to use a stepless or absolutely variable resistor of about 50,000ohms in the plate supply lead to the detector tube. This resistor serves to vary the plate voltage on the detector and so effects splendid regeneration control. It is essential, in using this scheme, to shunt the resistor with a 1 mfd. fixed condenser. Yet another popular method is to connect the resistor between the negative "B" battery and the 45-volt tap, using the sliding contact to provide the connection for the detector plate supply. In this way, the resistor serves as a potentiometer, the detector plate voltage being made variable, by its use, from zero to 45 volts. In this case, also, a 1 mfd. condenser should be connected between the slider and the terminal which connects with the negative "B" battery lead.

THOSE POOR CONTACTS

IN the reception of distance stations it often happens that the signal will fade out completely only to return a moment later. This happens without touching your dials or moving your position. This is particularly annoying at times when you are enjoying a good programme, or are trying to intercept the call letters of the station. The trouble may be due not only to unavoidable

A selection of suggestions on screen-grid shielding, regeneration control, the adjustment of volume and other matters.

atmospheric causes, but also to a low A battery or a dirty contact in one of the valve sockets. In either case the valve will light up bright for a while, and you can hear the station plainly. The next instant the contact may be poor or the A battery voltage will drop slightly and the station will completely disappear only to return a moment later when the voltage comes back to normal.

IDEAS ON VOLTAGE CONTROL

THE experience of one radio enthusiast vividly illustrates an annoyance encountered by many. Frequent mention has been made of the advisability of controlling volume in a radio frequency receiver by manipulating the radio frequency amplifying valve filament controls. To reduce volume the brilliancy of the radio frequency valve filaments is reduced.

The action constitutes an excellent volume control, but it also has one deficiency, a deficiency which manifests itself when a well-designed audio frequency amplifying system is used in conjunction with a good speaker. In very many receivers, and this includes stabilised and neutralised systems, the action of reducing the filament brilliancy by adding resistance into the filament circuit, by means of a rheostat is equivalent to in-

creasing the negative grid bias upon the receiver, due to the increased voltage drop across the rheostat winding. The result is greater sensitivity, a reduction in volume due to lowered filament temperature and electric emission, and also a small increase in the tendency toward oscillation.

This slight reduction in stability means a change in the resonance curve of the tuned stages, and this effect is noted in a loss of the upper audio register. That is to say, the side band suppression is increased under the circumstances mentioned and a change in quality is noted when the volume is reduced. Hence the quality of the output differs when the maximum output is being used and when it is reduced.

GRID BIAS FOR THE SCREEN GRID VALVE.

WITH the advent of the screen-grid valve several new problems have been brought to the set builder. Chief among these, and perhaps the most neglected, is that of biasing the control grid.

Many constructors have disregarded this feature entirely, having found that the valve will function without a grid bias. However, the characteristic charts of the valve show that the plate current is actually considerably higher when a bias is applied.

There are several ways of securing the necessary potential, most of which are too costly or impractical where a storage battery filament current is used. The potentiometer system, while satisfactory, generally causes too much drain on the battery, while the insertion of a flashlight cell in the ground lead, shunted by a condenser, results in unstable operation. The ideal solution is to secure the bias from the storage battery without

Your signals coming in fine!



Officers of the Victorian Division of the Wireless Institute of Australia communicating with a South Australian experimenter by means of a portable short-wave transmitter and receiver rigged temporarily in the wilds of Warburton.

SIMULATING the conditions under which communication would have to be attempted from a 'plane forced down far from civilisation, a group of noted Victorian experimenters, in recent tests, were successful in maintaining communication over distances up to 500 miles. The special lightweight crystal controlled transmitter, designed by Mr. Bruce Hardie, of VK3YX, was supplied with power from a hand-cranked generator (shown in the inset), and alternately from "B" batteries. Communication was maintained between Warburton and Adelaide with a power input of only 1.8 watts.

Absorbed in the operation of the equipment is Mr. J. K. Herd. Behind him is famed H. Kingsley Love, while at his left is Secretary of the Institute Bruce Hardie.

creating any additional drain. This may be done with the aid of a very small variable resistance of the centre tap type. A variable resistor of 20-ohm. rating may be inserted in the negative filament lead of the screen-grid valve in such manner that it acts as a filament limiting resistance and a variable grid bias at the same time, by connecting one end to the negative of the storage battery, the other end to the filament lead of the valve, and the centre contact arm to the ground side of the antenna tuning unit. A smooth variation of grid bias is obtained in this manner.

IMPROVING BATTERY CONNECTIONS
STORAGE batteries sometimes have threaded brass rods inserted in the lead

connections and used for terminals. These sometimes corrode inside of the lead lug, and cause a scratching sound in the set. Therefore, the large leaded claw battery clips should be used for A battery connections. Direct contact with the lead battery lug will ensure a good connection.

Another effect of such corrosion between the brass terminal and the lead lug is to insulate them from each other. If the customary connection is made to such a corroded terminal it will be found that the filaments of the tubes will not light. This would give the impression that the battery is completely run down or a cell is dead. By checking the electrolyte with a hydrometer and checking each individual cell with a

voltmeter the true condition of the battery will be found. By filing the lead lug and making direct contact with the battery leads such a corroded terminal will easily be discovered.

A SIMPLE AERIAL INSULATOR

A CHEAP and quite efficient insulator for a receiving aerial may be made from a large wooden spool or reel, such as is used for holding wire. First bake the spool in an oven to drive off the moisture, then boil in melted paraffin. Bake again, and finally give a good coat of shellac. The aerial wire can then be threaded through the hole in the reel, while the rope or cord may be tied around its middle.

:-: Servicing a Radio Set :-:

A common horn does not have this method of expansion, and has a cut-off of much higher frequency; therefore, the lower frequencies which really give character to the output are missing.

Most table model radios will fit into consoles equipped with papier-mache or composition exponential horns. The sale of these consoles is limited only to your salesmanship. However, a sure sale is to install a composition curled-up horn in some piece of furniture the customer already owns, and cover the outlet of the horn with gilt gauze.

One source of trouble in small diaphragm speaker units is the tension of the diaphragm being such as to cause diaphragm resonant points putting out from the speaker noises and rattles not supposed to be there. Always look at this tension, and adjust it if you are servicing a speaker that is not good.

It was mainly due to the self-resonant fault of small diaphragms that the armature type of speaker unit came into prominence, not only because it is the most practical means of working parchment diaphragms

XXV.

A quick speaker test is to touch the head-phone tips across the speaker terminals, with set turned on. If no sound or click comes from the speaker, and it does from the head-phone, the speaker winding is open.

Always be sure the polarity of the speaker cards is right. Continuous use of wrong polarity will demagnetise the speaker magnets, besides loss of volume. Most jacks in manufactured sets have positive wired to the sleeve. Binding post outputs are generally marked positive on one post.

Most 'phone plugs are marked positive on the sleeve side.

You can tell when speaker units of the diaphragm type become demagnetised by whether or not the diaphragm will slip off easily or be attracted by the coil cores. A demagnetised speaker cannot react on the pulsating current, hence a miserable output sounding like a tin pan.

If papier-mache horns have become loose in consoles, they will rattle with the air column vibration, and cause extraneous noises. Nail the bell tight to framework.

AERIAL SERVICE

XXVI.

If we cannot make our customer see the necessity of letting us make some money on his set proper, we can undoubtedly do so when it comes to the antenna.

About 1 per cent. of the antennae are efficient, the balance are just a wire from here to there.

Unless the aerial wire is enamelled, corrosion starts immediately, and in a very few months it has a decidedly oxidised surface. As high frequency travels on the surface of a wire, or the skin, and as corrosion is a conductor, but of very high resistance, we

This week our contributor deals with speaker service and aeriels.

have an aerial choking off what is collected; therefore, the radio is not receiving the strength of impulses it would with a bright collector and conductor.

This is argument No. 1 why the customer should have a new antenna.

XXVII.

All aeriels are semi-directional. That is, they have a maximum collective plane. Where the lead-in end points, the maximum collection is from that direction. There are always some stations your customer wants, but does not get very well. Help him to get the favorite better by pointing the lead-in end at it, if possible.

There are numerous occasions where the installation of an outside aerial is impractical, or the one in use is very poor.

It is surprising how efficient this is, considering the difficulties encountered in various wirings of houses where a decided loop and inductance effect takes place, or poor splices for high frequency, etc., but 8 times out of 10 you can get wonderful results. The plug is simply a condenser, one side going to one wire of the electric wiring, and the other side to the set.

The low frequency of the house current does not affect the radio.

Reverse the single-pronged plug in the receptacle to ascertain which is the live or ungrounded side of the wiring, or, in fact, to find out on which side it works best.

These aerial plugs can be demonstrated on nearly every job, and in some cases they are the only medium to use. When a plug is not in stock use some other means. The writer has made them up from old, straight-line wave-condenser plates, mounting a stator plate on a small block of wood or a piece of hard rubber, and placing a sheet of mica over it, holding the mica with the same screws that hold down the stator plate. The mica is obtainable in nearly every hardware store, as it is used as lights for heater stoves, and the sheets are just the right size. The mica extends over the edge of the stator plate a trifle.

The rotor plate is laid over the stator plate, and a binding screw and nuts mount it through the shaft hole, so it rotates.

One side is wired to one prong of an electric-light plug, and the other side to the antenna post. This type condenser is adjustable to get the best action from the wiring aerial. This home-made type has also been used by the writer as filler condenser on supers, and adjusts to any point desired.

As one side of this condenser goes to live lighting voltage, it must be placed where it can do no damage.

A common small sized mica condenser can also be used for aerial plug work, and completely taped.

XXVIII.

We are not knocking ground aeriels, nor saying they are not extremely efficient, but, from a money-making standpoint, a proper charge cannot be made for the labor entailed, and, upon completion, it may be a fizzle, as they do not work on all sets as well as other aeriels.

If a customer wants one you should charge by the hour, and not be penalized by results.

XXIX.

One good aerial, with everything in its favor, is the aerial and counterpoise type. This is a paying job, as you can get a good price and show results.

Where customers complain about summer static, and want to close down for the summer, install a counterpoise aerial for them. You lose 50 per cent. of the nuisance, and this is good summer-time work.

Using two wires for the aerial, 2 1/2 inches apart, with spreader, 1 x 2 x 26 inches, at each end, and 60 to 80 feet long, and another similar aerial to go to ground post on radio in place of ground, 18 feet directly under it, and 10 or 12 feet above ground, you have a decided improvement over an aerial ground installation. You can please anybody with this job, and your town can be full of them if you want to have it so.

XXX.

It should not be necessary to advise never to have trees or other breakdown points under aeriels, no parts of an aerial touching grounded objects, and no poor joints.

The statement, "Oh, this is only temporary," is the bunk. There is no such thing as a temporary aerial. Either it is good or it is bad, and, if you demonstrate with a bad aerial, why not leave out a couple of valves, so you can have another. "Oh, this is just, etc."

Splices should be mechanically and electrically perfect and taped.

Spring, inside tape, and other short aeriels stretched across or around a room are all right if absolutely necessary for such sets as three stages of radio frequency or super-heterodynes, but not for the garden variety of set. The tuning becomes too sharp, not to be mistaken for selectivity on these common sets, and the shower of electrons picked up is very weak, barely affecting the first grid circuit. The balance of the set has, of course, its maximum amplification power, which is constant at normal working points. Therefore, if the first grid gets a weak impulse, the following amplification is directly proportional, and vice versa.

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The "MOTOR" of the MODEL 'PLANE

There is a trick or two in winding the rubber strips which drive the propeller of a model 'plane.

YOU'LL need an egg-beater winder for your aeroplane models.

Readers who have built the Baby R.O.G. and indoor pusher flying models, described in "Wireless Weekly," will find that while it's comparatively easy to wind the R.O.G. by hand, the job becomes more difficult on the indoor pusher. Few model aviators wind the R.O.G. more than 250 turns. But the pusher motor will take as many as 650 turns. The indoor endurance model that you'll learn to build next week will also take 850 turns. The outdoor twin pusher to be described in three weeks, will take 1200 turns! Winding these models by hand would soon become a wearisome task.

The egg-beater winder makes the job easy. The winder is geared so that one turn of the winder gives five turns to the rubber. You can operate it quickly and easily. You simply attach the rubber motor to the winder by means of a small, piano-wire S hook and turn the handle.

Another important reason for using the winder is that it permits you to stretch the rubber. Stretched rubber takes many more turns than unstretched rubber. And the more you stretch it—up to a certain point—the more turns it will take. Your indoor pusher motor, for example, is a double strand of rubber about 15 inches long. Stretch a new rubber to 30 inches, or twice its length, and it will take 800 turns before breaking. Stretch it to 60 inches, or four times its length, and it will take 1240 turns.

When you wind by hand you cannot stretch



A Harker-Horsley standard day bomber and torpedo carrier of the R.A.F. A Rolls-Royce Condor engine is used.

the rubber at all, because you must simply turn the propeller with your finger. But in using the winder your partner can hold the 'plane, while you, with the rubber attached to the winder, can back away until the rubber is properly stretched before winding. Then, as you turn the handle, you can slowly move toward the 'plane. When the motor is fully wound, you can unhook it from the winder and attach it to the propeller shaft. Easy work.

When you start competing in contests you'll find that taking care of your rubber is one of the best things you can do. When it's not in use, keep it in an airtight, opaque container. Keep it sprinkled with talc. Some boys put glycerine or another lubricant on it, but lubricants are messy, and they add weight to the motor.

Investigations show, too, that you can increase the number of turns your rubber will take, by pre-winding. For instance, if you wind an unused 15-inch strand, after stretching it to 30 inches, you can give it 860 turns. But if you'll strength it to 30 inches, wind it up 500 turns, let it unwind, and then stretch and wind it up again, you'll find that it will take 960 turns. A hundred more turns, simply because you pre-wound it once! You can get even better results by stretching an unused rubber to 60 inches and pre-winding it 800 turns. That will permit you to get over 1300 turns on a 15-inch motor!

The conclusion you must draw is, first, that you can get the maximum number of turns if you stretch a rubber about four times its length preparatory to winding it; and, second, that by pre-winding your motor once you increase its efficiency. This is extremely valuable knowledge for the contest entrant!

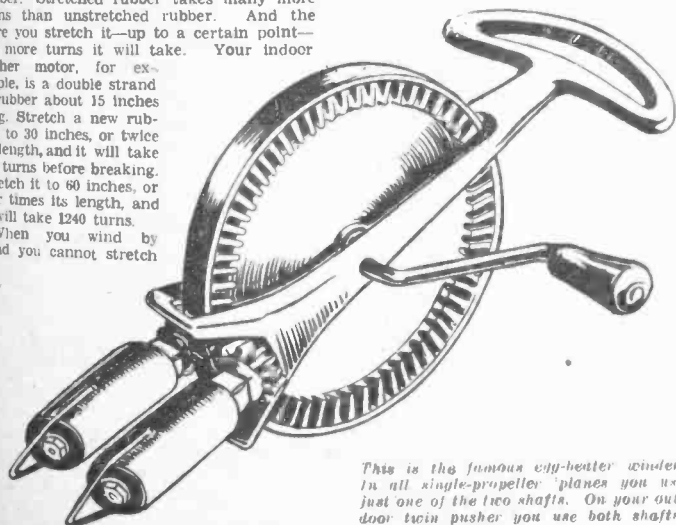
The egg-beater winder will be especially valuable to you when you start flying your outdoor twin pusher, because then you will have two propellers to wind. By hand you would have to wind each propeller separately, and the first motor would "go dead," or lose its resiliency before the other was wound. With the egg-beater winder you can wind up both motors at once, because the winder, you'll notice in the picture, has two shafts.

Unless you've had a chance to work in a machine shop enough so that you are familiar with metal-working tools, you'll not want to try to make the winder yourself. Take the accompanying drawing to a mechanic and have him do the work for you. It doesn't take long, and it won't be expensive. The egg-beaters you can buy at any hardware store, cheaply, and you'll need very few other materials.

The winder in the picture gives five turns to the rubber to one of the handle. Some beaters give only four turns, but you can check the ratio yourself by counting the turns.

In the drawing, the details are shown in the positions in which they are assembled on the winder. Fig. II. shows the blades or beaters cut off 1 1/4 inches from the small bevel gear, except for the centre shaft, which is left 5-16 of an inch longer. A 1/8-32 thread must be cut on this shaft to a point even with the blades. Fig. III shows a piece of 5-16 square stock of 1 1/4 inches long, with a 1-8 inch hole drilled through the length of it. This steel block slides in between the cut-off blades, with the centre shaft running through the hole. The cross section shows how the block fits firmly inside the stumps of the blades. The bushing shown in Fig. IV. can be cut from 5-8 round steel. It is made to slip tightly over the cut-off blades, as you can see from the photograph. A small washer, Fig. V, is then placed over the end, and a small hexagonal nut is attached to hold block, blades, bushing, and washer in place. Don't tighten the nut too much, or the winder will be hard to turn. Now the U-shaped piece, Fig. VII. is bent from .035 music wire.

The last operation is the drilling of a 1-16 inch pin hole in the bushing. This must be done after the winder is completely assembled. The hole must be drilled to one side of the centre so as to miss the shaft and yet go through the square block. A piece



This is the famous egg-beater winder. In all single-propeller planes you use just one of the two shafts. On your outdoor twin pusher you use both shafts.

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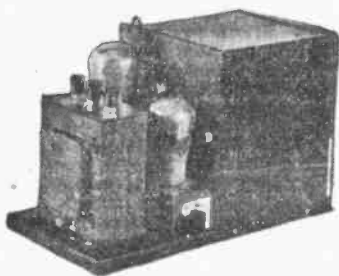
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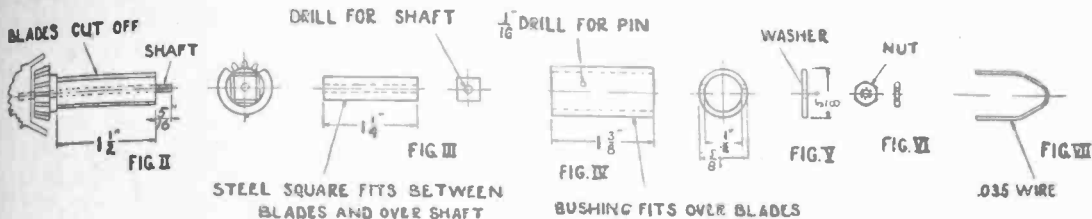
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.035 WIRE

Starting at the left, this drawing shows you every step in the construction of the shaft of the winder. Anybody in a machine shop can convert an egg-beater into a winder in a short time.

of 1-16 rod is then driven through the hole and soldered at each end to keep it from working loose. Make sure the winder works freely, and then solder the nut to the shaft to prevent it from ever coming off.

Of course, the process is the same for both shafts, so that the two sets of blades should be cut together and the process should be followed through for the winders on both gears at the same time.

By using the winder on the indoor pusher you built last week you'll find that you can get a much longer flight.

TROUBLE-SHOOT YOUR PUSHER

How does your first pusher fly? If it is an uncertain performer, examine your elevator. This is the most important part of the plane. It sits out on the front end of the motor stick and governs the lift and the steadiness of your ship. Check the leading edge of your elevator to see that it is 5-16 inch higher at the outer tips than the trailing edge. You'll remember that the leading edge is bent so that the tips are 5-16 inch higher than any other part. This requires careful work. Perhaps you haven't bent both sides quite the same.

Perhaps the rubber holding your elevator to the motor stick is too large. In that

case it will allow the elevator to rock when the ship is in flight. Naturally that will make the pusher unsteady.

A loose rubber on your wing, too, would destroy the flying qualities of your ship.

The pusher flies faster and in a straighter line than any other indoor model. If you want to make it turn in a smaller circle, about

the only way to do it is to remove your wood fin, and glue it back on at an angle. This, of course, will have the same effect as bending the bamboo and tissue fin on the Baby R.O.G.

If you want the pusher to fly more slowly, try a larger propeller. Your present one is 7 inches long. One 8 1/2 inches long will be heavier and will turn more slowly. But don't try a larger propeller on a ship that doesn't already fly well.

The pusher needs more speed than the Baby R.O.G. in order to fly properly, and you dare slow it up only if your ship is well made and well balanced. It will be a good stunt for you to build a second pusher—most model builders have several ships of each type. You can get kits containing the necessary parts and materials to build the pusher from the Boy Scouts' Association Shop, 285 Pitt Street, Sydney. When you've built a pusher that satisfies you try your larger propeller. The experiment will be interesting and worth while.

Next week you're going to learn to build the best indoor plane of them all—the indoor endurance tractor. This ship holds the world's indoor flying record of 173 seconds—nearly three minutes!

MODEL AERO CLUB

The Pilot broadcasts from 2BL every Wednesday at 6.20 p.m. Write to him c/o "Wireless Weekly," and he will answer your questions.

AN AERONAUTICAL DICTIONARY

The third of the series of aviation definitions

Wing: In aeronautics a flat or curved structure designed to support (or help support) an aeroplane in the air. The wing of a plane, like the propeller, the elevator, the stabiliser, the fin, and the rudder, is an

Angle of Attack: The acute angle between a line drawn from the front edge of a wing to the trailing edge (this line is known as the chord) and the path a wing follows as it moves through the air. Since the wing is fixed to the fuselage, the direction of the fuselage determines the path of the wing, so that the angle is always the same. The term applies to all airfoils, including propeller.

Angle of Incidence of Wing: The acute angle between the plane of the wing and the line of thrust. In models, of course, the line of thrust would be parallel to the propeller shaft. Therefore the angle of incidence of the wing of a model is the angle between the plane of the wing and a line parallel to the propeller shaft.

Single-surface Wing: A term used in model aviation to describe a wing whose frame is covered only on one side. In the early days of aviation the wings used were bamboo covered with fabric on either the upper or under side. Builders soon learned, however, that a frame covered on both top and bottom is more efficient in the air than a wing with but one side covered. Then came experiments, still going on, with different types

of airfoils. Most small model aeroplanes use single-surface wings, because of their lightness, but the larger ones, like man-carrying airplanes, have the

Built-up Wing: A wing with a framework of spars and the ribs designed so that the upper surface of the wing will differ from the lower surface. The term is used in model aviation, and is unknown to many pilots and practical fliers. Ordinarily the ribs of a built-up wing are made to give the wing a certain shape, known as the airfoil section, and is chosen because of known desirable traits.

Fuselage: The elongated body of an airplane, to which the wings and tail structures are attached. Ordinarily the pilot and passengers sit in a cockpit or cabin placed in the fuselage.

Built-up Fuselage: A fuselage made of a framework of lengthwise and transverse pieces, covered with fabric or a metal "skin" The term is rarely used in connection with the fuselages of large ships, since they are invariably "built-up," but in model aviation the phrase is necessary to set the framework fuselage off from the

Flying-stick: A model aeroplane whose fuselage is a single piece of balsa or other wood.

Tail Group (Empennage): The stabilising and control surfaces at the rear end of an aircraft, including stabiliser, fin, rudder, and

elevator. The elevator and the rudder are moveable surfaces, while the fin and stabiliser are fixed.

Fin: A fixed stabilising surface, usually placed vertically at the rear of an aircraft, which serves to keep the craft from capsizing. The fin acts like the keel of a sailing boat.

Stabiliser: A fixed horizontal surface on an aeroplane, usually placed at the rear end of the fuselage, which keeps the craft from pitching or bucking in the air. Hinged to it, in order to move up and down, is the

Elevator: A hinged or pivoted moveable auxiliary surface of an aeroplane, usually attached to the stabiliser at the rear end of the fuselage, whose purpose is to give ascending or descending impulse to the plane. When the elevator is raised the plane's nose points up and the ship climbs; when it is lowered the tail of the plane goes up and nose of the plane turns downward.

Rudder: A hinged or pivoted moveable auxiliary surface of an aeroplane, usually attached to the fin, whose purpose is to give right and left directional control. Swung to the right, the rudder carries the plane to the right; and swung to the left, it turns the plane to the left.

Leading Edge: The foremost edge of an aircraft or propeller blade. It is also known as the entering edge, and usually it is less sharp than the

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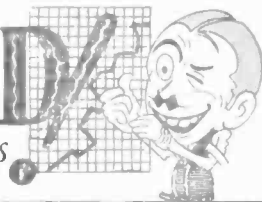
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The Output Transformer Problem

It is evident, from a study of the present technical literature on the subject, that the problems of the last audio frequency amplifier and the coupling from its plate circuit to the speaker are becoming genuinely appreciated. A considerable mass of material dealing with the problems of the low impedance output valve is available at the moment, and, with the exception of a few conflicting "schools of thought," engineers are in agreement over the requirements. The advent of the pentode for output stage work has, however, resulted in the need for a fresh study of the whole problem. With the low impedance tube it has been understood that the prime requisite was that the load resistance should be twice that of the valve, in order to obtain maximum undistorted output. The power output of such valves was expressed as—

$$W = \frac{\mu^2 e_g^2 r_o}{(r_o + r_p)^2}$$

when W is the output in watts, μ the amplification constant of the valve, r_o the load resistance, r_p the valve plate resistance, and e_g the r.m.s. input grid voltage. The load resistance is not, of course, the impedance of the output transformer primary or that of the coupling choke, but the impedance of the speaker as reflected into the output circuit of the valve by the characteristics of the output device. Thus in the case of a transformer the equivalent load impedance may be considered as the secondary load resistance (the speaker) multiplied by the square of the turn ratio of the transformer.

In the case of the pentode, where the plate impedance is perhaps 50,000 ohms, this relationship between the valve and load impedances obviously cannot be maintained in general practice, and many of us have been wondering just what was to be done about it. The method of attack as outlined by an engineer of one of the outstanding manufacturers of pentodes goes something like this:—The maximum undistorted output which the last valve can give, providing the characteristics of the valve be straight in the range of the negative grid voltage, can be stated as:—

$$W = \frac{V_p^2}{16r_p}$$

where V_p is the output plate voltage and r_p again the impedance of the valve. From this it can be seen that the smaller the impedance the larger the output. The load impedance, however, is in series with that of the valve, and in the usual procedure it is of a similar magnitude. The output voltage in the plate circuit is μ times e_g , where μ is the amplification factor of the valve and e_g the input grid voltage. Therefore the A.C. flowing through the speaker is represented by—

$$I_a = \frac{\mu e_g}{r_p + Z}$$

where Z is the speaker impedance. This impedance is not the same for different fre-

quencies, and therefore the denominator (r_p plus Z) is dependent on the frequency. This means that for a given input the output is different for different frequencies. As Z is greatest for the high frequencies the output at these frequencies will be low. This can be remedied by making r_p so large that Z can always be neglected. Then the A.C. passing through the speaker can be represented by—

$$I_a = \frac{\mu e_g}{r_p} = S e_g$$

in which S is the slope of the characteristic. In this case I_a is almost independent of frequency and better quality results.

Such a relationship between valve and load impedance would result in a very low output with the ordinary three-electrode valve. Operation under such conditions would be quite impractical. The desirability of the impedance relationship, however, appears to have been considered so great that the pentode was evolved to offset the losses in the output device by more effective operation of the tube itself. As it happens, the pentode designers claim to have succeeded so well that not only have they offset the loss in the coupling device, but they have provided a performance ahead of the three-electrode tube at given grid input and plate voltages.

Impedance Curves

I CRAVE a small corner in your "Curves Ahead," page to ask why transformer and magnetic pick-up manufacturers will rarely offer a curve showing the impedance of their particular product at different frequencies.

"I notice that each and every one of them seem only too willing to advance the amplification curve, which seems always to be a straight line for practically all frequencies. From 200-5000 cycles, at any rate. Some of them will also give you a curve of a different brand by way of comparison, and one which usually resembles a dog's hind leg, but nothing is ever said about the transformer's impedance. I presume the information can be procured by writing to the different manufacturers, but I consider it would be much easier and far more satisfactory if they could give you the curve when the transformer (or pick-up) is purchased.

"So much is said these days about matching valve impedance with those of the external circuit for superior results, but when one craves for these superior results and only knows the impedance of the valves in use, and has no technical information regarding transformers, etc., a large element of guesswork is still present.

"I notice that the manufacturers of a certain well-known brand give the inductance of the primary at certain current values, and also the D.C. resistance. This gives one something to work on, but it is not enough.

"Of course, someone will point out that the impedance will vary with the frequency and the plate voltage, etc., etc., but, if it comes to that the curve of a valve is also affected in the same way, and we get the curves of valves all right.

"I suggest that if impedance curves of transformers and pick-ups at different fre-

quencies were given with those articles they would be much appreciated by those whose aim is perfect reproduction.

"I would like to hear the opinions of other readers, and also—what would be more useful still—from manufacturers themselves, regarding this matter, on why we can't get Impedance Curves

"Yours, etc.,

"POWER PACK FAN.

"Stanmore."

Valve Operation From A.C.

THE "heater," or indirectly heated cathode type of A.C. receiving valve, is at present in quite general use in the United States, and is becoming increasingly popular in this country. Even so, there is still a distinct place for the heavy filament type of A.C. tube (such as the UX-226) in which the filament itself is heated by alternating current. The use of such tubes as a detector has not so far proved practical on account of complications introduced by the existence of grid current. As radio frequency or audio frequency amplifiers, however, they can be operated with very little resulting hum, providing certain circuit precautions are observed.

The considerations involved in the design and construction of valves of this type are to be found treated brilliantly in an article, "The Operation of Radio Receiving Tube Filaments on Alternating Current," by Dr. K. H. Kingdon and H. M. Mott-Smith, Jr., the first and second parts of which appeared in the March and April issue of "THE GENERAL ELECTRIC REVIEW"

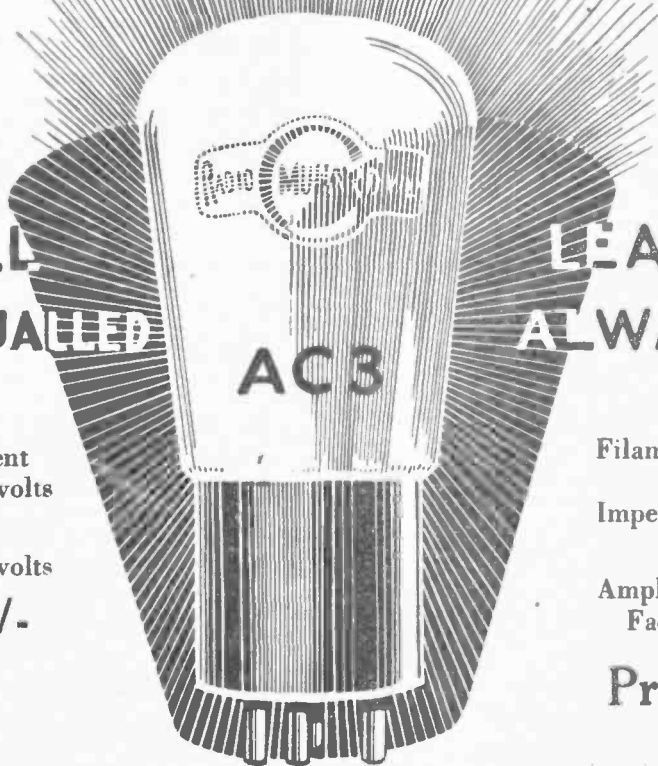
In summing up a mathematical and an experimental treatment of the subject it is stated that the use of alternating current for heating the filament gives rise to three effects—a fluctuating potential drop along the filament; a fluctuating magnetic field around the filament; and fluctuations in the filament temperature. The fluctuating drop along the filament results in an output voltage ripple which may be reduced greatly by returning the grid and plate circuits to a centre-tap across the filament supply. The remaining ripple is shown to be double the supply frequency, and of such a phase as to make the anode current a maximum when the filament current is a minimum. The output ripple resulting from the fluctuating magnetic field around the filament also is found to be at double the frequency of the filament supply with its phase such as to make the plate current a maximum when the filament current is a minimum. Since these two ripples are of opposite phase, it has been found possible to make them neutralise one another by suitable design of the filament.

The article, though quite heavy in parts, provides interesting study.

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Mullard

THE MASTER VALVE

PROVING RADIO

70
28

Practical calculations in Ohm's Law and frequency. Further notes on Valves. A puzzle and a prize. In one more lesson, the actual series "Proving Radio" will cease, and the A.O.P.C. course will commence. However, experiments will be described from time to time in order better to illustrate intricate points.

IT IS ONE thing to learn Ohms Law, and another thing to put it to practice, as quite a number have found. Those of our readers who have carefully followed "Proving Radio" from its beginning, should have a good idea of the principles involved, since Ohm's Law has been applied in several cases, and a special article dealing with this subject was published.

However, in all probability, there would be few who could answer the following question: "What is the correct value rheostat to use when the accumulator voltage is 6, operating voltage of the valve 5, operating current of the valve .25 amps, and there are five valves to be worked off the one rheostat?" Ohm's Law applies here. Let us go about the calculation systematically.

First of all, what do we require to know? Resistance—isn't it? Right, then by Ohm's Law, the formula for calculating resistance is R equals E over C.

That's simple enough, but we have an accumulator giving six volts, and the filament of our valve requires only five volts. That means, then, that there must be a voltage drop of 1. Therefore, E will equal 1.

Now, about the other part of our fraction, i.e. C. The filament of one valve is .25 amps. Therefore, the filament current of five valves will be five times .25 amps, which equals 1.25 amps.

This makes matters much simpler. Our formula remaining the same, i.e., R equals E over C—the sum becomes R equals 1 over 1.25. For the sake of those who can deal easier in fractions, let us transpose the decimal: 1.25 equals 1 and 25 hundredths, equals 1 1/4.

The sum now is 1 equals 1 x 4
1 1/4 = 5
equals 4 of an ohm.

Following this procedure, the reader should now see that the formula for calculating the rheostat to be used can be found from the following: E—e i.e., E minus e over C times

C N,
N, where E equals the accumulator voltage equals the filament voltage of the valve, C equals current consumption of one valve filament, and N equals number of valves. It stands to reason, however, that should different type valves be used, the value C would not be multiplied by the number of valves, as some of them would probably have different characteristics. Say, for instance, we are using two valves—one is a 201A, and the other a 199. The 201A has a filament current consumption of .25 amps, and the 199 a consumption of .06 amps.

Therefore, in order to find the total current consumption, we should add these two together, i.e., .25 plus .06, equals .31 amps.

However it is unwise to use valves with such vastly different characteristics, because the 201A takes 5 volts on the filament, and the 199 only 3 1/2 volts. That means that it

would be necessary to use a 6-volt accumulator for the 201A, but the voltage would be too great for the 199 valve. Now, here is a chance for you to apply Ohm's Law again. You have a six-volt accumulator, the valve requires only 3 1/2 volts at .06 amps. Find the value of resistance required so that the two valves could be used together. (The resistance would, of course, be placed in series, with one of the filament leads to the valve.)

If you worked correctly, your answer should be 41 2-3 ohms.

MORE ABOUT FREQUENCY

You will remember that frequency has a definite relation to wave length. Frequency is measured in cycles per second, and NOT (as many said in their examination papers) "in cycles." The distance from the top of one positive half wave to the top of the next positive half wave is the wave length. The distance from the bottom of one negative half wave to the bottom of the next negative half wave is also one wave length.

Thus it will be seen that frequency and wave length are associated to one another, and as the speed of radio waves is always the same, i.e., the same speed as light—which is 186,000 miles, or 300,000,000 metres, per second, we can always find the wave length when the other factors are known.

The formula for this calculation is W/L (wave length) equals V (velocity) over F (frequency in cycles). It is most important that the student should remember the following points. In this calculation the wave length will always be in metres; the frequency must always be measured in cycles. If you are working a sum and you are dealing in kilocycles, you must revert this to cycles (a kilocycle is, you will remember, one thousand cycles) before you continue with the calculation.

Thus, if we wish to find the wave length of a station with a frequency of 50 kilocycles (in other words, fifty thousand cycles), our sum would be W/L equals 300,000,000 over 50,000, which equals 6000 metres.

Test yourself out on this by finding the wave length of a station working on 150 kilocycles. Your answer should be 2000 metres.

It is also possible to find the wave length from the inductance and capacity (which former measure has not yet been fully treated as they involve the calculation of the root figure). This will be treated in good time.

When we treated condensers, we learned that the unit of capacity was the farad.

in the case of small condensers, the microfarad was used. The microfarad is one-millionth of a farad.

It is seldom that we have to deal with larger capacities than those measured by the microfarad. Sometimes use is made of cms. and jars. The following table will explain the relation of microfarads, farads, cms. and jars. The farad equals 1,000,000 mfd, or 9 x 10 to the 11th power cms. The microfarad equals .00001 of a farad, which also equals 900,000 cms., or 900 jars.

FURTHER VALVE NOTES

Though we have treated the theory and operation of valves in general, i.e., as rectifiers, amplifiers, and detectors, we have still a few points to learn. One often sees reference on the sheet accompanying a valve, to impedance, amplification factor, and mutual conductance. Though these terms may seem formidable to the beginner, they are easily explained.

Impedance is a term which may be coupled with resistance. The term indicates that there is a resistance inside the valve to the electron stream between filament and plate.

The amplification factor is a term denoting the amount of voltage amplification obtainable in a valve. It is a measure of the controlling influence of the grid on the electron stream. Valves with high amplification factors are desirable, providing that the impedance of the same valve is sufficiently low to fulfil the requirements given above. It will usually be found that a high amplification factor valve has a high impedance, and vice versa.

Mutual conductance is a measure of the ratio of amplification factor to impedance. It indicates the efficiency of the valve, being a measure of the amount of output it is possible to obtain for the input provided. This term is sometimes expressed as "slope."

When answering queries I often strike a letter from some reader who desires to know if he can use A.C. on the filaments of his D.C. valves. This should interest followers of "Proving Radio," as it brings up a question worth discussing. A.C. will operate the valves, since it will heat the filaments just as D.C. does. However, if A.C. is used on all valves, a loud hum will result.

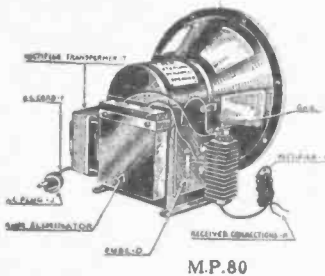
Now, why is this? Since the valve only allows the positive half cycle to pass, how is it that we can hear an A.C. hum?

An explanation will appear in a few weeks' time. Meanwhile, a prize of a Precise 4-1 radio transformer is offered for the best explanation.

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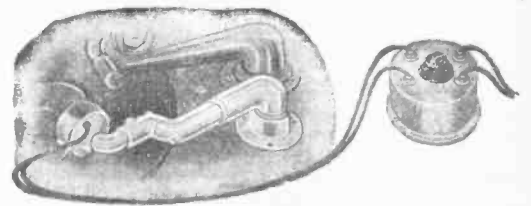
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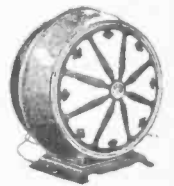


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PROVING RADIO CLUB NEWS

Queensland Division

As two groups have made a start in Queensland. Mr. H. N. Neale, of "Aloomba," Annerley Road, South Brisbane, has been appointed hon. secretary for the Queensland division of the Proving Radio Club. Anyone desiring to study the science and having sufficient available space to house a group, should get in touch with Mr. Neale; also we would be pleased to hear from a ham who would assist the secretary for Queensland in a plan of campaign.

MR. GEO. W. IRVING, Smith Street, Kempsey, is anxious to form a group in his district, so will intending members please get in touch with him. As Mr. Irving is a radio dealer, members joining up can be assured of receiving every assistance and should, under his guidance, make rapid progress.

WE take this opportunity of thanking Mr. W. Downie, of 19 Bon Accord Avenue, Waverley, for his assistance in offering a room for the use of the club, and hope to have sufficient members to start a Bondi Junction group in the near future. Intending members of this group please phone either C. Y. Hook, Pet. 3272, or L. R. Barker, M6661.

THE Arncliffe Group is still plodding steadily along. We have not got very far with our studies, but what we have done we have done thoroughly. We have now got four screen grid short-wave receivers working in this group, and who, in future, will furnish a report of short-wave stations that have been received during the week. On Saturday June 22, PCJ was reported a QSA3.

VK2HC was also heard on phone, and CW on 42 metres band on Saturday afternoon. As usual his QSA was 5, and modulation all that could be desired, but when using CW key clicks were bad.

As the group was at Pennant Hills on Sunday no reports are available. VK2HU was heard transmitting slow Morse on 230 metres from 2000 to 2100 SMT on Sunday on a 3-valve 3-coil arrangement. He was quite easy to follow on CW, but could not clear him up on phone. Some bother is experienced with harmonics from the broadcasting stations on this band. This group takes the opportunity of thanking VK2HU very much for the assistance he is giving the club.

THE meeting of the Coff's Harbor group was held on Friday June 14, and after giving club matters attention, we conducted the experiments of magnetism very successfully, the matter of induced magnetism being very successfully demonstrated. Not having a piece of glass for one experiment, we substituted a piece of paper, and the resultant success was beyond expectations.

Next week we are going to construct the galvanometer, and if we have sufficient time the same evening a start will be made with resistances, so would like you to forward the necessary materials for lectures Nos. 7 and 8.

(Note:—The P.R.C. secretary, Mr. C. Y. Hook, has forwarded this material to you.)

A MEETING of the Bondi Beach Group was held at the residence of Mr. J. Diggerman, 45 Lamrock Avenue, Bondi. Those present being L. R. Barker, J. Diggerman, P. Anderson, B. Hallet, J. Herrick, and S. Pauley. As this group is now closed for membership, and as there are several intend-

ing members waiting to join, we would be pleased to hear of anyone who has sufficient room to take another group. Please phone Petersham 3272, C. Y. Hook; or M6661, L. R. Barker.

The lectures taken for the opening night were (1) atomic or electronic theory, (2) ions, ionisation, and static, and as we had from 8 p.m. to 11 p.m. for discussion, much knowledge was gained, especially when P. Anderson ably demonstrated, with the blackboard and chalk, the action that takes place in molecules and atoms, etc. This group is rather fortunate, in so far as one of its members, J. Diggerman, whose knowledge of chemistry we will find of great assistance in the near future, was able to assist us in the lectures.

Next week we take the electric current theory, insulators, and conductors, also will have the pleasure of seeing an 80-metre transmitter of the T.P.T. G Type (lower power) using a 201A, which one of the hams has consented to show the group, also the ridget, which one of our members is building.

THE Randwick Group took as its subject Inductance and induction. The lecture was in the capable hands of our president, J. O'Dea, who spent two and a half hours on the job. Members reported favorably on the transmission of VK2HU on last Sunday night.

KEMPSEY GROUP.—"Dear Sir.—I would be pleased to receive particulars for starting a radio club in this district." (Sgd.) G. W. Irving, "The Radio Shop," Colonial Mutual Buildings, Smith Street, Kempsey.

Answer: Perhaps some local readers may see this, and get in touch with you. In the meantime, your letter has been forwarded to the Country Organiser, Mr. Simmonds, "Gunton," Marsh Street, Arncliffe.

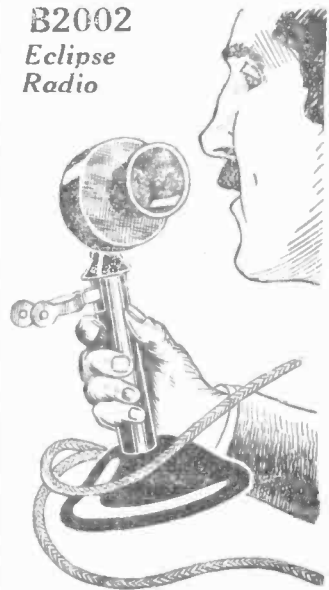
EXECUTIVE REPORT: The executive and members of the Proving Radio Club extend a hearty welcome to Mr. Ross A. Hull, who has had a remarkable success during his stay in America, and we sincerely hope that he meets with still greater success in Australia. The secretary reports that a Victorian Division of the Club has been opened at East Malvern, and Mr. A. J. Shields, of Stonehaven Avenue, East Malvern, S.E.5, has been requested to occupy the position of honorary secretary pro tem. The executive reports that arrangements have been finalised for the trip to the transmitting station of AWA at Pennant Hills.

A.W.A. Dealers' Social

AT a gathering of radio dealers arranged by Amalgamated Wireless in Melbourne a few days ago Mr. H. Johnson, wireless engineer, gave an interesting lecture on "Modern Broadcasting." The evening was intended to foster friendly relations among the dealers of that State. Mr. L. A. Hook, deputy general manager of A.W.A., was in the chair.

Mr. W. Hill, of A.W.A., demonstrated his versatility in monologue and recitation, and his clever "patter" added much to the success of the various mystery stunts, both apart from and connected with radio. Community singing, with topical verses supplied by the A.W.A. staff, was enjoyed, and the most interesting event of the evening was a film showing the various stages of a radiogram in transit by Beam Wireless to London. Mr. J. Malone, chief inspector of wireless, occupied a seat on Mr. Hook's left.

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Local Programmes, Friday, July 5

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

7.0: "Big Ben" and announcements. 7.2: Official weather forecast; rainfall; river reports; temperatures; astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.12: Shipping intelligence; mail services. 7.15: Studio music. 7.25: Investment market; mining sharemarkets; metal quotations; wool sales; breadstuffs markets; inter-State markets; produce markets. 7.40: Studio music. 8.0: "Big Ben"; close.

MORNING SESSION.

Announcer: A. S. Cochrane.

10.0: "Big Ben" and announcements. 10.2: Pianoforte reproduction. 10.10: "Sydney Morning Herald" news service. 10.25: Studio music. 10.45: A talk on "Home Cooking and Recipes" by Miss Ruth Furst. 11.0: "Big Ben"; A.P.A. and Reuter's cable services. 11.5: Close.

MIDDAY SESSION.

Announcer: A. S. Cochrane.

12.0: "Big Ben"; summary of news, "Sydney Morning Herald." 12.4: Rugby wireless news. 12.7: Stock Exchange, first call. 12.10: Synopsis of weather. 12.11: A reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" midday news service; Producers Distributing Society's report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular studio music. 2.0: "Big Ben"; close.

AFTERNOON SESSION.

Announcers: Laurence Halbert and Eric Bessemer.

Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben"; Rev. A. P. Doran will speak on "Tynwald Day." 3.15: Gladys M'Master, pianist—(a) "Sonata E Minor, 1st Movement" (Grieg), (b) "Rosemary" (Bridge). 3.23: Gladys Hart, soprano. 3.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 3.40: From the studio: A popular item. 3.45: A reading. 4.10: Gladys Hart, soprano. 4.17: Gladys M'Master, pianist—(a) "Clair de Lune" (Debussy), (b) "Mid Summer" (MacDowell), (c) "Petite Serenade" (Schutt). 4.27: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.34: From the studio, popular music. 4.45: Stock Exchange, third call. 4.47: Studio items. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man." Letters and stories. 6.15: Music and entertainment. The Farmyard Five, from Kookaburra Gully. 6.30: Dalgety's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news, by the 2FC racing commissioner. 7.0: "Big Ben"; late news service. 7.10: From Farmer's Restaurant, items by the dance band.

EVENING SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

7.40: Popular music. 7.45: Programme announcements. 7.48: A record recital. 8.0: "Big Ben." By arrangement with J. C. Williamson, Ltd., the first act of the "Desert Song." 9.25: From the Studio, weather report. 9.26: Jack Lumsdaine, songs at the piano. 9.36: From the Hotel Australia—Cec Morrison's Dance Band. From the Studio:— 9.45: Jack Cannot, comedian. 9.58: Jack Lumsdaine, songs at the piano. 10.8: From the Hotel Australia—Cec Morrison's Dance Band. 10.28: From the Studio—Late weather and to-morrow's programme. 10.30: National Anthem. Close.

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2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.

8 a.m.: G.P.O. chimes; weather report. State and metropolitan. 8.3: Studio music. 8.15: News and information service from the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes; half an hour with Silent Friends. 10.0: G.P.O. chimes; close down.

MIDDAY SESSION.

11.0: G.P.O. chimes; 2BL Women's Sports Association session, conducted by Miss Gwen Varley. 11.30: Advertising hints. 11.40: Women's session, conducted by Mrs. Cranfield; talk on "Infant Welfare" by Nurse May. 12.0: G.P.O. chimes; special ocean forecast and weather report. 12.3: Studio music. 12.30: Shipping and mails. 12.35: Market reports. 12.48: "Sun" midday news service. 1.0: G.P.O. chimes; studio music. 1.30: Talk to children and special entertainment for children in hospital by Uncle Steve. 2.0: G.P.O. chimes; close down.

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.

Accompanist: Kathleen Roe.

3.45: G.P.O. chimes; popular music. 4.0: G.P.O. chimes; Dorothy Benbow, contralto—(a) "The Lover's Curse" (Hughes), (b) "Dreaming of Home" (Besley) 4.7: Captain Stevens will speak on "Queer Habits of East African Natives." 4.22: Phyllis Bateman, violinist, "Andante" and "Allegro" from "Concerto in E Minor" (Mendelssohn). 4.30: Dorothy Benbow, contralto—(a) "How Many a Lonely Caravan" (Woodforde Finden), (b) "My Little Garden World" (Carew). 4.37: Popular music. 4.47: "Sun" news service. 4.52: Phyllis Bateman, violinist—(a) "Liebeslied" (Kreisler), (b) "Minuet" (Porpora-Kreisler). 5.0: G.P.O. chimes; pianoforte solo. 5.15: Popular music. 5.25: Producers Distributing Society's poultry report. 5.27: Features of the evening's programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.

5.30: Children's session, conducted by Uncle Bas; music and entertainment; letters and stories. 6.30: "Sun" news and late sporting. 6.40: The Instrumental Trio—(a) "Two Zigzag Dances" (Jacobs-Bond), (b) "Tisoro Mio" (Buccelli), (c) "The Vagabond King" (Priml), (d) "Marie" (Berlin), (e) "Romance Sans Paroles" (Van Goens), (f) "Nymphs of the Nile" (Hersom). 7.7: Australian Mercantile, Land, and Finance Co.'s report; weather report and forecast by courtesy of Government Meteorologist; Producers Distributing Society's fruit and vegetable market

report; grain and fodder report ("Sun"); dairy produce report ("Sun"). 7.25: Mr. Pam and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Act. Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

- 8.0: G.P.O. chimes. Light Orchestra—
(a) "In a Persian Garden" (Lehmann)
(b) "Pilgrims Chorus" (Wagner).
8.20: The Two Little Maids, vocal duets—
Comic Opera Medley.
"French Maid" (Gaubert).
"Red Widow" (Sebest).
"Irene" (Tierney).
"Katinka" (Priml).
"Sally" (Kern).
8.31: Sibley and Sayles, entertainers—
"The Two Sad Sunbeams in Micro-
phone Murrums."
"Like the Big Pots Do."
8.38: Light Orchestra—
(a) "Valse Triste" (Sibelius).
(b) "Dance Macabre" (Saint-Saens).
8.51: Vivia de Loitte in memories of the opera.
9.1: Weather report.
9.2: Light Orchestra—Fantasia.
"The Flying Dutchman" (Wagner).
9.21: Sibley and Sayles, entertainers—
The Two Sad Sunbeams, present more Murrums through the Mike.
"You Can Kiss my Girl" (Edney and Penn).
9.28: Light Orchestra—
Overture, "Rosamunde" (Schubert).
9.38: C. R. Dexter will supply last-minute sporting information.
9.53: Laurel Mather, popular vocalist—
(a) "Twilight Dreams" (Lang).
(b) "Ten Little Miles from Town" (Schoebel).
10.0: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.12: Laurel Mather, popular vocalist—
(a) "That Melody of Love" (Donaldson).
(b) "High upon a Hill Top" (Campbell and Whiting).
10.19: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.28: From the studio; late weather report.
10.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.57: To-morrow's programme.
10.59: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
11.30: National Anthem; close.

2GB

10 a.m.: 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: Music. 3.0: Movie Know All. 3.30: Close down. 5.30: Children's session by Uncle George. 7.0: Music. 7.30: Feature story. 8.0: Miss Vera Winn, contralto. 8.7: Instrumental trio. 8.15: Mr. J. Lou Walters, baritone. 8.25: Symphony Orchestra. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Gwen Selva, soprano. 8.45: Address. 9.0: Weather report. 9.3: Instrumental trio. 9.13: Miss Vera Winn, contralto. 9.23: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.28: Symphony Orchestra. 9.38: Mr. J. Lou Walters, baritone. 9.48: Organ music. 9.53: Miss Gwen Selva, soprano. 10.3: 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. 8.0: Music. 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.

Interstate Programmes, Friday, July 5

3LO

EARLY MORNING SESSION

7.15: Morning melodies. 7.30: Stock reports; Stock Exchange information; general news; shipping and sailing information. 8.0: Time signal. 8.15: Close down.

MORNING SESSION

9.0: 3LO's Recipe for Supper Dish—Lobster Mayonnaise. 11.5: Miss I. V. Crawford will speak on "Practical Psychology." 12.25: "Au Fait" will speak on "Fashions." 1.45: Under the auspices of the Department of Health, Dr. Rowan will speak on "Health and Environment."

MID-DAY NEWS SESSION

12.0: Time signal. 12.1: British official wireless news from Rugby; Reuters and the Australian Press Association cables. "Argus" news service. 12.15: Newmarket stock sales; special report by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: The Station Orchestra. 12.30: Arthur Douglas, Scottish comedian. 12.37: Stock Exchange information; prices received by the Australian Mines and Metals Association from the London Stock Exchange this day. 12.42: The Station Orchestra. 12.52: Arthur Douglas, Scottish comedian. 1.0: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports; rainfall. 1.8: The Station Orchestra. 1.18: Jean Sinclair, soprano. 1.25: The Station Orchestra. 1.35: Jean Sinclair, soprano. 1.38: The Station Orchestra. 1.48: Close down.

AFTERNOON SESSION

2.15: The Station Orchestra. 2.23: Linda Wald, soprano. 2.30: The Station Orchestra. 2.50: Description of Public Schools' football match, Geelong Grammar School v. Geelong College, by S. G. Harris. 3.10: Miss Frances Fraser will speak on "The Love Story of Beethoven." The talk will be illustrated by Beethoven's Minuet in E Flat (played by Agnes Fortune, piano), and the "Romance in G" (played by Cecil Parkes, violin). 3.40: Description of Public Schools' football match, Geelong Grammar School v. Geelong College. 4.0: The Strad Trio. 4.10: Linda Wald, soprano. 4.17: Description of Public Schools' football match, Geelong Grammar School v. Geelong College. 4.27: Cecil Parkes, violin. 4.42: Description of Public Schools' football match, Geelong Grammar School v. Geelong College. 5.0: News service; Stock Exchange information; progress scores in billiard match, Walter Lindrum v. Willie Smith. 5.45: Stories and entertainment for the children. 6.55: Captain Donald MacLean.

EVENING SESSION

7.5: Stock Exchange information. 7.15: Official report of the Newmarket stock sales, by the Associated Stock and Station Agents, Bourke Street, Melbourne. Latest truck orderings for the next week's markets. Fish market reports by J. B. Borrett, Ltd. Rabbit prices. River reports; weather synopsis. Market reports by the Victorian Producers' Co-operative Company, Ltd. Farm and dairy produce and cereals meat reports. Market reports of fruit by the Victorian Fruitgrowers' Association. Retail prices. Wholesale prices of fruit by the Wholesale Fruit Merchants' Association; citrus fruits. 7.30: News session. 7.43: Birthday greetings. 7.45: Out of the Past. 7.46: The Collingwood Citizens' Band: Fifteen minutes of musical comedy. 8.0: A Maker of History.

NIGHT SESSION

8.0: Programme announcements. 8.1: Collingwood Citizens' Band—Overture, "Lustpiel." The Cornet Solo, "I Passed by Your Window." March, "Under the Double Eagle." 8.15: Linda Wald, Soprano—"Synnov's Song" (Kjerulf). "Winterlied" (Humperdinck). 8.22: Collingwood Citizens' Band—"Rustic Suite." 8.30: The Sundowners' Radio Revue Company present "The Big Old-F's Pow-Wow." A Burlesque Sketch especially written and produced for Radio, by J. Harcourt Bailey. Half an hour of mirth and melody, which takes place at a Red Indian Camp in the Canadian Rockies. The Characters in the Sketch are:—Big Chief Sitting Bull, played by Robert Gillard. Little Chief Frog in the Throat, Robert Allen. Thrifty Chief Drink-Em-Up-Quick, Herbert San, derson. Would be a Chief Stick-in-the-Mud, Tom Semple. Comedy Chief Pale Face Jimmy, J. Harcourt Bailey. Assisted by numerous Braves, Squaws, Squalls, Totem Poles, Tapes Poles, Monopoles. The aeroplane used in the Sketch is kindly furnished by the Magicians' Association, and, as usual, there is a surprise ending. 9.0: John Hobbs, Bass-Baritone—"Songs of the Countryside" (Head). "If Wishes were Horses" (Rowley). 9.7: Lindsay Biggins, Piano—"Four Preludes" (Scriabine). (a) "Evening," (b) "Berceuse" (Voormolen). (c) "Song," (d) "Andaluzza" (Granados). 9.23: Linda Wald, Soprano—"Irish Tune from County Kerry" (Grainiger). 9.32: Eric Welch will speak on to-morrow's V.R.C. races at Flemington. 9.42: The Collingwood Citizens' Band—Selection, "Darlie's Dreamland." 9.53: Linda Wald, Soprano—"The Waltz Song" (Gounod). 10.0: News service; British official wireless news from Rugby; meteorological information; announcements.

10.10: Collingwood Citizens' Band—Selection, "Faust" (Gounod). 10.20: John Hobbs, Bass-Baritone—"Gifts" (Thomson). "Limehouse" (Hyden). 10.27: Collingwood Citizens' Band—March, "Uncle Sam." "Minuet" (Boccherini). 10.37: Ern. Hall's Radio Revellers, with Hugh Huxham: "She's Got a Great Big Army of Friends" (Nelson). "Querida" (Simon). "Falling in Love With You" (Mayne). "Love to Dunk a Hunk of Sponge Cake" (Castill). "Sweet Sue" (Harris). "Roses of Yesterday" (Berlin). "The Voice of the Southland" (Austin). Selected and request numbers. 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.1: G.P.O. clock says "Ten." 10.1: Market reports. Farm and station produce, fruit, fish, and vegetables. 10.25: "Age" 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: Recordings. 11.30: The Jedral Trio. 12.0: Recordings. 12.20: British official wireless news; announcements. 12.30: Close down.

AFTERNOON SESSION.

3.0: Recordings. 3.30: Royal Philharmonic Orchestra, conducted by Felix Weingartner. "Symphony, No. 8, in F" (Beethoven). 4.0: Recordings. 4.30: Close down.

EVENING SESSION.

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

NIGHT SESSION.

8.29: The Shire Hall of Preston was opened in April, 1895. William White built the first brick cottage in Preston in 1853, on the site where Hutton's factory now stands. Although it is called Priests Town, it has no great ecclesiastical building. 8.30: Community Singing, transmitted from the Collingwood Town Hall. The Radio Revellers, with Hugh Huxham, assisted by Arthur Douglas (the Hielerander) and Mildred and Connie (in a little variety). 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, overture, "Le Chevalier Breton" (Herman); valse, "Lucille Love" (Olman). dante Intermezzo, "Laughing Eyes" (Finck); caprice, "In the Starlight" (Hueter); rag step, "Live Wires" (Shepherd). 3.30: Organ recital by Mr. Geo. Sampson, F.R.C.O., City Organist. 4.0: Studio Orchestra, entr'acte, "A Voice in the Wilderness" (Russell). march, "The Glencoe" (Hayes). 4.10: Records. 4.15: News. 4.30: Close down.

NIGHT SESSION.

A programme by Mr. Sydney May's Party. 8.0: From the Studio—Double Quartette—"Londonderry Air." John Steele, tenor—"How Many Hired Servants" (Sullivan). Vera Parker, contralto—"Sapphic Ode" (Brahms). Eric Hayne, violinist—"Hymn to the Sun" (Rimsky Korsakoff). "Canzonetta" (d'Ambrosio). Double Quartette—"My Old Kentucky Home." Patricia M'Onigly, soprano—"Loreley" (Liszt). Jack Land and Lou Lambert, vocal duet—"Love and War" (Cooke). Jack Atkinson (baritone)—"The Prologue" (Leoncavallo). Double Quartette—"Song of the Gale" (Poster). Jill Manners, soprano—"The Waltz Song" (Gounod). Jack Land, tenor—"The Message" (Blumenthal). Eric Hayne, violinist—"Andantino" (Martini-Kreisler). "Scherzo Rosmarin" (Kreisler). 9.0: Metropolitan weather forecast. 9.1: Week-end information for motorists, officially supplied by the R.A.C.Q.

Quartette (Misses Manners and M'Onigly and Messrs. Land and Atkinson)—"One Day, If I Remember Well" (Verdi). Vera Parker, contralto—"Coming Home" (Willeby). John Steele, tenor—"Arfon Water" (Hume). "O, Mistress Mine" (Quilter). Lou Lambert, baritone—"The Bachelor's Love Song" (Lohr). Double Quartette—"Life's Lullaby" (Lanel). Jack Land, tenor—"The Willow" (Goring Thomas). Jack Atkinson, baritone—"Drink To Me Only" (Puccini). Patricia M'Onigly, soprano—"Wondering Why" (Clarke). Men's Voices—"The Owl and the Pussycat" (de Koven). Jill Manners, soprano—"The Vagabond King" (Prini). 8.15: Ruby Dunstan, lyric soprano—"Elegie" (Massenet). "Snowflakes" (Mallinson). 8.25: Musical Appreciations, a short lecturette by Horace Perkins, Mus. Bac., A.M.U.A.—"Inflammatus" (Rossini), sung by Florence Austral. "The Meeting of the Waters" (Irish Folk Song), sung by Margaret Sutherland. Trio in D Minor (Mendelssohn), played by Tildrad Casals and Cortot (first movement). 9.1: Meteorological information, including Semaphore tides. 9.2: Overseas grain report. 9.3: Graham Burkin, baritone, "The Bandolero" (Saturati). "The Bachelor's Love Song" (Slater). 9.11: Station Orchestra, Indian song, "Silver Cloud" (Ketyby). "Valse Moderne" (Claude vy). 9.18: A special broadcasting sketch (produced by Beryl Alford). Characters: He, Jack Burgess; a Voice, Jack Burgess; She, Beryl Alford. Scene: A flat in complete darkness. There is the sound of a door opening, and two persons entering. 9.33: Station Orchestra, novelette, "Rosemary" (Rynard). "Vision of Salome" (Joyce). 9.41: Ruby Dunstan and Graham Burkin, "In the Springtime" (Newton). "In the Garden of my Heart" (Bell). 9.48: Lizette Poglia, violinist. 9.53: Graham Burkin, baritone, "Trooper Johnny Ludlow" (Temple). "The Trumpeter" (DLX). 10.0: Station Orchestra, "Allegro Moderato from Symphony" (Schubert), selection, "Bety in Mayfair" (Simon). 10.15: News service. 5CL's sporting service. 10.30: Close down.

5CL

NIGHT SESSION.

8.0: Chimes. 8.10: Station Orchestra, conducted by Lizette Foglia, selection, "The Vagabond King" (Prini). 8.15: Ruby Dunstan, lyric soprano—"Elegie" (Massenet). "Snowflakes" (Mallinson). 8.25: Musical Appreciations, a short lecturette by Horace Perkins, Mus. Bac., A.M.U.A.—"Inflammatus" (Rossini), sung by Florence Austral. "The Meeting of the Waters" (Irish Folk Song), sung by Margaret Sutherland. Trio in D Minor (Mendelssohn), played by Tildrad Casals and Cortot (first movement). 9.1: Meteorological information, including Semaphore tides. 9.2: Overseas grain report. 9.3: Graham Burkin, baritone, "The Bandolero" (Saturati). "The Bachelor's Love Song" (Slater). 9.11: Station Orchestra, Indian song, "Silver Cloud" (Ketyby). "Valse Moderne" (Claude vy). 9.18: A special broadcasting sketch (produced by Beryl Alford). Characters: He, Jack Burgess; a Voice, Jack Burgess; She, Beryl Alford. Scene: A flat in complete darkness. There is the sound of a door opening, and two persons entering. 9.33: Station Orchestra, novelette, "Rosemary" (Rynard). "Vision of Salome" (Joyce). 9.41: Ruby Dunstan and Graham Burkin, "In the Springtime" (Newton). "In the Garden of my Heart" (Bell). 9.48: Lizette Poglia, violinist. 9.53: Graham Burkin, baritone, "Trooper Johnny Ludlow" (Temple). "The Trumpeter" (DLX). 10.0: Station Orchestra, "Allegro Moderato from Symphony" (Schubert), selection, "Bety in Mayfair" (Simon). 10.15: News service. 5CL's sporting service. 10.30: Close down.

6WF

10.0: Tune-In. Gramophone and phonograph records from the studio. 11.0: Close down. 12.30: Tune-In. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin supplied by the Meteorological Bureau of West Australia. 1.3: Music from the studio by the Radio Trio, comprising Miss E. Waterman (cello), Miss L. Waterman (violin), Miss A. Dean (piano). 2.0: Close down. 3.30: Tune-In. 3.35: Afternoon tea music relayed from the Primrose Cafe de Luxe. 4.30: Close down. 4.45: Tune-In. 4.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Perth Piano Trio. 7.30: Commercial and general information. 7.45: "Racing Selections" by the sporting editor of the "Truth" Newspaper Co. Ltd. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Baritone solos by Mr. Pughills. Items by the "Katoomba Instrumental Duo." Pianiste: Miss Audrey Dean. 8.50: Late news items by courtesy of "The Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcements; late weather bulletin. 8.58: "Gardening" talk by Mr. James Conarty. 10.30: Close down.

104.5-METRE TRANSMISSION.

Simultaneous broadcast on 104.5 metres of programme given on 1250 metres, commencing at 8.45 a.m.

7ZL

EVENING SESSION.

7.15: Sid Jones on "Football." 7.30: A Studio concert and recordings: Rene Dyer, contralto—"When Song is Sweet." "My Dear Soul" (Sanderson). 7.37: The Black Diamonds Band—"Lohengrin," parts 1 and 2. 7.44: Harry Guy, baritone—"Morning" (Speaks). "Adelai" (Spürin). 7.51: Light Opera Company—"Songs of the Past." 7.54: Jean Hibbard, soprano—"Harvest" (Del Fiego). "My Message" (d'Hardelo). 8.1: Spencer Shaw, organ solos—"Tannhauser" (Wagner). "Finlandia" (8.8: Rene Dyer, contralto—"Poppies for Forgetting" (Clarke). "As I Went a Roaming" (Brake). 8.15: Ketyby's Orchestral Orchestra—"Sanctuary of the Heart Trio, comprising Miss E. Waterman, baritone—"The Song is Ended" (Berlin). "A Chip of the Old Block." 8.27: Ketyby's Orchestral Orchestra—"Sanctuary of the Heart," part 2 (Ketyby). 8.31: Jean Hibbard, soprano—"La Serenata" (Braga). "Oh, That It Were So" (Bridge). 8.38: W. H. Squire, cello solo—"Andante Religioso" (Thome). "Melodie" (Squire). 9.45: News session. 10.0: Chimes. 10.1: Close down.

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2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.
7.0: "Big Ben" and announcements. 7.2: Official weather forecast; rainfall; river reports; temperatures; astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.12: Shipping intelligence; mail services. 7.15: Studio music. 7.25: Investment market; mining sharemarkets; metal quotations; wool sales; breadstuffs markets; Inter-State markets; produce markets. 7.40: Studio music. 8.0: "Big Ben." Close.

MORNING SESSION.

Announcer: Eric Bessemer.
10.0: "Big Ben" and announcements. 10.2: Pianoforte reproduction. 10.10: "Sydney Morning Herald" news service. 10.25: Studio music. 10.30: Last-minute sporting information, by the 2FC Racing Commissioner. 10.40: Studio music. 10.45: A talk on "Gardening," by J. G. Lockley ("Redgum"). 11.0: "Big Ben"; A.P.A. and Reuter's cable services. 11.5: Close down.

MIDDAY AND AFTERNOON SESSIONS.

Announcers: Ewart Chapple, Laurence Halbert.
12.0: "Big Ben"; summary of news, "Sydney Morning Herald." 12.4: Rugby wireless news. 12.7: Stock Exchange information. 12.10: Synopsis of weather. 12.11: Studio music. 12.50: From Rosehill: Description of the races in the running. During intervals, from the studio, items by the "Gleeful Three." From Melbourne, description of the Grand National Steeplechase. 4.45: From the Studio, complete sporting and racing resume. 5.0: "Big Ben." Close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.
5.30: The chimes of 2FC. 5.35: The children's session, conducted by the "Hello Man"; letters and stories; music and entertainment. 6.40: Stock Exchange information. 6.45: Weather and shipping news. 6.47: Rugby wireless news. 6.52: Late sporting news. 7.0: "Big Ben"; late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats—(a) "Bird Songs at Eventide" (Coates), (b) "Carmen" (Bizet), (c) "Hymn to the Sun" (Rimsky-Korsakoff), (d) "Marche Russe" (Luligini), (e) "Entracte—Manselle Modiste" (Herbert).

EVENING SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.
7.40: Popular music.
7.45: Programme announcements.
7.48: A record recital.
8.0: "Big Ben"; Sydney Operatic Revue Co.
9.45: From the Hotel Australia, Cec. Morrison's Dance Band.
10.0: From the Studio—"Big Ben"; late news service.
10.10: From the Hotel Australia—Cec. Morrison's Dance Band.
10.28: From the Studio, late weather.
10.30: From the Hotel Australia—Cec. Morrison's Dance Band.
10.57: From the Studio, to-morrow's programme.
10.59: From the Hotel Australia—Cec. Morrison's Dance Band.
11.30: National Anthem. Close.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.
8 a.m.: G.P.O. chimes; weather report, State and metropolitan. 8.3: Studio music. 8.15: News and information service from the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes; half an hour with Silent Friends. 10.0: G.P.O. chimes; close down.

MIDDAY SESSION.

Announcer: A. C. C. Stevens.
11.0: G.P.O. chimes; women's session, conducted by Mrs. Cranfield; what's on at the pictures and theatres. 11.30: Advertising hints. 11.40: Talk on "Gardening" by Mr. Cooper, Park Superintendent, City Council. 12.0: G.P.O. chimes; special ocean forecast and weather report. 12.3: Studio music. 12.30: "Sun" midday news service. 12.40:

Studio music. 1.0: "Sun" news service. 1.10: Studio music. 1.40: "Sun" news service. 1.50: Studio music. 2.0: G.P.O. chimes; close down.

AFTERNOON SESSION.

Announcer: Eric Bessemer.
2.45: G.P.O. chimes; popular music. 3.0: From the Sydney Cricket Ground, description of the football match, All Blacks v. Australia. 4.0: From the Studio, polo and racing results. 4.10: From the Sydney Cricket Ground, description of the football match, All Blacks v. Australia. 5.0: From the Studio, complete sporting and racing resume. 5.10: Close.

EARLY EVENING SESSION.

Announcer: Basil Kirke.
5.30: Children's session, conducted by Uncle Bas; music and entertainment; letters and stories. 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette—(a) "Bal Masque" (Fletcher), (b) "The Maid of the Mountains" (Fraser-Simson), (c) "Softly Awakes my Heart" (St. Saens), (d) "The Blue Danube" (Strauss). 7.7: Complete sporting and racing resume. 7.30: Mr. Pim and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Advt. Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.
Accompanist: G. Vern Barnett.
8.0: G.P.O. chimes; Rowell Bryden, baritone.
8.7: The Troubadours.
8.17: John Boulton and Reg. Mitchell, in a sketch, "Too Much Knowledge" (Boulton).
8.32: Amy Firth, mezzo.
8.39: The Troubadours.
8.49: Rowell Bryden, baritone.
8.56: John Boulton and Reg. Mitchell, in a sketch, "In the Bush."
9.11: Weather report.
9.12: Amy Firth, mezzo.
9.19: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
9.30: From the Studio, the Troubadours.
9.40: Impression of to-night's fight at the Stadium by an eye-witness.
9.55: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.7: From the Studio, late "Sun" news.
10.15: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.28: From the Studio, late weather report.
10.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.57: From the Studio, to-morrow's programme.
10.59: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
11.30: National Anthem; close.

2GB

3 p.m.: Musical session. 5.30: Children's session by Uncle George. 7.0: Request hour. 8.0: Instrumental and dance programme. 10.30: Close down.

2UW

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

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Interstate Programmes, Saturday, July 6

3LO

BREAKFAST HOUR.

7.15 to 8.15: See Friday.

MORNING SESSION.

11.0: The Jedal Trio: A programme of special request numbers. 11.20: Final selections by Eric Welch for the first day of the V.R.C. Grand National meeting at Flemington. 11.30: Jean Sinclair, contralto. 11.40: The Jedal Trio will continue the "Request" programme.

MIDDAY NEWS SESSION.

12.0: Melbourne Observatory time signal. 12.1: British official wireless news from Rugby; Reuter's and the Australian Press Association cables; "Argus" news service. 12.20: The Radio Revellers. 12.29: Mildred and Connie, harp and violin. 12.35: Stock Exchange information; prices received by the Australian Mines and Metals Association from the London Stock Exchange this day. 12.44: The Radio Revellers. 12.53: Arthur Douglas, Scottish comedian. 12.58: Description of Maiden Hurdle Race, 2 miles. Grand National meeting at Flemington. 1.5: Meteorological information. 1.11: The Radio Revellers. 1.20: Mildred and Connie, harp and violin. 1.30: Description of baseball match, Collingwood v. Carlton. 1.38: Description of Myross Handicap, 6 furlongs. Grand National meeting at Flemington.

AFTERNOON SESSION.

1.45: Description of baseball match, Collingwood v. Carlton, at Collingwood, by Percy Steel. 2.25: Description by Eric Welch of Grand National Hurdle Race, 3 miles. V.R.C. races at Flemington. 2.45, 2.23, 4.3, 4.37, 4.55: Description of football match, Collingwood v. Carlton, at Collingwood, by Rod McGregor. 3.0, 3.35, 4.15, 4.45: Description of football match, Melbourne v. Richmond, at M.C.C. by Mel Morris. 3.12: Description of Kensington Steeplechase, 2 miles 1/2 furlong. V.R.C. races at Flemington. 3.20: Quarter-time scores. 3.53: Description of Iramoo Welter, one mile. V.R.C. races at Flemington. 4.0: Half-time scores. 4.27: Description of Winter Handicap, 1 1/4 miles. V.R.C. races at Flemington. 4.35: Three-quarter time scores. 5.15: News service; Stock Exchange information; progress scores in billiard match, Walter Lindrum v. Willie Smith. 5.30: Final scores. 5.45: Stories and entertainment for the children. 6.40: Captain Donald MacLean will continue his adventure stories.

EVENING SESSION.

8.55: Market reports. 7.10: News session; final scores of football matches. 7.20: Birthday greetings. 7.24: Out of the Past.

NIGHT SESSION.

8.1: Programme announcements; 3LO's Weekly Tasmanian letter from the "Courier," Launceston. 8.2: The Station Orchestra—Overture, "Chal Romann" (Ketelby). 8.12: Linda Wald, soprano—"L'Estrellita" (Ponce). "L'Heure Exquise" (Paul Verlaire). 8.19: The Station Orchestra—Musical gems from Tchaikowsky. "Prelude" (Jarnefeld). 8.32: Arthur Douglas, Scottish comedian—"Something Scotch." 8.39: The Station Orchestra—Selections of Sanderson's songs. 8.54: Mildred and Connie, harp and violin—Selections from their repertoire. 9.10: Song feature of the week. 9.15: Eric Welch will describe the night's events at the Stadium. 9.30: The Station Orchestra—Selection, "Queen High" (Gensler). 9.40: Linda Wald, soprano—"Wall" (D'Hardelet). "The Pipes of Pan" (Monckton). 9.47: The Station Orchestra—"In a Persian Garden" (Lehmann). 10.0: Eric Welch will continue his description of the night's events at the Stadium. 10.12: Late sporting; progress results of the billiard match, Walter Lindrum v. Willie Smith. 10.26: The Station Orchestra—Selection, "The Desert Song" (Remberg). 10.35: Arthur Douglas, Scottish comedian—"The Waggle of a Kilt." 10.45: Ern Hall's Radio Revellers, with Hugh Hubbard— "I'm Thirsty for Kisses" (Davis). "I'm Sorry, Sally" (Kahn). "My Blackbirds Are Bluebirds Now" (Friend). "Casablanca" (Evans). "Fragile of Love" (Wayne). "Oh, Isabella" (Shuster). "Sweet Forget Me Not" (Lorenzo). "Pansies" (Nichols). "You Ought to Hear Olaf Laff" (Baer). Selected. 11.30: God Save the King.

3AR

MORNING NEWS SESSION

10.6 to 10.59: See Friday.

MORNING MUSICAL SESSION

11.0: Recording. 11.50: British official wireless news; announcements; rates of exchange supplied by Thomas Cook and Sons. 12.0: Close down.

AFTERNOON SESSION

3.0: The Station Orchestra. 3.10: Linda Wald, soprano. 3.17: The Station Orchestra. 3.32: Victor Harding, bass. 3.39: The Jedal Trio. 4.0: Linda

Wald, soprano. 4.16: The Station Orchestra. 4.31: Victor Harding, bass. 4.40: The Station Orchestra. 5.0: Close down.

EVENING SESSION

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

NIGHT SESSION

7.45: Late sporting results. 8.0: Salvation Army Thanksgiving and Choral Festival to be held in the Auditorium, Collins Street, Melbourne. Congress Choir. "Jesus of Nazareth." "Praise the Lord." Hawthorn Band. "Precious Thought." Captain John Hocking, Bass. "The Name I Love." Women Cadets. Part song, "There's a Land of Wondrous Beauty." Headquarters' Orchestra. Selection, "Welsh Melodies." Captain Ella Nottridge. Monologue, "A Reverie." Congress Choir. Company song, "My Shepherd." Captain Ivy Neilson, Violin. "Hejre Kati." East Kew Girls. "Call'er Herrin." Congregation. Male Glee, Hawthorn Glee Party. "Cry Out and Shout." Staff Band. Selection, "Mount of Olives." Mrs. Captain Jessop, Soprano. "At Peace with God." The Commissioner will speak. Congress Choir. "Abide with Me." Deputy Bandmaster H. V. Stevens, Cornet. Selected. Retired officers. "The Veterans' Song." Lt.-Colonel Mackay. Appeal for Candidates. Congregational Song. Staff Band. "Hallelujah Chorus." 10.0: The Jedal Trio (Alva Hattenbach, violin Edna Hattenbach, cello; John Simons, piano). Trio, "Told at Twilight" (Buerter). "Interlude" (Gentile) (Rimsky-Korsakov). "Valse Gentile" (Nevin). Violin, "Rondo" (Mozart-Kreisler). Trio, "Largo" (Handel). "Hungarian Dance" (Brahms). 10.20: "Age" news service; announcements. 10.30: God Save the King.

4QG

EARLY MORNING SESSION.

7.43 to 8.30: See Friday.

AFTERNOON SESSION.

3.0 to 4.30: See Friday.

EARLY EVENING SESSION.

6.15: "Queenslander" bi-weekly news service for distant listeners. 6.30: Bedtime stories conducted by Uncle Ben. 7.0: To-day's races in detail. 7.20: General sporting notes. 7.0: Sailing notes by Mr. Fred Smith.

NIGHT SESSION.

8.0: Overture, by the Savoy Orchestra. 8.10: Annie Adams, soprano—"The Reason" (Riego). "A Request" (Woodford-Finden). 8.18: Frank Warbrick, pianist—A short recital, including—"Song of Sunshine" (Hollins). "Prelude" (Scriabine). "Donnybrook Fair" (arr. Geo. Roberts). 8.33: A. N. Falk, baritone—"Invictus" (Huhn). 8.36: The Rio Grande Serenaders, in selected Hawaiian melodies. 8.40: Mrs. Ferrier, contralto—Selected. 8.45: Orchestral music. 9.0: Metropolitan weather forecast. 9.1: Mrs. Ferrier, contralto—Selected. 9.5: The Rio Grande Serenaders—More Hawaiian Melodies. 9.10: A. N. Falk, baritone—"World That Was Once a Garden" (Lohr). 9.15: Dance music. 10.0: News; weather. Close down.

5CL

AFTERNOON SESSION.

12.0: Chimes. 12.1: Special late selections for Flemington races by Mr. Eric Welch, 3LO's special sporting commissioner. 12.3: Probable starters and selections for Adelaide Hunt Club races. 8 Cheltenham to-day, by "Silvius." 12.15: News session. 12.35: Flemington result—Maiden Hurdle. 12.36: News service. 12.40: Railway and meteorological information. 12.44: Recordings. 1.5: From Cheltenham Racecourse: Riders and positions for Blackrier Hurdle Race, about two miles and a quarter. 1.13: Flemington result—Myross Handicap. 1.20: From Cheltenham: Description of the Blackier Hurdle Race. 1.45: From Cheltenham: Riders and positions for Drag Cup Steeplechase, two miles and three furlongs. 2.0: From Cheltenham: Description of Drag Cup Steeplechase, by Mr. Arnold Treloar. 2.5: Flemington: Resume of previous race results. 2.10: Flemington: Description of the Grand National Hurdle. 2.25: Cheltenham: Riders and positions for Downer Handicap, one mile one furlong and forty yards. 2.40: Cheltenham: Description of the Downer Handicap by Mr. Arnold Treloar. 2.50: Flemington result: Kensington Steeplechase. 2.51: Description of League football. 3.3: Resume of previous race results. 3.5: Cheltenham: Riders and positions for Stirling Stakes, six and a half furlongs. 3.10: League football. 3.20: Cheltenham: Description of Stirling Stakes. 3.25: League football. 3.30: Flemington result: Iramoo Welter. 3.31: League football. 3.43: Cheltenham: Riders and positions for Bagot Bracelet, of nine furlongs and forty yards. 4.0: Cheltenham: Description of Bagot Bracelet. 4.5: Resume of previous race results. Flemington result: Winter Handicap. 4.8: League football. 4.25: Cheltenham: Riders and positions for Blackmore Handicap, five furlongs. 4.30: League football. 4.35: Cheltenham: Description of Blackmore Handicap. 4.45: Description of League football. 5.5: Resume of race results; final football scores; close down.

EVENING SESSION.

6.0: Chimes. 6.1: Birthday greetings, correspondence, songs and stories by "Grand Nanny." 7.0: Recordings. 7.0: Chimes. 1 Senior birthday league greetings. 7.2: Stock Exchange. 7.6: Recordings. 7.10: Rev. G. E. Hale. 7.25: Mr. C. G. Riley. 7.45: 5CL's sporting service.

NIGHT SESSION.

8.0: Chimes. 8.10: A special programme, during the course of which Ruby Dunstan and Graham Burgin will appear for the last time. 10.20: 5CL's sporting service. 10.30: Close down.

6WF

10.0: Tune-in. Gramophone and phonograph records from the studio. 11: Close down. 12.0: Tune-in. 12.5: Racing anticipations. 12.7: Pianoforte solos by Miss Audrey Dean. 12.44: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.3: Close down. 2.30: Tune-in. Sporting session: Race results from the Belmont Park racecourse and quarter-time scores of the various football matches, will be broadcast during the afternoon. 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: Miss Jessie McGregor and Mr. Archer Norwood in songs at the piano and patter. 8.50: Late news items by courtesy of "The Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcement; late weather bulletin. 9.0: A re-broadcast from 5CL, Adelaide: Speeches by members of the Young Australia League, returning from U.S.A. (weather permitting). 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

MIDDAY SESSION.

11.30 to 1.30: See Friday.

AFTERNOON SESSION.

1.40: Description of Myross Handicap, 6 furlongs. Flemington, Victoria. 2.30: Description of Grand National Hurdle, Flemington, Victoria. 2.45: Transmission of football match, Lefroy v. North Hobart, described by Sid Jones. 3.15: Description of Kensington Steeplechase, 2 miles, Flemington. 3.20: Lefroy v. North Hobart. 3.55: Description of Iramoo Welter, 1 mile, Flemington. 4.0: Lefroy v. North Hobart. 4.30: Description of Winter Handicap, 1 1/4 miles, Flemington. 6.0: All sporting results to hand.

EARLY EVENING SESSION.

6.15: Recordings. 6.30: "Uncle David." 6.45: Recordings. 7.0: "Uncle David." 7.15: News session.

EVENING SESSION.

7.30: Roy Johnson will speak on "Manual Training." 7.45: J. M. Counsel will speak on "European Affairs." 8.6: A special studio concert. 9.30: News session. 9.45: Studio concert (continued). 10.20: Close down.

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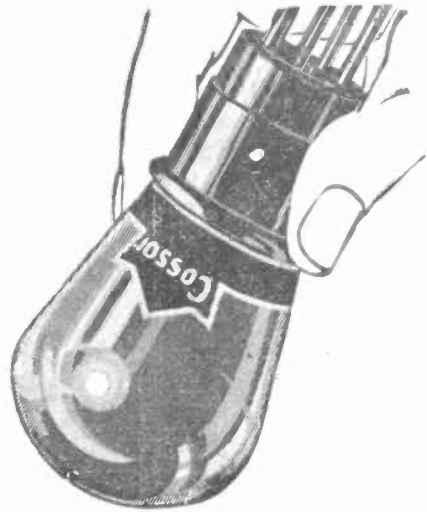
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4099

Local Programmes, Sunday, July 7

2FC

MORNING SESSION.

Announcer: A. S. Cochrane.
 10.0: "Big Ben" and announcements.
 10.2: News service.
 10.20: The Captain to His Comrades.
 10.35: The Comrades' Book-shelf.
 10.40: Studio music.
 11.0: "Big Ben." From St. Mark's Church of England—Morning service, conducted by Rev. Canon E. Howard Lea.
 12.15: Approx. Close.

AFTERNOON SESSION.

Announcer: A. S. Cochrane.
 2.30: Programme announcements.
 2.32: Children's session, conducted by the "Hello Man."
 3.0: "Big Ben." From Christ Church, St. Laurence—An organ and violin recital, arranged by Christian Hellemann and Farnsworth Hall; vocalist, Suzanne Ennis.
 4.30: From the Studio—Studio music.
 5.0: "Big Ben." Close.

EVENING SESSION.

Announcer: Laurence Halbert.
 Accompanist: Kathleen Roe.
 6.0: "Big Ben" and announcements.
 6.2: W. F. Kay will speak on "Some Great Nuggets."
 6.20: A musical programme, arranged by Mischa and Madame Dobrinski; pianoforte solos by Molly James.
 7.0: From St. Stephen's Presbyterian Church—Evening service, conducted by Rev. Hugh Paton. Organist, Harry Chandler, M.A. Sanctus.
 Hymn 91.
 Lesson, Exodus 3.
 Prayer.
 Hymn 142.
 Lesson, Hebrews 12.
 Anthem.
 Prayer.
 Hymn 21.
 Sermon.
 "The Bush that Burned," Exodus 3.2.
 Preacher, Rev. Hugh Paton.
 Prayer.
 Hymn 172.
 Benediction.
 Organ postlude.
 8.30: From the Studio—Weather report.
 8.31: The N.S.W. Government Tramways Band.
 8.46: Virginia Bassetti, contralto.
 8.53: The N.S.W. Government Tramways Band.
 9.8: William Dallison, tenor.
 9.15: The N.S.W. Government Tramways Band.
 9.30: Virginia Bassetti, contralto.
 9.37: The N.S.W. Government Tramways Band.
 9.45: William Dallison, tenor.
 9.52: The N.S.W. Government Tramways Band.
 10.0: "Big Ben"; slumber music.
 10.28: Late weather and to-morrow's programme.
 10.30: National Anthem. Close.

2BL

MORNING SESSION

Announcer: A. C. C. Stevens.
 11.0: G.P.O. chimes.
 From Bourke Street, Congregational Church—morning service, conducted by Rev. Sydney Herbert Cox—
 Organ Prelude.
 Call to Worship.
 Doxology.
 Prayer of Invocation.
 Hymn 54, "God is Love."
 Pastoral Prayer and Lord's Prayer (chanted).
 Anthem, "God is a Spirit."
 Notices and Offertory.
 Anthem, "Praise the Lord."
 Scripture Lesson.
 Organ Interlude and Offertory Prayer.
 Boys' and Girls' Story.
 Hymn 288, "According to Thy Gracious Word."
 "The Knocker at the Door," Rev. Sydney Herbert Cox.
 Hymn 183, "Holy Spirit, Truth Divine."
 Benediction.
 Organ Postlude.

12.15, approx.: From the studio—"Sun" news service.

12.30: Studio music.

2.0: G.P.O. chimes. Close down.

AFTERNOON SESSION

Announcer: Basil Kirke.
 Accompanist: Kathleen Roe.
 3.0: G.P.O. chimes. From Haberfield Methodist Church, pleasant Sunday afternoon service, conducted by Rev. R. Piper.
 4.30: From the studio, studio items.
 5.0: G.P.O. chimes. Close down.

EVENING SESSION

Announcer and accompanist: G. Vern Barnett.
 6.0: G.P.O. chimes.
 6.1: Birthday calls.
 6.5: A programme supplied by the Cheer-Up Society.
 7.0: The Sydney Harmonic Choir—"An Elgar Night of Music," in association with the Empire Trio and Miss Le Brun Brown. Items by Harry Thomas.
 9.30: A recital of Celebrity records.
 10.0: "Big Ben." Close.

2GB

9 a.m.: Address. 9.30: Address. 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: Concert arranged by courtesy of Messrs. Winkworth and Son. Piano solo by the Rosenkranz piano. 8.23: Miss Mary Neal, contralto. 8.30: Mr. Gregory Valentine, violinist. 8.38: Mr. Cecil Houghton, tenor. 8.45: Miss Elsie Peerless, soprano. 8.52: Rosenkranz player piano. 9.0: Weather report. 9.1: Miss Mary Neal, contralto. 9.8: Mr. Gregory Valentine, violinist. 9.16: Mr. Cecil Houghton, tenor. 9.23: Rosenkranz player piano. 9.28: Miss Elsie Peerless, soprano. 9.35: Close down.

FOR 2UW SEE PAGE 40.

SUNDAY MORNING WIRELESS TALKS

from

STATION 2GB

JULY 7th, 1929

9 a.m.: MARY RIVETT,
M.A.

Health as a
Psychological Norm

9.30 a.m.: VICTOR E.
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Interstate Programmes, Sun., July 7

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3LO

MORNING SESSION.

10.30: Bells from St. Paul's Cathedral. 10.45: Express train information. British official wireless news from Rugby. News from yesterday's papers 11.0: Morning Service from Independent Church, Collins Street, Melbourne—Thanksgiving Service for the King's recovery: Hymn 553. National Anthem. Prayer and Lord's Prayer (chantcd). Scripture Lesson. Anthem. "Let the People Praise Thee" (Bremer). Hymn 557. "Lord, while for all mankind we pray." Prayer. Anthem. "Lord, Thou hast been our refuge" (Blair). Notices. Offerings. Hymn 569. "When Oceans Part. O Lord, Unite." Sermon. Rev. A. Penry Evans. Hymn 48. "Our God, Our Help in Ages Past." Benediction. 12.15: Close down.

AFTERNOON SESSION.

2.0: Sonora Recital of the world's most famous records. 3.0: Pleasant Sunday Afternoon, from Central Mission, Wesley Church. Chairman: Rev. Dr. S. J. Hoban. Hymn No. 94. "Jesu Lover of My Soul." Prayer. Orchestral Selection. G. M. Williams, conductor. Hymn No. 29. "I'm not ashamed to own My Lord." Solo, Mr. J. M. Hill. Orchestra. Solo, Mr. J. M. Hill. Notices, Offering, and Orchestra. Address. National Anthem. Benediction. Orchestra. 4.30: Close down. 4.45: Shipping information. 5.47: Answers to letters and birthday greetings by "Billy Bunny." 6.25: Brother Bill's talk. 6.45: Adult birthday greetings and programme announcements. 6.47: Bells from St. Paul's Cathedral.

EVENING SESSION.

7.0: Evening service from St. Paul's Cathedral, Melbourne. Hymn (A. & M.). Exhortation. General confession. Absolution. The Lord's Prayer. Versicles and Responses (Pestal). Psalm 37. First Lesson. The Magnificat. Second Lesson. Nunc Dimittis. The Apostles' Creed. Collects. Anthem. Prayers. Hymn. Sermon. Canon Croty. Hymn. The Blessing.

NIGHT SESSION.

8.30: Cecil Parkes, violin; Kingsley Parkes, violin; Myra Montague, piano; Frank Johnstone, 'cello—"Piano Quartet in D Major" (Mendelssohn)—1st Movement Only. 8.30: Cecil Parkes, violin; Kingsley Parkes, violin; Eunice Gregory, viola; Frank Johnstone, 'cello—"String Quartet Op. 18, No. 4 in C Minor" (Beethoven). Allegro ma non tanto. Scherzo. Menuetto. Finale. 8.57: Violet Jackson, Soprano—"Abide With Me" (Liddle). "The Holy Child" (Easthope Martin) 9.4: Cecil Parkes, Violin—"Caprice Viennois" (Kreislcr). "Caprice No. 3" (Faganelli). "Tambourin Chinois" (Kreislcr) 9.15: Vassili Ilster, Piano—"Rhapsody," No. 2 (Liszt). "Nocturne A Flat Major" (Liszt). "Concert Etude" (Liszt). 9.35: Violet Jackson, Soprano—"The Wild Rose." "Cradle Song" (Schubert). 9.42: Cecil Parkes, violin; Kingsley Parkes, violin; Eunice Gregory, viola; Frank Johnstone, 'cello—"Aria" (Mozart). "Menuet" (Beethoven). "Moment Musicale" (Schubert). "Polonaise" (Schubert). 9.53: News service; announcements. 10.0: God Save the King.

3AR

MORNING SESSION.

11.0: Morning service from Scots Church, Collins Street, Melbourne. 12.15: British official wireless news. News from yesterday's papers. 12.30: Close down.

AFTERNOON SESSION.

3.0: An hour and a half of orchestration, organs, and oratorios. 4.30: Close down.

EVENING SESSION.

5.0: H. J. Book will speak to the children. 6.30: Close down.

NIGHT SESSION.

7.0: Suitable strains for the Sabbath. 8.0: The Brunswick City Band (conductor, Hugh Niven)—Overture, "Chanson du Sold" (Hume). 8.10: J. Howard King, bass-baritone—"Hear Me, Ye Winds and Waves" (Handel). "Dream in the Twilight" (Strauss). 8.17: The Brunswick City Band—Suite, "Bohemian" (Hume). 8.27: Raymond Carey (tenor) and J. Howard King (bass-baritone)—Duet, "The Pearl Fishers" (Bizet). 8.37: Eddie Fitch and the Famous Wurlitzer, transmitted from the Regent Theatre, Collins Street, Melbourne—"Request Numbers." 9.37: Raymond Carey, tenor—"Eriskey Love Loll" (Kennedy Fraser). "There's on Earth But One True Precious Pearl" (Korbay). 9.44: The Brunswick City Band—March, "La Vivandier" (Rimmer). Cornet solo, "Easter Flowers" (Hume). Soloist: Geo. Mulgrew. 9.54: News service; announcements. 10.0: God Save the King.

4QG

MORNING SESSION.

11.0: The complete morning service will be relayed from St. Stephen's Roman Catholic Cathedral. 12.30: Close down.

AFTERNOON SESSION.

3.15: The band concert by the Brisbane Newtown Band will be relayed from the Botanic Gardens. 4.30: Close down.

EARLY EVENING SESSION.

6.0: Greetings to little listeners and replies to letters.

NIGHT SESSION.

7.0: The complete evening service will be relayed from St. Stephen's Roman Catholic Cathedral. 7.30: At the conclusion of the church service the concert by the Brisbane Municipal Concert Band will be relayed from the bandstand at Wickham Park. 9.30: Close down.

5CL

MORNING SESSION.

10.45: Carillon of Bells from Adelaide Town Hall. 11.0: Chimes. 11.1: Service from Pirie Street Methodist Church. 12.10: British official wireless news. 12.15: Close down.

AFTERNOON SESSION.

3.0: Chimes. 3.1: A pleasant Sunday afternoon service from Maughan Church. 4.0: Close down.

EVENING SESSION.

6.0: Chimes. 6.30: "The Bird Lady" and "The Sunshine Songsters." 7.1: Senior Birthday League greetings. 7.2: Service from Flinders Street Baptist Church.

NIGHT SESSION.

8.20: Announcement. 8.30: A special programme. 9.35: Mr. P. H. Nicholls on "The Power of Thought." 9.50: General news service; announcements. 10.0: Close down.

6WF

10.25: Tune in. 10.30: Special half hour for the enthusiastic listener. 11.0: Morning service relayed from St. George's Cathedral, Perth. 12.15: Close down. 3.30: Tune in. 3.35: Musical programme from the Studio, Mr. Leslie Judson, pianist. 4.30: Close down.

6.45: Tune in. 6.48: Bedtime stories by Mr. Robert Edmondson, assisted by the Misses Winnie, Jolin, Violet, and Betty Edmondson. 7.15: Music. 7.30: Evening service relayed from Wesley Church, Perth. 8.45: A relay from Queen's Hall, of Community singing. 10.5: 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

MORNING SESSION.

10.45: Bells from Trinity Church. 11.0: Transmission from Memorial Congregational Church, Hobart. 12.30: Close down.

AFTERNOON SESSION.

3.30: From the Studio—A special concert programme, by P.S.A. Association. 4.30: Close down.

EARLY EVENING SESSION.

6.15: Chorus singing (conductor, Trevor M. Morris). 6.45: Bertha Southey Brammall.

EVENING SESSION.

7.0: Transmission from Holy Trinity Church, Warwick Street, Hobart. 8.25: A sacred and classical programme arranged by J. M. Counsel. 9.45: News session. 9.50: Close down.

2UW

Sunday, July 7

10.30 a.m.: Music and request numbers. 1 p.m.: Close down. 5.30 p.m.: Children's hour, conducted by Uncle Jack. 6.30: Close down. 7.0: Musical programme. 10.30: Close down.

Censored

ON a certain Monday night Mr. Frank Ryan, feeling in the best of all possible humors, began to tell an impromptu story to Uncle Bas over the air. The story was progressing towards its conclusion when suddenly the station went off the air. We are pleased in these wicked days to hear of a station which preserves its moral instincts against the contamination of its environments. And if Sir William Joynson-Hicks were here he also would be pleased.

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Local Programmes, Monday, July 8

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

7.0: "Big Ben" and announcements. 7.2: Official weather forecast; rainfall; river reports; temperatures; astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.12: Shipping intelligence; mail services. 7.15: Studio music. 7.25: Investment market; mining sharemarkets; metal quotations; wool sales; breadstuffs markets; inter-State markets; produce markets. 7.40: Studio music. 8.0: "Big Ben"; close.

MORNING SESSION.

Announcer: A. S. Cochrane.

10.0: "Big Ben" and announcements. 10.3: Pianoforte reproduction. 10.10: "Sydney Morning Herald" news service. 10.25: Studio music. 10.30: The 2FC racing commissioner, late sporting news. 10.45: A talk on "Home Cooking and Recipes," by Miss Ruth Furst. 11.0: "Big Ben"; A.P.A. and Reuter's cable services. 11.5: Close down.

MIDDAY SESSION.

Announcer: A. S. Cochrane.

12.0: "Big Ben"; summary of news, "Sydney Morning Herald." 12.4: Rugby wireless news. 12.7: Stock Exchange, first call. 12.10: Synopsis of weather. 12.11: A reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" midday news service; Producers' Distributing Society's market report. 1.15: From the Aeolian Hall, lunch-hour chamber music recital, by the Sverjensky Instrumental Ensemble. 1.50: From the studio, Stock Exchange, second call. 1.52: Studio music. 2.0: "Big Ben"; close.

AFTERNOON SESSION.

Announcers: Laurence Halbert and Eric Bessemer.

Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben"; popular items. 3.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 3.40: From the studio—Eleanor Stanton, contralto, (a) "He's the Lily of the Valley" (Negro Spiritual, arr. Fisher), (b) "Little Wheel Turnin'" (Negro Spiritual, arr. Fisher). 3.46: A reading. 4.10: Janet Lester, pianist, (a) "Sonata C Major" (Scantanti), (b) "Clair de Lune" (Debussy), (c) "Musical Box" (Liadoff). 4.20: Eleanor Stanton, contralto, (a) "Youth and Spring" (Steinel), (b) "The Scarecrow" (Davies). 4.27: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.37: From the studio—Janet Lester, pianist, (a) "Warum" (Schumann), (b) "Naila Waltz" (Dohnanyi). 4.45: Stock Exchange, third call. 4.47: Popular music. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man"; letters and stories; music and entertainment; Geoffrey Baskett. 6.30: Dalgely's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news. 7.0: "Big Ben"; late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats; All-British—(a) "Dorothy" (Cellier), (b) "Folk Tune and Fiddle Dance" (Fischer), (c) "Three English Dances" (Quilter), (d) "Chansonette" (Hope).

EVENING SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.

7.40: Popular music.
7.45: Programme announcements.
7.48: A record recital.
Note: The Orchestra numbers are all British.

8.0: "Big Ben." Studio Orchestra, conducted by Horace Keats—
"The Cingalee" (Monckton).

8.15: The Artarmon Gleemen.
8.25: Will Carter in a sketch. "Back to Adelong" (Carter).

8.35: Studio Orchestra, conducted by Horace Keats—
Ballet music, "Hiawatha" (Coleridge Taylor).

8.50: Ila Turnbull, soprano.
9.7: Weather report.
9.8: C. N. Baeyer, "Great Writers I Have Met—Frankfort Moore."

9.13: Studio Orchestra, conducted by Horace Keats—
"The Emerald Isle" (German and Sullivan).

9.28: The Artarmon Gleemen.
9.38: Will Carter, in Bush Cameos—
(a) "Bell's Dog."
(b) "The White Gate."
(c) "Getting into Touch."

9.48: Studio Orchestra, conducted by Horace Keats—
"Three Bavarian Dances" (Elgar).

10.0: Ila Turnbull, soprano.
10.7: Studio Orchestra, conducted by Horace Keats—
Suite, "At the Play" (Bowen).

10.17: Late "Evening News."
10.28: Late weather and to-morrow's programme.

10.30: National Anthem; close.

2BL

MORNING SESSION

Announcer: A. C. C. Stevens

8 a.m.: G.P.O. chimes; weather report—State and metropolitan. 8.3: Studio music. 8.15: G.P.O. chimes; news and information service from the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes. Half an hour with silent friends. 10.0: G.P.O. chimes; close down.

MIDDAY SESSION

Announcer: A. C. C. Stevens

11.0: G.P.O. chimes; 2BL Women's Sports Association session, conducted by Miss Gwen Varley. 11.30: Advertising hints. 11.40: Women's session, conducted by Mrs. Cranfield; talk on "Infant Welfare" by Nurse May. 12.0: G.P.O. chimes; special ocean forecast and weather report. 12.3: Pianoforte and vocal recital. 12.30: Shipping and mails. 12.35: Market reports. 12.48: "Sun" midday news service. 1.0: G.P.O. chimes; studio music. 1.30: Talk to children and special entertainment for children in hospital by Uncle Steve. 2.0: G.P.O. chimes; close down. Note: Race results will broadcast by arrangement with the "Sun" Newspapers, Ltd.

AFTERNOON SESSION

Announcer: A. C. C. Stevens

Accompanist: Kathleen Roe.

3.45: G.P.O. chimes; popular music. 4.0: G.P.O. chimes; Anne Melhuish, soprano—(a) "Gentle Flowers in the Dew" (Gounod); (b) "The String of Pearls" (Phillips). 4.7: A talk by Captain Fred Aarons. 4.22: Hazel M'Pherson, contralto. 4.30: Popular music. 4.40: Anne Melhuish, soprano—(a) "The Bonnie Banks o' Loch Lomond" (Scotch); (b) "Orpheus with His Lute" (Sullivan). 4.47: "Sun" news service. 4.53: Hazel M'Pherson, contralto. 5.0: G.P.O. chimes; pianoforte reproduction. 5.15: Popular music. 5.23: Complete racing resume. 5.27: Features of the evening's programme.

EARLY EVENING SESSION

Announcer: Basil Kirke.

5.30: Children's session, conducted by Uncle Bas; music and entertainment; letters and stories. 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette—all British—(a) "Bohemian Suite" (Hume), (b) "Floradora" (Stuart), (c) "Ballet Piquant" (Barke), (d) "The Crystal Gazer" (Carr). 7.7: Australian Mercantile Land and Finance Co.'s report; weather report and forecast, by

Courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market reports; grain and fodder report ("Sun"); dairy produce report ("Sun"). 7.25: Mr. Plm and Miss Pam in advertising talks, handy hints and nonsense. 7.53: An Ad Special. 7.55: Programme and other announcements.

EVENING SESSION

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

8.0: G.P.O. chimes. Camille Alder, soprano.

8.7: Graham and Manning in a sketch.

8.17: The Ahad Duo.

8.25: From the Victory Theatre, Kogarah—Horace Weber at the "Christie" organ.

8.45: From the studio, S. H. Bowden will give his topical talk, "Week by Week."

9.0: G.P.O. chimes; weather report.

9.1: Camille Alder, soprano.

9.8: The Ahad Duo.

9.15: Graham and Manning in a sketch.

9.25: Billee Cresswell, popular vocalist.

9.32: Late "Sun" news and announcements.

9.37: From the Victory Theatre, Kogarah—Horace Weber at the "Christie" organ.

9.57: From the studio, Billee Cresswell, popular vocalist.

10.4: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.16: From the studio, "Sun" news service.

10.20: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.28: From the studio: Late weather.

10.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.37: From the studio, to-morrow's programme.

10.59: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

11.30: National Anthem. Close.

2GB

10 a.m.: Music. 10.10: Happiness talk by A. E. Bennett. 10.20: Music. 10.30: Women's session by Miss Helen Beegling. 11.30: Music. 11.45: Close down. 2.0: Music. 2.5: Women's radio service by Mrs. Dorothy Jordan. 2.50: Movie Know All. 3.0: Music. 3.30: Close down. 5.30: Children's session by Uncle George. 7.0: Music. 7.30: Short talk by Mrs. Jordan. 8.0: Miss Elsie Condon, contralto. 8.7: Symphony Orchestra. 8.15: Mr. Leslie Herford, baritone. 8.22: Instrumental trio. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Gladys Verona, soprano. 8.45: Address. 9.0: Weather report. 9.3: Symphony Orchestra. 9.15: Miss Elsie Condon, contralto. 9.23: Mr. Heath Burdock, Shakespearean recital. 9.35: Mr. Leslie Herford, baritone. 9.45: Instrumental trio. 9.50: Miss Gladys Verona, soprano. 10.2: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 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. 7.45: Radio talk—hints and advice by Mr. E. Homfray. 8.0: Music. 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.

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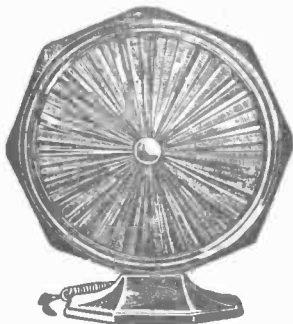
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Interstate Programmes, Monday, July 8

3LO

EARLY MORNING SESSION

7.15 to 8.15: See Friday.
MORNING SESSION.
 11.0: 3LO's Special Breakfast Dish. 11.5: Miss Olga Parker will continue her talks on Story to Tell the Children. More hero stories. 11.25: Miss Doreen Berry will continue her travel series: "Summer at the Italian Lakes and Switzerland."

MID-DAY NEWS SESSION.

12.0: Melbourne Observatory time signal. 12.1: British official wireless news from Rugby; Reuters and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; entries for the market for Tuesday, Wednesday, and Thursday. 12.20: Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: Community singing. Conductor, G. J. Mackay. 1.40: Stock Exchange information. 12.43: Community singing resumed. 1.45: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecasts, river reports, rainfall. 2.0: Close down.

AFTERNOON SESSION.

2.15: The Station Orchestra. 2.25: J. Howard King, Bass-baritone. 2.32: Guildford Bishop, violin. 2.40: Jean Snelcar, contralto. 2.47: The Station Orchestra. 3.0: J. Howard King, bass-baritone. 3.7: Vassili Ister. 3.37: The Station Orchestra. 3.47: Jean Snelcar, contralto. 3.52: The Station Orchestra, selection, "La Traviata" (Verdi). 4.0: Mildred and Connie, harp and violin. 4.15: One Act Play. 4.35: The Station Orchestra. 4.50: News service; Stock Exchange information; progress scores in billiard match, Walter Lindrum v. Willie Smith. 5.0: Close down. 5.0: Captain Donald MacLean. 5.0: The Jetal Trio. 7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.43: Birthday greetings. 7.45: Out of the Past. 7.46: The Station Orchestra, selection from Gilbert and Sullivan. 8.0: A Maker of History.

NIGHT SESSION.

8.12: Senia Chostakoff, principal solo tenor with the "Don Cossack Choir."
 "Evening Bells" (with Organ Accompaniment). (Jaroff).
 "Elegie" (Massenet).
 8.20: Bertha Jorgensen, Violin—
 Slow Movement from Concerto (Wieniawski).
 8.28: The Station Orchestra—
 Selection, "Catherine" (Tchaikowsky).
 8.38: Senia Chostakoff, Russian tenor—
 Two Russian Folk Songs.
 8.45: Vassili Ister, of "Imperial Russian Trio"
 fame, at the Piano—
 A Ruchmalnoff Programme.
 "Elegie."
 "Serenade."
 "Polichinello."
 "Prelude in C Sharp Minor."
 "Prelude in G Minor."

9.15: The Royal Victorian Liedertafel (conductor, J. Sutton Crow), pianist, Lindsay Higgins.
 Part Song, "The Warrior's Prayer."
 Unaccompanied part song, "Spin Spin" (Swedish air, arr. Jungst).
 Part song, "Hunters Joy" (Asthols).
 Unaccompanied part songs—
 "Lovely Nigh" (Arab).
 "Moonlight" (Spicker).
 Part Song—"Ring Out Wild Bells" (Fletcher).
 9.45: The Station Orchestra—
 Suite—"Joyous Youth" (Coates).
 "Twilight" (Cesar).
 10.0: news service; British official wireless news from Rugby; Reuter's and the Australian Press Association cables; news service.
 10.10: The James Girls—
 In a Melodious Mood.
 10.25: The Station Orchestra—
 Selection, "The Lido Lady" (Rodgers).
 10.35: French Bros., Banjoists—
 Ten Minutes of Modern Melody.
 10.45: Progress scores in billiard match, Walter Lindrum v. Willie Smith.
 10.47: Ham. Johnston's Dance Orchestra—
 Latest and Brightest Dance Numbers.
 11.30: God Save the King.

3AR

MORNING NEWS SESSION

10.0 to 10.50: See Friday.
MORNING MUSICAL SESSION
 11.0: Recordings. 11.30: The Halle Orchestra. 12.10: Recordings. 12.20: British official wireless news from Rugby; announcements. 12.30: Close down.

AFTERNOON SESSION

3.0: Recordings. 4.30: Close down.
EVENING SESSION
 8.0: Recordings. 7.10: News service; announcements; acceptances and barrier positions for the V.R.C. races at Flemington on Wednesday, July 10. 7.20: Recordings.

NIGHT SESSION

8.0: The Jetal Trio (Alva Hattenbach, violin; Edna Hattenbach, cello; and John Simons, piano). Trio, "Red Barafan" (Verlenov).
 "Menuetto" (Bridge).
 "Gavotte" (Bridge).
 "Allegretto" (Bridge).
 Edna Hattenbach, cello—
 "Menuetto" (Hattenbach).
 The Trio—
 "Melody" (Moszkowski).
 "Slavic Dance" (Dvorak).
 8.30: Ham. Johnston's Orchestra—
 "All that I want is a Stay-at-Home Girl."
 "That's how I feel about You."
 Waltz, "Rose of Planders."
 8.39: Arthur Douglas, Comedian—
 "When I meet McKay."

8.42: Ham. Johnston's Orchestra—
 "Flower of Love."
 "Little Maid of Old Madrid."
 "My Mother's Eyes."
 8.51: Mildred and Connie, Harp and Violin—
 Selections from their repertoire.
 8.54: Ham. Johnston's Orchestra—
 "We-De-De."
 "A Little Town called Home Sweet Home."
 9.3: Arthur Douglas, Scotch comedian—
 "The Wedding of John McLean."
 9.6: Ham. Johnston's Orchestra—
 "I Love to Hear you Singing."
 "I'm Sorry, Sorry."
 "Kansas Gily Kitty."
 9.15: Mildred and Connie, Harp and Violin—
 Selections from their Repertoire.
 9.18: Ham. Johnston's Orchestra—
 "Sweet Sam."
 "Carolina Moon."
 "Could it be You."
 9.27: Arthur Douglas, Scotch Comedian—
 "Name of Mine."
 9.30: Ham. Johnston's Orchestra—
 "Too Busy."
 Waltz, "Mexican Serenade."
 Selected.
 9.39: Mildred and Connie, Harp and Violin—
 Selections from their repertoire.
 9.42: Ham. Johnston's Orchestra—
 "Who wouldn't."
 "I'm wild about everything."
 "Sally of my Dreams."
 9.51: Arthur, Douglas, Scotch Comedian—
 "Saturday Night."
 9.54: Ham. Johnston's Orchestra—
 "Jo Anne."
 Waltz, "Nothing Seems the Same."
 "Little Japanese Mammy."
 10.3: Mildred and Connie, Harp and Violin—
 Selections from their repertoire.
 10.7: Ham. Johnston's Orchestra—
 Selected.
 10.20: News service; announcements.
 10.30: God Save the King.

4QG

EARLY MORNING SESSION.

7.43 to 8.43: See Friday.

MIDDAY SESSION.

1.0 to 2.0 See Friday.

EVENING SESSION.

3.0 to 4.30: See Friday.

EARLY EVENING SESSION.

6.0 to 7.45: The Children's Music Corner, conducted by "The Music Man." 7.45: Lecture, The Children's Music Corner, conducted by "The Music Man."

NIGHT SESSION.

8.0: The Studio Orchestra (conductor, A. F. Featherstone).
 Overture, "Encouragement" (Boettger).
 8.8: Kennedy Allen, the second of a series of reviews of Shakespeare's works—
 "Married Life in Shakespeare."
 8.18: Jean Naylor, contralto—
 A short song recital, including—
 "Lascia ch'io Pianga" (from "Rinaldo," Handel).
 "It Was a Dream" (Lassée).
 "Oh, That We Two Were Maying" (Nevins).
 "Sing, Sing, Blackbird" (Phillips).
 8.38: The Studio Orchestra—
 Valse, "Dreams of the Fairies" (Johnsen).
 8.45: D. Felsman, baritone—
 "Time to Go" (Sanderson).
 8.50: Cecile Hives, soprano—
 "The Beat of a Passionate Heart" (Phillips).
 8.55: Ernest Harper, baritone—
 "Yonder" (Oliver).
 9.0: Metropolitan weather forecast.
 9.1: The Studio Orchestra—
 Selection, "Follow Me" (Pulton).
 9.0: D. Felsman, baritone—
 "Rolling Down to Rio" (German).
 9.13: The Federal Band (conductor, W. H. Davis)—
 March, "The Voice of the Gulls" (Alford).
 9.18: Cecile Hives, soprano—
 "Tired Hands" (Sanderson).
 9.22: J. Gavton.
 Euphonium solo, "Asleep in the Deep" (Petrie).
 9.25: Mrs. Charles Willey, contralto—
 "Abide with Me" (Liddle).
 9.27: The Federal Band—
 Selection, "Mary" (Hibsch).
 9.30: The Federal Band—
 Suite, "Gold and Silver" (Lehars).
 9.36: Tenor horn solo—
 "Dream of Love" (Millars).
 9.42: Mrs. Charles Willey, contralto—
 "St. Nicholas Day in the Morning" (Martini).
 9.47: Ernest Harper, baritone—
 "Avalon" (Johnson).
 9.55: The Federal Band—
 Fox trot, "To Walk a Million Miles" (Lewis).
 10.0: News service; information; close down.

5CL

EVENING SESSION.

8.0: Chimes. 8.1: Birthday greetings, correspondence. 8.30: Recordings. 6.45: 5CL's sporting service. 7.0: Chimes. 7.1: Senior Birthday League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: Under the auspices of the South Australian Agricultural Department, Mr. George Quinn (Horticultural Instructor), will speak to you. 7.30: 5CL Twinkler Boys' Club.

NIGHT SESSION.

8.0: Chimes.
 8.1: "A Glimpse into the Past."
 8.1: Walter Barratt and his Maison Masters of Melody (of the Maison de Danse, Glenelg).
 Walter Barratt, saxophonist.
 Fred Tuller, saxophonist.
 Frank Waterman, trumpet.
 Will Friebe, trumpet.
 Johnnie Gardner, banjo.
 Ron Le Cornue, percussion.
 Cyril Job, tuba.
 Reg Hollow, pianist.
 After the announcement of his name each player introduces himself by playing a few bars of music.
 "Lucky in Love" (Ide Sylva).
 "Old Man Sunshine" (Dixon).
 "Bon Soir, Cherie" (McHugh).
 8.25: Eric Wickens, bass—
 "When the Sergeant-Major's on Parade" (Long-staffe).
 8.28: Walter Barratt and his Maison Masters of Melody—
 "If you want the rainbow you must have the rain" (Rose).
 "I Faw Down and Go Boom" (Braham).
 "I Can't give you anything but love" (Fields).
 8.38: Marcelle Berardi, soprano—
 "Pierrot" (Ryher).
 8.41: Walter Barratt and his Maison Masters of Melody—
 "A room with a view" (Coward).
 "There's a rainbow round my shoulder" (Johnson).
 "Avalon Town" (Brown).
 8.51: Eric Wickens, bass—
 "The Floral Dance" (Moss).
 8.54: Walter Barratt and his Maison Masters of Melody—
 "Savoy American Medley" (Somers).
 "I don't care" (Dowell).
 "Mexican Serenade" (Terese).
 9.3: Meteorological information, including Semaphore tides.
 9.4: Overseas grain report.
 9.5: A story of the French Revolution.
 The story of Beryl Alford.
 The songs of Marcelle Berardi.
 9.25: Walter Barratt and his Maison Masters of Melody—
 "Rio Rita" (Tierney).
 "The Kinkajou" (Tierney).
 "Glad Rag Doll" (Dougherty).
 9.35: Eric Wickens, bass—
 "Nothing but Love" (Carrie Jacobs-Bond).
 9.38: Walter Barratt and his Maison Masters of Melody—
 "I Love to Hear You Singing" (Haydn Wood).
 "That's Her Now" (Azer).
 "High up on a Hilltop" (Baert).
 9.48: Marcelle Berardi, soprano—
 "I Didn't Know."
 9.51: Walter Barratt and his Maison Masters of Melody—
 "Beautiful" (Larry Shay).
 "Japsany" (Klenner).
 "Promise Me" (Stranks).
 10.0: Eric Wickens, bass—
 "The Ringers" (Hermann Lohr).
 10.3: Walter Barratt and his Maison Masters of Melody—
 "You're Wonderful" (Fields).
 "In a Little Town Called Home Sweet Home" (Donaldson).
 "I Knew It Was You" (Murray).
 "Lonely Little Bluebird" (Woods).
 10.15: General news service; British official wireless news; meteorological information; announcements.
 10.30: Close down.

6WF

10.0: Tune in. Gramophone and phonograph records from the Studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Tune signal. 1.1: Weather bulletin supplied by the Meteorological Bureau of West Australia. 1.3: Panatrose Hour relayed from Messrs. Musgrove's Lyric House, Perth. 2.0: Close down.
 3.30: Tune in. 3.35: Music relayed from the Carlton Cafe. Vocal items from the Studio. 4.30: Close down.
 8.45: Tune in. 8.48: Bedtime stories by Uncle Duffy. 7.5: Music by the Radio Trio. 7.30: Commercial and general information. 7.45: Talk by Lieut.-Col. Le Souef, Director Zoological Gardens, South Perth. 8.0: Tune signal. 8.1: First weather bulletin. 8.3: Relay from the Town Hall Bassendean of concert by the West Guildford Orchestral Society, conducted by Mr. Arthur Young. 8.20: Talk, "Mystic Java" by Mr. J. Cowie, of the Orient Touring Co. 8.50: Late news items by courtesy of "The Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcement; late weather bulletin. 9.5: Programme continued from the Bassendean Town Hall. 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

EVENING SESSION.

7.30: Professor A. B. Taylor, M.A., will speak on "The harmful influence upon human progress caused by the general misunderstanding of technical terms in daily conversation. 7.45: Geo. Collis will speak on "Physical Culture." 8.6: A concert programme. 9.30: News session. 9.45: Recordings. 10.1: Close down.

GRACE BROS

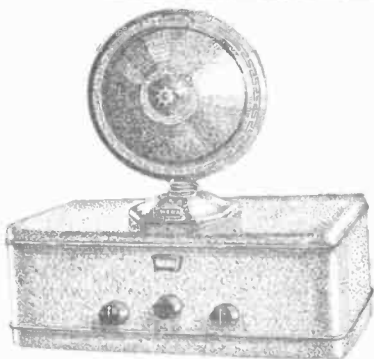
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BROADWAY
SYDNEY

Local Programmes, Tuesday, July 9

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

7.0: "Big Ben" and announcements. 7.2: Official weather forecast: rainfall; river reports; temperature: astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.12: Shipping intelligence; mail services. 7.15: Studio music. 7.25: Investment market; mining sharemarkets; metal quotations; wool sales; breadstuffs markets; inter-State markets; produce markets. 7.40: Studio music. 8.0: "Big Ben"; close.

MORNING SESSION.

Announcer: A. S. Cochrane.

10.0: "Big Ben" and announcements. 10.2: Pianoforte reproduction. 10.10: "Sydney Morning Herald" news service. 10.25: Studio music. 10.30: Last minute sporting information, by the 2FC racing commissioner. 10.40: Studio music. 10.50: Pianoforte reproduction. 11.0: "Big Ben"; A.P.A. and Reuter's cable services. 11.5: Close down.

MIDDAY SESSION.

Announcer: A. S. Cochrane.

12.0: "Big Ben"; summary of news, "Sydney Morning Herald". 12.4: Rugby wireless news. 12.7: Stock Exchange, first call. 12.10: Synopsis of weather. 12.11: A reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" midday news service. 1.15: Producers' Distributing Society's market report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular studio music. 2.0: "Big Ben"; close. Note: Race results from Gosford will be broadcast.

AFTERNOON SESSION.

Announcers: Laurence Halbert, Eric Bessemer.

Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben"; popular music. 3.20: From Christ Church, St. Laurence, organ recital by Christian Hellemann. 3.40: From the studio, a reading. 4.10: From Christ Church, St. Laurence, organ recital by Christian Hellemann. 4.30: From the studio, popular music; Stock Exchange, third call. 4.40: From Christ Church, St. Laurence, organ recital by Christian Hellemann. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man," assisted by Aunt Eily; letters and stories; music and entertainment. 6.30: Dalgety's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news. 7.0: "Big Ben"; late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats, (a) "Sefira" (Siede), (b) "Un Peu d'Amour" (Silesu), (c) "Carmen" (Bizet), (d) "Winds in the Trees" (Goring-Thomas).

EVENING SESSION.

Announcer: Laurence Halbert

Accompanist: Ewart Chapple.

7.40: Popular music.
7.45: Programme announcements
7.48: A record recital.
8.0 "Big Ben." It is hoped on this night to relay from Melbourne, Harold Williams, the famous Australian baritone, in association with the Philharmonic Society and the University Symphony Orchestra, conducted by Professor Bernard Heinz.
10.28: Late weather report.
10.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.57: From the studio, to-morrow's programme.
10.59: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
11.30: National Anthem; close.

2BL

MORNING SESSION

Announcer: A. C. C. Stevens.

8 a.m.: G.P.O. chimes; weather report—State and metropolitan. 8.3: Studio music. 8.15: G.P.O. chimes; news and information service from the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes; half an hour with silent friends. 10.0: G.P.O. chimes; close down.

MIDDAY SESSION

Announcer: A. C. C. Stevens.

11.0: G.P.O. chimes; 2BL Women's Sports Association session, conducted by Miss Gwen Varley. 11.30: Advertising hints. 11.40: Women's session, conducted by Mrs. Cranfield; talk on the "Work of the St. John Ambulance Association," by Sister Parry. 12.0: G.P.O. chimes; special ocean forecast and weather report. 12.3: Pianoforte and vocal recital. 12.30: Shipping and mails. 12.35: Market reports. 12.48: "Sun" midday news service. 1.0: Studio music. 1.30: Talk to children and special entertainment for children in hospital, by Uncle Steve. 2.0: G.P.O. chimes; close down. Note: Race results from Gosford will be broadcast by arrangement with "Sun" Newspapers, Ltd.

AFTERNOON SESSION

Announcer: A. C. C. Stevens.

Accompanist: Kathleen Roe.

3.45: G.P.O. chimes; popular music. 4.0: G.P.O. chimes; Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.15: From the studio, Zora Cross will give a talk. 4.27: Romano's Cafe dance orchestra, conducted by Bennie Abrahams. 4.37: From the studio, Esther Gunton, soprano—(a) "Big Lady Moon" (Coleridge-Taylor), (b) "My Desire" (Cadman). 4.44: Studio items. 4.51: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 5.0: G.P.O. chimes; Frederick Todd, basso. 5.7: Popular items. 5.15: Frederick Todd, basso. 5.22: Producers' Distributing Society's poultry report. 5.24: Racing resume. 5.27: Features of the evening's programme.

EARLY EVENING SESSION

Announcer: Basil Kirke.

5.30: Children's session, conducted by Uncle Bas; music and entertainment; letters and stories. 6.0: Mr. Norman speaks to the "Bigger Boys." 5.45: "Sun" news and late sporting. 6.55: 2BL Dinner Quartette—(a) "Under the Lilac Bough" (Schubert), (b) "Serenade" (Gounod), (c) "Song of the Volga Boatmen" (arr. Lake). 7.7: Australian Mercantile Land and Finance Co.'s report; weather report and forecast, by courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market reports; grain and fodder report ("Sun"); dairy produce report ("Sun"). 7.25: M. Plm and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Ad. Special. 7.55: Programme and other announcements.

EVENING SESSION

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

8.0: G.P.O. chimes. From the Victory Theatre, Kogarah, the orchestra, conducted by Fred Mitchell.
8.20: From the studio, Amy Ostinga, contralto.
8.27: Frank Ryan, comedian.
8.34: Maisie Ottie, novelty pianist.
8.41: Brunton Gibb, in a sketch.
8.50: From the Victory Theatre, Kogarah, Horace Weber at the "Christie" organ.
9.10: From the studio, weather report.
9.11: Amy Ostinga, contralto.
9.18: Frank Ryan, comedian.
9.28: Maisie Ottie, novelty pianist.
9.33: An Hour in Bohemia—our programme is now for the benefit of those curious souls who have wondered what the microphone does after the announcer's cheery "Good-night."
10.28: Late weather and to-morrow's programme.
10.30: National Anthem. Close.

2GB

10 a.m.: 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: Music. 3.30: Close down. 5.30: Children's session, by Uncle George. 7.0: Music. 7.30: Talk from the Radio Service Department by Mr. Stan Crittenden. 8.0: Miss Thelma Lansdowne, contralto. 8.7: Band selections. 8.15: Mr. William Green, tenor. 8.22: Violin solos. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Elsie Brown, soprano. 8.45: Band selections. 8.50: Miss Thelma Lansdowne, contralto. 9.0: Weather report. 9.3: Address. 9.15: Symphony orchestra. 9.25: Mr. William Green, tenor. 9.35: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.40: Violin solos. 9.50: Miss Elsie Brown, soprano. 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. 8.0: Music. 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.

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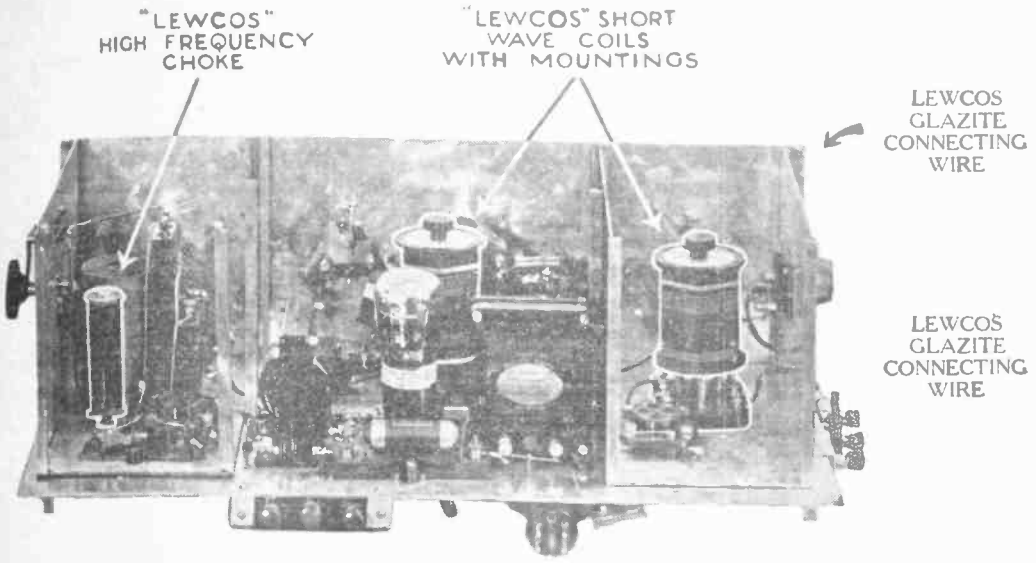
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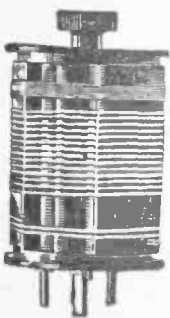
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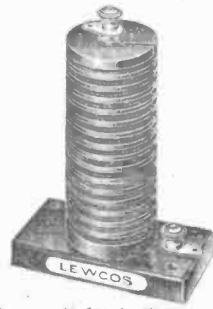
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Interstate Programmes, Tuesday, July 9

3LO

EARLY MORNING SESSION.

7.15 to 8.15: See Friday.

MORNING SESSION.

11.0: 3LO's luncheon-dish recipe. 11.55: Miss E. Noble will speak on "Gas Cookery." 11.45: J. Howlett Ross will speak.

MIDDAY NEWS SESSION.

12.0: Melbourne Observatory time signal. 12.1: British official wireless news from Rugby; Reuter's and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; official report of the sheep market by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: The Station Orchestra. 12.28: Julia Russell, soprano. 12.35: Stock Exchange information; metal prices received by the Australian Mines and Metals Association from the London Stock Exchange this day. 12.42: The Station Orchestra. 12.47: Victor Baxter, tenor. 12.54: The Station Orchestra. 1.0: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports; rainfall. 1.8: Julia Russell, soprano. 1.15: The Station Orchestra. 1.28: Victor Baxter, tenor. 1.45: Close down.

AFTERNOON SESSION.

2.15: The Radio Revellers. 2.25: Mildred and Connie, harp and violin. 2.32: The Radio Revellers. 2.42: Arthur Douglas, Scottish comedian. 2.50: The Radio Revellers. 3.0: The James Girls. 3.15: The Radio Revellers. 3.25: Mildred and Connie, harp and violin. 3.32: The Radio Revellers. 3.42: Jean Sinclair, contralto. 3.49: The Radio Revellers. 4.0: Arthur Douglas, Scottish comedian. 4.7: The Radio Revellers. 4.17: Jean Sinclair, contralto. 4.24: The Radio Revellers. 4.45: News service; Stock Exchange information; progress scores of billiard match, Walter Lindrum v. Willie Smith. 4.55: Close down. 6.0: Captain Donald MacLean. 6.30: The Strand Trio.

EVENING SESSION.

7.3: Stock Exchange information. 7.15: Market reports. 7.43: Birthday greetings. 7.45: Out of the Past.

NIGHT SESSION.

8.0: A special programme has been arranged. 10.0: News session; British official wireless news from Rugby; meteorological information; announcement; Eric Welch's selections for to-morrow's V.R.C. races at Flemington. 10.20: The Jedal Trio (Alva Hattenbach violin, Edna Hattenbach cello, John Simons violin)—"Andante Religioso" (Thome). "Moorish Nightsong" (Tasch). "The Rosary" (Nevin). Alva Hattenbach, violin—"Spanish Dance" (Granados-Kreisler). The Trio—"Melody" (Faure). "Dancing Doll" (Poldini). 10.35: Ern Hall's Radio Revellers, with Hugh Buxham—"Shilvering" (Doody). "Promising Me" (Ivan Booth). "Ready for the River" (Moret). "My Stormy Weather Pal" (Plantadosi). "What'll You Do" (Cohn). "Do You" (Plantadosi). "Fay's Old Hat" (Gay). "My Mother's Eyes" (Baer). "Stay at Home Girl" (O'Hagan). Selected. 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.0 to 10.30: See Friday.

MORNING MUSIC SESSION.

11.0: Recordings. 11.30: Vassili Ester, pianist for the Imperial Russian Trio, returns to 3AR: "Menuett G Major" (Paderewski), "Romance" (Gillier), "Valse Caprice" (Rubinstein). 12.20: British official wireless news from Rugby. Announcements. 12.30: Close down.

AFTERNOON SESSION.

3.0: Recordings. 4.30: Close down.

EVENING SESSION.

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

NIGHT SESSION.

8.15: The Station Orchestra—Selection, "Lucia di Lammermoor" (Verdi). "Nocturne" (Chopin). 8.30: The James Girls—In Mirth and Melody. 8.45: The Station Orchestra—Suite, "Woodland Pictures" (Fletcher). 8.55: Jean Sinclair, contralto—"My Dear Soul" (Sanderson). "Friend o' Mine" (Sanderson). 9.2: "The Lost Piper," produced by Maurice Dudley. By Mr. and Mrs. James R. A. Fleming. First performance in Australia.

CAST.

James Cameron Maurice Dudley
Daphne Mrs. Maurice Dudley
Ian H. M. Hill

SCENE: The Study in James Cameron's House in Edinburgh.

9.17: The Station Orchestra—Selection, "Romeo and Juliet" (Gounod). 9.29: Mildred and Connie, harp and violin—Selections from their repertoire. 9.44: The Station Orchestra—Suite, "Promenade" (Foxy). 9.54: Jean Sinclair, contralto—"The Gleaner's Slumber Song" (Waltwhay). "My Ain Folk" (Lemon).

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.

6.5: An astronomy talk, "At our Farthest from the Sun," by Mr. A. K. Chapman.

NIGHT SESSION.

In response to many requests another special orchestral programme arranged by Mr. Erich Jön will be broadcast. 8.0: From the Studio, Group I. Grand Opera—Orchestra, Overture from "Tancredi" (Rossini). W. W. Crisp, tenor, "Flower Song" (from "Carmen." Bizet). Orchestra, Entr'acte. "Music" (from "Rosamunde" (Boccherini). Mildred Bell, contralto—"Softly Awakes my Heart" (from "Samson and Delilah," Saint-Saens).

8.30: Group II, Echoes from an Old World Garden—Orchestra, "La Cinquantaine" (Marie). "Menuet" (Boccherini). Stanley Tamblin, bass-baritone—"At the Court of Gay Versailles" (Arundale). Orchestra, "Air de Louis XIII." (Glyss). "Chaconne" (Durand). Mildred Bell, contralto, and Stanley Tamblin, bass-baritone—"Rendez-Vous" (Aelter). 9.0: Metropolitan weather forecast.

Group III, Classical—Orchestra, "Erich's Grand Symphony" (Schubert). Mildred Bell, contralto, "The Ring" (Schumann). Orchestra, "Chanson Triste" (Tschaiakowsky). "Serenata" (Mozelowsky). Stanley Tamblin, bass-baritone—"Within those Holy Portals" (Mozart). Orchestra, "March Militaire," No. 2 (Schubert).

9.30: Group IV, Light Opera—"The Trysting Tree" (from "Nell Gwyn," German). Orchestra, "Three Dances" (from "Nell Gwyn," Ed. German). "Country Dance." "Pastoral Dance." "Merry-makers' Dance."

Mildred Bell, contralto, and Stanley Tamblin, bass-baritone, vocal duet—"When the Lilac Bloom Uncloses" (from "Lilac Time," Schubert). Orchestra, selection, "The Mikado" (Gilbert and Sullivan).

10.0: News, weather, close down.

5CL

MORNING SESSION.

11.30 to 2.0: See Friday.

AFTERNOON SESSION.

3.0: Chimes. 3.1: Programme review and announcements. 3.10: Readings. 4.10: An educational talk on "Prevention of Migration of Fish." "Typesetting by Telegraph," "A Show Case for Canned Goods," "Prevention of Forest Fires in Canada," "Turning Waste Land to Forests." 4.25: Stock Exchange. 4.30: Close down.

EVENING SESSION.

6.0: Chimes. 6.1: Birthday greetings; correspondence; songs and stories by "The Wattle Lady." 6.30: Recordings. 6.45: 5CL sporting service. 7.1: Senior Birthday League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.15: Under the auspices of the Workers' Educational Association, Mr. A. E. Kirkwood, M.A., will talk on "Words." 7.30: Mr. R. C. Beld, Ph.D., Lecturer in English at the Adelaide University. 7.45: Dr. Herbert Basedow.

NIGHT SESSION.

8.0: Programme review. 8.10: A special programme by the Melbourne Philharmonic Society, relayed from Melbourne. From 5CL Studio—Meteorological information, including Semaphore tides; overseas grain report. Mr. J. W. Bell, Deputy Commissioner of the Repatriation Commission. Continuation of Philharmonic Society's concert. 10.15: General news service. 10.30: Close down.

6WF

10.0: Tune in. Gramophone and phonograph records from the Studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin supplied by the Meteorological Bureau of West Australia. 1.3: Luncheon music relayed from the Primrose Cafe de Luxe. 2.0: Close down.

3.30: Tune in. 3.35: Musical programme from the Studio. Pianoforte solos by Miss Audrey Dean. 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 informa-

tion. 7.45: Dr. Battye, B.A., LL.B., will talk on "Early Governors of Western Australia." 8.0: Time signal. 8.1: First weather bulletin. 8.3: Relay from the Town Hall, Perth, of Orchestral Concert by the Metropolitan Orchestral Society, conducted by Mr. H. Vowles, F.R.C.O. 8.50: Late news items by courtesy of "The Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcement; late weather bulletin. 9.5: Programme continued from the Perth Town Hall. 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

MIDDAY SESSION.

11.30. to 1.30: See Friday.

AFTERNOON SESSION.

3.0. to 4.30: General programme.

EARLY EVENING SESSION.

6.15 to 7.15: General programme, see Friday.

EVENING SESSION.

7.30: Under the auspices of the Agricultural Department, C. A. Holland will speak on "Pig Feeding." 7.45: W. E. Fuller will speak on "Literary Lapses and Library Lists." 8.6: Recording. 8.15: A programme of dance music, interspersed with records. 8.15: Reg Jones and his orchestra: "My Mother's Eyes" (Baer). "I Fell Head Over Heels in Love," "I Loved You Then" (Mendoza). Robert Radford, bass: "When That I Was a Tiny Boy," "Four Jolly Saltmen." Reg Jones and his orchestra: "I Fan Down and Go Boom," "In a Little Town Called Home, Sweet Home," "That's How I Feel About You." Harry Lauder, tenor: "Ohio" (Lauder), "O'er the Hills to Arcadentony" (Lauder). Reg Jones and his orchestra: "Happy Days and Lonely Nights" (Fisher). "I'm Sorry, Solly" (Kahn). "If You Want Rainbow" (Rose). Edna Thornton, contralto: "Flower Song" (Gounod). Reg Jones and his orchestra: "Promise Me" (Booth). "Me and the Man in the Moon" (Mouaco). "There's a Rainbow Round My Shoulder" (Jolson). Robert Radford, bass: "In a Cellar Cool," "Rocked in the Cradle of the Deep" (Knight). Reg Jones and his orchestra: "Marie" (Berlin), "Beloved" (Kahn), "Mexican Serenade" (Plantadosi). Gresham Singers: "Summer Eve" (Hatton), "Little Tom Went a'Fishing" (Hatton). Reg Jones and his orchestra: "Querida" (Simon), "That's Her Now" (Ager), "Cuckoo" (Jonansson). 9.45: News service. 10.1: Close down.



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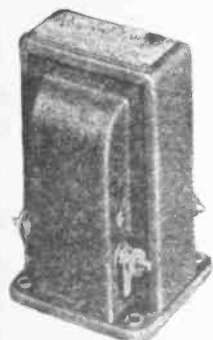


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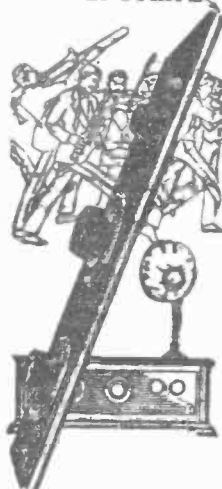
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Local Programmes, Wednesday, July 10

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

7.0: "Big Ben" and announcements. 7.2: Official weather forecast; rainfall; river reports; temperatures; astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.12: Shipping intelligence, mail services. 7.15: Studio music. 7.25: Investment markets; mining share market; metal quotations; wool sales; breadstuffs markets; Inter-State markets; produce markets. 7.40: Studio music. 8.0: "Big Ben"; close.

MORNING SESSION.

Announcer: A. S. Cochrane.

10.0: "Big Ben" and announcements. 10.3: Pianoforte reproduction. 10.10: "Sydney Morning Herald" news service. 10.25: Studio music. 10.45: A talk on "Home Cooking and Recipes" by Miss Ruth Furst. 11.0: "Big Ben"; A.P.A. and Reuters' cable services. 11.5: Close down.

MIDDAY SESSION.

Announcer: A. S. Cochrane.

12.0: "Big Ben"; summary of news, "Sydney Morning Herald." 12.4: Rugby wireless news. 12.7: Stock Exchange, first call. 12.10: Synopsis of weather. 12.11: A reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" midday news service; Producers' Distributing Society's report. 1.20: Studio music. 1.28: Stock Exchange second call. 1.30: Studio music. 2.0: "Big Ben"; close. Note.—Race results from Kensington.

AFTERNOON SESSION.

Announcers: Laurence Halbert, Eric Bessemer.

Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben," popular music. 3.23: Myra O'Neill, soprano—(a) "Down in the Forest" (Ronald), (b) "The Wood Pigeon" (Lehmann). 3.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 3.40: From the Studio: Daisy Sweet, contralto—(a) "When All was Young" (Gounod), (b) "The Dawn" (d'Hardelet). 3.48: A reading. 4.10: Myra O'Neill, soprano—(a) "The Yellow Hammer" (Lehmann), (b) "The Wren" (Lehmann). 4.17: A popular item. 4.25: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.35: Daisy Sweet, contralto—(a) "My Rose" (Tangley), (b) "The Star and the Flower" (d'Hardelet). 4.42: A musical number. 4.45: Stock Exchange, third call. 4.47: Studio music. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The children's session, conducted by the "Hello Man," assisted by Uncle Ted and "Sandy"; letters and stories, music and entertainment. 6.30: Dalgety's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news. 7.0: "Big Ben"; late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keate—(a) "Serenade" (Herbert), (b) "Waltz in B Flat" (Godard), (c) "Chopiniana" (arr. Finck), (d) "Solveig's Song" (Grieg).

EVENING SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

7.40: Popular music. 7.45: Programme announcements. 7.48: A record recital. 8.0: From the Conservatorium: The Royal Apollo Club concert. Assisting Artists: Ernest M'Kinlay, Muriel Barlow, Carl Budden Morris. 9.0: "Big Ben" from the studio; weather report. 9.1: Rev. F. H. Raward, "Quaint Folk of the Australian Bush." 9.10: From the Royal Apollo Club concert, held at the Conservatorium. 10.15: From the studio; late "Sun" news. 10.28: To-morrow's programme and late weather. 10.30: National Anthem; close down.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.

8.0: G.P.O. chimes; weather report. State and metropolitan. 8.3: Studio music. 8.15: News and information service. From the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes; half an hour with silent friends. 10.0: G.P.O. chimes. Close down.

MIDDAY SESSION.

Announcer: A. C. C. Stevens.

11.0: G.P.O. chimes; 2BL Women's Sports Association session, conducted by Miss Gwen Varley. 11.30: Advertising hints. 11.40: Women's session, conducted by Mrs. Cranfield. 12.0: G.P.O. chimes; special ocean forecast and weather report. 12.3: Pianoforte recital. 12.30: Shipping and mails. 12.35: Market reports. 12.48: "Sun" midday news service. 1.0: G.P.O. chimes; Studio music. 1.30: Talk to children, and special entertainment for children in hospital, by Uncle Steve. 2.0: G.P.O. chimes. Close down. Note.—Race results from Kensington will be broadcast by arrangement with "Sun" Newspapers, Ltd.

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.

Accompanist: Kathleen Roe.

2.45: G.P.O. chimes; Les Busse, melo accordeon solos—(a) "Black Birds and Blue Birds," (b) "Intermezzo," from "Cavalleria Rusticana" (Mascagni), (c) "Irish Mother o' Mine" (Von Tiltzer). 3.0: G.P.O. chimes. From the Showground: Description of the football match, All Blacks v. N.S.W. 4.10: From the Studio, race results: Les Busse, melo accordeon solos—(a) "La Paloma" (Yradier), (b) "Turkish Patrol" (Michaëlis), (c) "Ould County Down" (Sanders); popular music. 4.55: Complete sporting and racing resume. 5.0: G.P.O. chimes. Close.

EARLY EVENING SESSION.

Announcer: Basil Kirke.

5.30: Children's session, conducted by Uncle Bas; music and entertainment; letters and stories. 6.20: The "Aero" Club, conducted by Mr. Norman, in association with "Wireless Weekly." 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette—(a) "A Summer's Morn" (Haines), (b) "Valse Suite" (Brahms), (c) "Catherine" (Tschalkowsky), (d) "Serenade d'Amour" (Waldan). 7.7: Australian Mercantile Land and Finance Co.'s report; weather report and forecast, by courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market reports; grain and fodder report ("Sun"); dairy produce report ("Sun"). 7.25: Mr. Pam and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Ad. special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

8.0: G.P.O. chimes. From the Capitol Theatre—The Capitol Unit of Entertainment. 8.7: From the Studio: Charles Tidswell, in unusual songs—
(a) "A Persian Passion Poem" (Sterndale Bennett).
(b) "Coaling" (Helmore).
8.14: Josef Kaartinen, saxophone solos.
8.21: Charles Lawrence and Gladys Rowling in a sketch specially written for broadcasting, by Mrs. Dally Scarlett, entitled the "Bush Picnic."
8.36: Charles Tidswell, in unusual songs—
(a) "And You" (Bennett).
(b) "Tommy, the Whistler" (Melvin).
8.43: From the Capitol Theatre—Fred Scholl at the Wurlitzer organ.
9.3: From the Studio—Weather report.
9.4: Josef Kaartinen, saxophone solos.
9.11: Claude Corbett will speak on general sporting.

9.23: From the Capitol Theatre—Stage presentation.

9.36: From the Studio—Gladys Bowling in popular numbers.

9.43: Charles Lawrence, entertainer.

9.53: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.3: From the Studio—Rae Foster, popular vocalist.

10.10: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.21: From the Studio—Rae Foster, popular vocalist.

10.28: Late weather.

10.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.57: From the Studio—To-morrow's programme.

10.59: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

11.30: National Anthem. Close.

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: Music. 3.0: Labor Saving Demonstration, from Nock and Kirby. 4.0: Close. 5.30: Children's session, by Uncle George. 7.0: Music. 7.30: Talk by Miss Beegling. 8.0: Miss Heather Kinnaird, contralto. 8.7: Symphony Orchestra. 8.15: Mr. Hector Wagner, baritone. 8.22: Cello solos. 8.30: Mr. Jack Win and Miss Nora Windle in a dramatic sketch. 8.40: Miss Gladys Edwards, soprano. 8.50: Symphony Orchestra. 9.0: Weather report. 9.3: Address. 9.15: Miss Heather Kinnaird, contralto. 9.25: Cello solos. 9.35: Mr. Jack Win and Miss Nora Windle in a humorous sketch. 9.45: Mr. Hector Wagner, baritone. 9.55: Instrumental trio. 10.0: Miss Gladys Edwards, soprano. 10.10: 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 Home-craft 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. 8.0: Music. 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.

N.Z. Earthquake Affects Short-waves

It was noticed that on the evening following the terrific earthquake in New Zealand, short-wave reception was affected in a peculiar manner. American stations were reporting exceptionally good reception from Australia and New Zealand. Here, static was prevalent on all bands, particularly on the 80 band, where most of the Australian stations are working. On 40 metres, conditions were much better, and DX was possible. Curiously enough, though ten metres is supposed to be of little use for night work, there were several stations operating on this band, and they were heard at about R5 to R9.

The Signal Box Four S.W. receiver has proved very successful, and the receiver will suit both Hams and BCLSW listeners. The midget condenser will cover the amateur band well.

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Interstate Programmes, Wednesday, July 10

3LO

EARLY MORNING SESSION.

7.15 to 8.15: See Friday
MORNING SESSION.
 11.0: Afternoon Tea Trifles. 11.5: Eric Welch will speak on to-day's V.R.C. races at Flemington. 11.25: Mrs. M. Callaway Mahood will speak on "The Art of Decoration." 11.45: Mrs. Clarence Webor will speak on "Physical Culture for Women."

MID-DAY SESSION.

12.0: Melbourne Observatory time signal. 12.10: British official wireless news from Rugby; Reuters and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; cattle sales report, bullocks and calves, by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: The Radio Revellers. 12.30: Jean Sinclair, contralto. 12.37: Stock Exchange information; prices received from the London Stock Exchange by the Australian Mines and Metals Association this day. 12.44: The Radio Revellers. 12.54: Arthur Douglas, Scottish comedian. 1.0: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecasts; river reports; rainfall. 1.8: The Radio Revellers. 1.14: Jean Sinclair, contralto. 1.20: The Radio Revellers. 1.28: Description of Keilor Hurdie Race, 2 miles, by Eric Welch, V.R.C. races at Flemington. 1.35: Sports from the Rotary Club luncheon transmission from the Freemasons' Hall, Collins Street, Melbourne. 2.0: Close down.

AFTERNOON SESSION.

2.13: Description by Eric Welch of Two-Year-Old Mile, V.R.C. races, at Flemington. 2.20: The Station Orchestra. 2.28: Jean Sinclair, contralto. 2.35: The Station Orchestra. 2.43: Description of Trial Steeplechase, 2 miles 1/2 furlong, V.R.C. races, at Flemington. 2.50: The James Girls. 3.5: The Station Orchestra. 3.18: Description of Steeplechasers' Flat Race, 2 miles, V.R.C. races, at Flemington. 3.25: Tom Semple, tenor. 3.32: The Station Orchestra. 3.42: Jean Sinclair, contralto. 3.48: Joseph Barille, flute. 3.52: Description of Braybrook Handicap, 1 1/2 miles, V.R.C. races, at Flemington. 4.0: The Station Orchestra. 4.10: Tom Semple, tenor. 4.17: The Station Orchestra. 4.21: Description of Cooparie Welter, 7 furlongs, V.R.C. races, at Flemington. 4.35: The Station Orchestra. 4.50: News service; Stock Exchange information; progress scores of billiard match, Walter Lindrum v. Willie Smith. 5.0: Close down. 5.0: Captain Donald MacLean in some more thrilling adventure stories. 5.30: The Jedral Trio.

EVENING SESSION.

7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.43: Birthday greetings. 7.45: Out of the Past. 8.6: Under the auspices of the Tasmanian Government Tourist Department, L. S. Bruce will speak on "Port Davey, Tasmania." 8.0: A Maker of History.

NIGHT SESSION.

8.1: 59th Battalion Band—"Under the Banner of Victory" (Von Blom). 8.6: J. Alexander Browne, Baritone—"The Company Sergeant Major." "The Adulant." 8.13: 59th Battalion Band—A Descriptive Song.

GUARD MOUNTING PARADE.

1. Bugler sounds duties. 2. Band marches on to parade ground, drums playing. 3. Bugler sounds "Advance." 4. Dance plays "Knight of the Road" as duties march on parade. 5. Duties form up. Field Officer tells Officers to fall out. 6. Brigade Sgt. Major takes over parade and gives the command "Right Dress." 7. Their report to the Field Officer. 8. Field Officer inspects duties after giving the command, "Officers take post." Band plays selection, "On Parade." After inspection Parade is called to attention. Bugler plays "Treat." Field Officer gives command "To your Duties Move." Band plays march, "Royal Australian Navy." Orders given whilst changing guard. Band moves off, counter marches, plays "Grand March Simple" breaking into quick march, "Jack o' Lantern." Bugler sound "Officers' Mess."

8.53: J. Alexander Browne, Baritone—"The Drum Major." "The Sergeant Major on Parade." 8.40: 59th Battalion Band—One Step, "Are You From Dixie?" (Lobb). Song, "When You Come Home" (Squire). 8.50: J. Howlett Ross will speak on—"Round the Boree Log." 9.0: The Jedral Trio (Alva Hattenbach, violin; Edna Hattenbach, cello; John Simons, piano). The Trio, "Romance d'Automne" (Fredk. Hall). Edna Hattenbach, cello—"I Passed by Your Window" (Brahe). John Simons, piano—"Gavotte" (Una Bourne). "March Grottesque" (Una Bourne). Alva Hattenbach, violin—"Gavotte" (Alva Hattenbach). The Trio—"To a Miniature" (Brahe). "Cradle Song" (Una Bourne). 9.43: The James Girls—"In a Bright and Breezy Budget." 9.58: 59th Battalion Band—Old English Songs. 10.0: News service; British official wireless news from Rugby; meteorological information; announcements; progress scores in billiard match, Walter Lindrum v. Willie Smith.

10.18: Arthur Douglas, Scottish comedian—"Ohio." 10.25: 59th Battalion Band—"Australia Will be There." 10.30: Arthur Douglas, Scottish Comedian—Scottish Song and Story. 10.39: Eru. Hall's Radio Revellers, with Hugh Huxham—"Stars are the Windows of Heaven" (Malle). "Only a Rose" (Friml). "That's Her Now" (Ager). "Song of the Vagabonds" (Friml). "Japansy" (Klenner). "Constantinople" (Carlton). "Minnetonka" (Wallace). "My Mother's Eyes" (Baer). "Stay at Home Girl" (O'Hagen). "Fireworks" (Williams). Selected. 11.30: God Save the King.

3AR

AFTERNOON SESSION

3.0: Recordings. 3.15: Mildred and Connie, harp and violin; Selections from their repertoire. 3.30: Recordings. 3.45: Vassili Ister, piano—"Granade" (Albeniz), "Sevilla" (Albeniz), "Aragon" (Albeniz). "Recuerdos de rigije" (Albeniz), "Castilla" (Albeniz). 4.30: Close down.

EVENING SESSION

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

NIGHT SESSION.

7.55: "The Five O'Clock Girl," transmitted from the Theatre Royal, by permission J. C. Williamson, Ltd.

Cast: Madame Irene, Ivy Parker; Madame Worthington, Winnie Tate; Ronnie Webb, Elved Jay; Roy, Cecil Kellaway; Oswald, Leo Franklin; Policeman, John Dume; Susan, Snow, Tul Black; Higgins, Patricia Brown; Helen Patterson; Gerold Brooks, William Valentine; Molly (Gerry's maid servant), Lucy Greenhill; Cora Walwright, Mary Rigby; Jasper Cobb, Frank Leighton; Jules (head waiter at the Kit-Kat Club), George Jennings. Quartet in Scene 7, Act 1, and Scene 7, Act 2: Oliver Kingette, Eileen Starr, Grace Fraser, Margaret M'Kenzie. Synopsis of Scenes. Act 1: A Block Party near Beckman Place, New York. Scene 2: On the telephone. Scene 3: A room in Gerry's Roof Garden Apartment. Scene 4: On the way from Gerry's Apartment. Scene 5: The Snowflake Cleaner's Shop. Scene 6: Outside the Kit-Kat Club. Scene 7: The Kit-Kat Club. Act 2: Outside the Field and Stream Hotel, Southampton. Scene 2: on the Merrick Road. Scene 3: The Snowflake Cleaner's Shop. Scene 4: Outside Ronnie's Roof Garden. Scene 6: On the way to the Church. Scene 7: Outside the Church.

MUSICAL NUMBERS.

Act 1: 1. Opening ensemble. 2. I'm one Little Party," Jay and Girls. 3. "Love is a Terrible Thing," Tul Black, Cecil Kellaway, and Leo Franklin. 4. "I Just Want You," Tul Black and Alfred Frith. 5. "Thinking of You," Helen Patterson and Wm. Valentine. 6. "I Kiss Your Hand," William Valentine, 7. "Happy-Go-Lucky Bird," William Valentine and Girls. 8. "Up in the Clouds," Helen Patterson, Wm. Valentine, and Ensemble. 9. "Any Little Thing," Tul Black and Alfred Frith. 10. "Following in Father's Footstep," Leo Franklin and Cecil Kellaway. 11. Dance, Winnie Tate. 12. The Kit-Kat Ballet. 13. "Lonely Romeo," Helen Patterson and Boys. 14. Reprise, "Up in the Clouds." 15. Finale. Act 11. 1. "You'll Find Us There," Ensemble. 2. "Danced with the Prince of Wales," Tul Black, Cecil Kellaway, and Leo Franklin. 3. "Who Did? Who Did?" Helen Patterson and Wm. Valentine. 4. "Tell the World You're Through," Wm. Valentine and Boys. 5. Reprise, "I Kiss Your Hand," Helen Patterson and Wm. Valentine. 6. "The Long, Long Walk," Alfred Frith. 7. Finaletto. 8. Specialty, Leo Franklin and Cecil Kellaway. 9. Dance, Danny Dove. 10. Specialty, Helen Patterson. 11. "Ever so Goosey," Alfred Frith and Ensemble. 12. Finale: Entire Company. 10.45: News session; announcements. 10.55: God Save the King.

4QG

7.42 to 4.30: See Friday.

EARLY EVENING SESSION.

7.45: Lecture, arranged by the Queensland Agricultural High School and College.

NIGHT SESSION.

8.0: Alf. Featherstone and his Orchestra, Fox-trots: "The Toy-maker's Dream" (Golden). "So Long" (Golden). 8.10: Mrs. M'Neish, soprano—"Open Thy Blue Eyes" (Massenet). "Break o' Day." 8.20: Alf. Featherstone and his Orchestra—Fox-trots: "Give Your Baby Lots of Lovin'" (Burke). "Ya Comin' Up To-night, Huh" (Sherwin). 8.30: Mrs. L. Corrigan, harpiste—"La Danse des Sylphs" (Godfrued). "The Rosary" (Nevin). 8.40: Alf. Featherstone and his Orchestra, jazz waltz—"My Angeline" (Wayne). 8.45: Jill Manners and Patricia M'Conigley—Vocal duet—Selected. 8.50: Alf. Featherstone and his Orchestra, fox-trots—"My Mother's Eyes" (Baer). "I Fell Head Over Heels in Love" (Thayer). 9.0: Metropolitan weather forecast; movements of lighthouse steamers.

9.5: Jill Manners, soprano—Selected. 9.10: D. Felsman, baritone—"Time Was I Romed the Mountains" (Lohr). "You Along o' Me" (Sanderson). 9.20: Alf. Featherstone and his Orchestra, fox-trots: "Mother of Mine" (Jolson). "When Eyes of Blue Are Fooling You" (Clive). 9.30: Mrs. F. North, a reading—Chapter 4, from "The Unfortunate Youth" (Locke). 9.40: Ella Howle, contralto—"Danny Boy" (Weatherley). "Big Lady Moon" (Coleridge-Taylor). 9.50: Alf. Featherstone and his Orchestra, old-time waltz—"Forest Hill." 10.0: News. 10.15: Alf. Featherstone and his Orchestra—Three-quarters of an hour's dance music. 11.0: Close down.

5CL

EVENING SESSION.

6.0: Chimes. 6.1: Children's Happy Moments. 6.3: Programmes, 6.4: C.I. sporting service. 7.1: Senior Birthdays League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: "Mo' Manning on 'Football.'" 7.25: Boy Scouts' Corner. 7.45: 5CL Bluebird Girls' Club—An entertainment by "The Bird Lady."

NIGHT SESSION.

8.0: Chimes. 8.10: Glenelg Municipal Band (conducted by W. S. May)—Overture, "Pique Dame" (Suppe). March, "Oz Triump" (Spooner). 8.20: Musical Appreciation, a short lecture and annotated recordings by Horace Perkins, Mus. Bac., A.M.U.A., "The Clock Symphony" (Haydn), in two movements. 8.55: Glenelg Municipal Band—Cornet duet, "The Warblers." 9.0: Chimes. 9.1: Meteorological information, including Semaphore tides. 9.2: Overseas grain report. 9.3: Enid Besanko, soprano. 9.10: Bert Woolley, banjoist. 9.18: Syd. Morrell, baritone—"King Charles" (White). "O Star of Eve" (Wagner). 9.23: Glenelg Municipal Band—"Romantic" (Kelerovic). 9.30: P. H. Nicholls and Bessie Francis, in an extract from Tenynson's "Lancelot and Elaine." 9.45: Glenelg Municipal Band, Air varie, "Sandon" (Rimmer). 9.52: Enid Besanko, soprano. 9.59: Bert Woolley, banjoist. 10.4: Syd. Morrell, baritone—"Cheery Song" (Slater). "Sylvia" (Speaks). 10.10: Glenelg Municipal Band, Mrs. Victor Barrn" (Rimmer). 10.15: General news service. British official wireless news. Meteorological information. Announcements, including Flemington race results. 10.30: Close down.

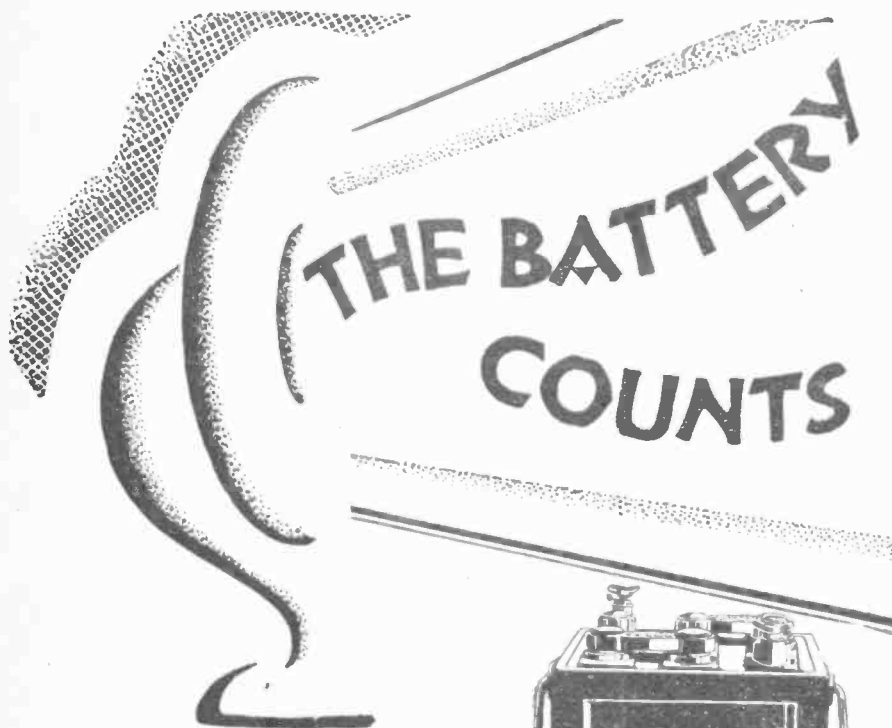
6WF

10.0: Tune in. Gramophone and phonograph records from the Studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin supplied by the Meteorological Bureau of West Australia. 1.3: Talk, "Care of the Sick," by Dr. Winifred Holloway, of London. 1.20: Music. 1.30: Close down. 3.30: Tune in. 3.35: Music relayed from the Primrose Grove, Luxe. Vocal items from the Studio. 4.30: Close down. 6.45: Tune in. "6.48: Bed-time stories by Uncle Duffy. 7.5: Light music by the Radio Trio. 7.30: Commercial and general information. 7.45: Talk on a Popular Science by Mr. H. M'Kall. 8.0: Time signal. 8.1: First weather bulletin. 8.3: "Duet Cynthea" by George and Henry Rivers, warra Choll, conducted by Miss Gwen Bray. 8.50: Late news items by courtesy of "The Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcements; late weather bulletin. 9.5: 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 6.43 p.m.

7ZL

EVENING SESSION.

7.30: Major Harry Troussell, Superintendent of Hobart Fire Brigade. 7.45: V. C. Webb will speak on "Road Troubles." 8.6: Recital of Columbia releases—"My Angeline" Oscar Brown, baritone. "A Precious Little Thing Called Love," "Caresing You, Fred Rich and his Orchestra, "Let's Sit and Talk about You," Art. Gilham, tenor, "I Love You, I Love You," New Queen's Hall Light Orchestra, "La Caprice De Nardette" (Coleauge Taylor), Semande et Reponse, "Un Sonnet d'Amour," "La Tarentelle Frailante," Tom Barrett, baritone, "Shout Hallelujah! Cause I'm Home," "Happy Days and Loney Loney" Clarke and his South Sea Islanders, "Hula Hu," "Rinia Girl," Beck and Buck, novelty duet, "Mrs. Jiggins Goes Shopping," "Duet Cynthea," George and Henry Rivers, "The Flower," "Lilac Time," "When Lilac Uncloses," National Military Band, "National Emblem March" (Bagley). 9.45: News session. 10.0: Close down.



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Local Programmes, Thursday, July 11

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.
7.0: "Big Ben" and announcemen's. 7.2 Official weather forecast; rainfall; river reports; temperatures; astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.12: Shipping intelligence. mail services. 7.15: Studio music. 7.25: Investment markets; mining share market; metal quotations; wool sales; breadstuffs markets; inter-State markets; produce markets. 7.40: Studio music. 8.0: "Big Ben"; close.

MORNING SESSION.

Announcer: A. S. Cochrane.
10.0: "Big Ben" announcements. 10.2: Pianoforte reproduction. 10.10: "Sydney Morning Herald" news service. 10.25: Studio music. 10.30: Last-minute information by the 2FC Racing Commissioner. 10.40: Studio music. 11.0: "Big Ben." A.P.A. and Reuter's cable services. 11.5: Close down.

MIDDAY SESSION.

Announcer: A. S. Cochrane.
12.0: "Big Ben"; summary of news, "Sydney Morning Herald." 12.4: Rugby wireless news. 12.7: Stock Exchange, first call. 12.10: Synopsis of weather. 12.11: A reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" midday news service; Producers' Distributing Society's market report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular studio music. 1.50: Last-minute sporting information by the 2FC Racing Commissioner. 2.0: "Big Ben"; close.

AFTERNOON SESSION.

Announcers: Laurence Halbert, Eric Bessemer.
Accompanist: Ewart Chapple.
2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben." Annie Hughes, the story of her travels, "Homeward Bound." 3.15: Florence Waddell, contralto—(a) "The Silver Ring" (Chaminade), (b) "Sometimes when Night is Nigh" (Phillips), (c) "Quiet" (Sanderson). 3.23: Studio music. 3.30: Gwenneth Lascelles, mezzo soprano—(a) "To a Nightingale" (Brahms), (b) "The Sandman" (Brahms). 3.37: Studio items. 3.45: A reading. 4.10: Florence Waddell, contralto—(a) "Hindoo Song" (Bemberg), (b) "Sunday" (Carew). 4.17: Studio music. 4.23: Gwenneth Lascelles, mezzo soprano—(a) "The Lass with the Delicate Air" (Arne), (b) "A Garden is a Lovesome Thing" (Del Riego). 4.30: Popular music. 4.45: Stock Exchange, third call. 4.47: Studio music. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.
5.30: The chimes of 2FC. 5.35: The children's session, conducted by the "Hello Man," letters and stories, music and entertainment. 6.30: Dalzety's market reports (wool, wheat, and stalk). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news. 7.0: "Big Ben," late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats—(a) "Serenade" (Moskowsky), (b) "Salut d'Amour" (Elgar), (c) "Dorothy" (Cellier), (d) "The Swan" (Saint-Saens).

EVENING SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.
7.40: Popular music.
7.45: Programme announcements.
7.48: A record recital.
8.0: "Big Ben;" from the State Theatre. The State Theatre Orchestra, conducted by Will Prior.
8.8: From the Studio: George Rogers, tenor—
(a) "Garden of Happiness" (Wood).
(b) "I Might Come to You" (Squire).
(c) "O. Trusting Eyes" (Gartner).
8.15: Carl Budden Morris, pianist.
8.27: Frank McEachern, basso.
8.34: The Storyteller: tells a tale.
8.49: Foreword to the next item.

8.50: From the State Theatre: Stage Presentation.
9.22: From the Studio: George Rogers, tenor—
(a) "Tis Not Because" (Forester).
(b) "Blodwin" (Parry).
9.29: Carl Budden Morris, pianist.
9.41: Frank McEachern, basso.
9.48: From the Hotel Australia, Cec. Morrison's Dance Band.
10.0: From the Studio; late "Evening News" service.
10.10: From the Hotel Australia, Cec. Morrison's Dance Band.
10.28: From the Studio; late weather report.
10.30: From the Hotel Australia, Cec. Morrison's Dance Band.
10.57: To-morrow's programme.
10.59: From the Hotel Australia, Cec. Morrison's Dance Band.
11.30: National Anthem; close.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.
8 a.m.: G.P.O. chimes. Weather report—State and metropolitan. 8.3: Studio music. 8.15: News and information service from the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes. Half an hour with silent friends. 10.0: G.P.O. chimes. Close down.

MIDDAY SESSION.

Announcer: A. C. C. Stevens.
11.0: G.P.O. chimes. 2BL Women's Sports Association session, conducted by Miss Gwen Varley. 11.30: Advertising hints. 11.40: Women's session, conducted by Mrs. Cranfield. 12.0: G.P.O. chimes. Special ocean forecast and weather report. 12.3: Studio music. 12.30: Shipping and mails. 12.35: Market reports. 12.48: "Sun" midday news service. 1.0: Studio music. 1.30: Talk to children, and special entertainment for children in hospital, by Uncle Steve. 2.0: G.P.O. chimes. Close down.

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.
Accompanist: Kathleen Roe.
3.45: G.P.O. chimes. Florence Roach, soprano. 3.52: Popular items. 4.0: G.P.O. chimes. Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.15: From the studio. A talk by Basil Kirke. 4.30: Mab Bowyer, contralto, (a) "Dawn, Gentle Flower" (Bennett), (b) "Far Across the Desert Sands" (Finden). 4.37: Popular items. 4.44: Florence Roach, soprano. 4.51: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 5.0: G.P.O. chimes. From the studio. Mab Bowyer, contralto, (a) "The Silver Ring" (Chaminade), (b) "At Night" (Rachmaninoff). 5.7: Pianoforte reproduction. 5.17: Popular music. 5.27: Features of the evening's programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.
5.30: Children's session, conducted by Uncle Bas; music and entertainment; letters and stories. 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette, (a) "Serenade" (Toselli), (b) "Cavalleria Rusticana" (Mascagni), (c) "To the Spring" (Grieg), (d) "The Londonderry Air" (arr. Kreisler). 7.7: Australian Mercantile Land and Finance Co.'s report; weather report and forecast, by courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market report; grain and fodder report ("Sun"); dairy produce report ("Sun"); weekly traffic bulletin. 7.25: Mr. Pam and Miss Pam, in advertising talks, hand hints and nonsense. 7.53: An ad. special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.
Accompanist: G. Vern Barnett.
8.0: G.P.O. chimes. Lucille Bruntnell's studio production of Barrie's play, "The Half Hour."
8.30: The N.S.W. Tramway Band.

8.45: Raymond Beatty, basso.
(a) "The Wanderer" (Schubert).
(b) "The Erl King" (Schubert).
8.53: Hugh McLean, violinist.
9.0: G.P.O. chimes. Weather report.
9.1: Robert Scott, tenor,
(a) "Onaway, Awake" (Coleridge-Taylor).
(b) Selected.
9.7: The N.S.W. Tramway Band.
9.22: Lucille Bruntnell and Co., in a sketch.
9.32: Raymond Beatty, basso.
(a) "Eleanor" (Coleridge-Taylor).
(b) "Vulcan's Song" (Gounod).
9.39: The N.S.W. Tramway Band.
9.54: Robert Scott, tenor.
(a) "My Dreams" (Tosti).
(b) "Eileen Alannah" (Thomas).
10.1: Hugh McLean, violinist.
10.8: The N.S.W. Tramway Band.
10.23: Late "Sun" news service.
10.28: Late weather and to-morrow's programme.
10.30: National Anthem. Close.

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: Music. 3.30: Close down. 5.30: Children's session by Uncle George. 7.0: Music. 8.0: Miss Edna Lister, contralto. 8.7: Band selections. 8.15: Mr. Robert Scott, tenor. 8.22: Instrumental Quartette. 8.30: Madame Betts-Vincent, in an illustrated talk on the making of music. 8.45: Miss Gwen Selva, soprano. 8.55: Symphony Orchestra. 9.0: Weather report. 9.3: Address. 9.15: Miss Edna Lister, contralto. 9.25: Instrumental Quartette. 9.35: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.40: Band selection. 9.45: Mr. Robert Scott, tenor. 9.55: Symphony Orchestra. 10.0: Miss Gwen Selva, soprano. 10.10: 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. 8.0: Music. 8.15: Garden talk by Mr. S. H. Hunt. 8.30: Request items. 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.

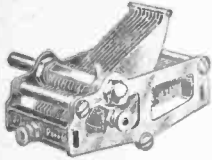
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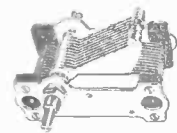
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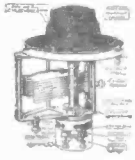
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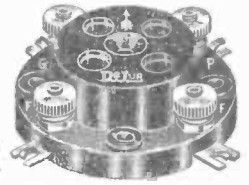
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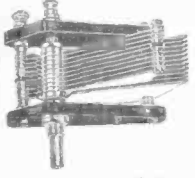
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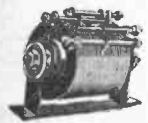


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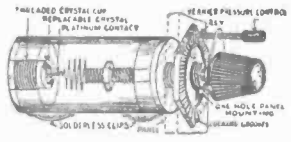
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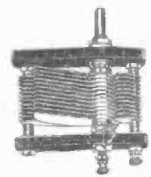


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Interstate Programmes, Thursday, July 11

3LO

EARLY MORNING SESSION

7.15 to 8.15: See Friday.

MORNING SESSION

11.0: 3LO's Different Dainties for the Daily Dinner. 11.5: Captain Donald MacLean will continue his series, "Famous Women of History." 11.25: Miss B. Macaulay will continue her talks on "Astrology—a New Factor in Education."—"Were you born between April 21 and May 20?" 11.45: Matron Moreland will speak on "Mothercraft."

MIDDAY NEWS SESSION

12.0: Melbourne Observatory time signal. 12.1: British official wireless news from Rugby; Reuter's and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; enquiries for the market for Tuesday, Wednesday, and Thursday, by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: Community singing—old-time choruses, conducted by Frank Hatherley; Ern. Hall's Radio Revellers, with Hugh Huxham and Arthur Douglas. 12.40: Stock Exchange Information; prices received by the Australian Mines and Metals Association from the London Stock Exchange this day. 12.45: Community singing resumed. 1.45: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports; rainfall. 2.0: Close down.

AFTERNOON SESSION

2.15: The Station Orchestra—Suite, "From India" (Popy). 2.25: Jean Sinclair, contralto—"The Blind Ploughman" (MacCunn). "Lie There, My Lute" (Squire). 2.32: The Station Orchestra—"Ballet Russe" (Luglini). "Nocturne" (Tschalkowsky). 2.42: J. Howard King, bass-baritone—"Had a Horse" (Korbay). "Shepherd, See Thy Horse's Foaming Man" (Korbay). 2.50: Description of public schools football match, Xavier College v. Geelong College, at M.C.C., by S. G. Harris. 3.0: The Station Orchestra—"The Myrles of Damascus" (Finden). 3.9: J. Howard King, bass-baritone—"Young Girls in the Garden" (Mompou). "Fair Tale" (Medtner). 4.0: Description of public schools football match, Xavier College v. Geelong College, at M.C.C., by S. G. Harris. 4.15: J. Howard King, bass-baritone "The Curfew" (Gold). selected. The Station Orchestra—"Reve Angelique" (Rubinstein). 4.25: Description of public schools football match, Xavier College v. Geelong College, by S. G. Harris. 4.35: "Herald" news service; Stock Exchange information; progress scores in billiard match, Walter Lindrum v. Willie Smith. 4.45: Evenson's, transmitted from St. Paul's Cathedral. 5.30: Acceptances and barrier positions for the V.R.C. races at Flemington on Saturday. 5.35: Close down. 6.0: Captain Donald MacLean. 6.30: The Strad Trio.

EVENING SESSION

7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.43: Birthday greetings. 7.45: Out of the past. 7.46: The Station Orchestra—A Gilbert and Sullivan medley. 7.59: A maker of history.

NIGHT SESSION.

8.0: Programme announcements. 8.1: Rnd McGregor will speak on "Football." 8.15: The Radio Revellers—"Falling in Love with You" (Mayne). "Sweet Sue, Just You" (Harris). "Roses of Yesterday" (Berlin). 8.24: Freda Northcote, contralto—"The Little Blue Sunbonnet" (Homery). 8.27: The Radio Revellers—"The Voice of the Southland" (Austin). "My Heaven is Home" (Collin). "Pickin' Cotton" (Henderson). 8.38: Ernest Wilson, bass-baritone—"Ballad of Queen Greer" (Brahe). 8.39: The Radio Revellers—"I'm on the Crest of a Wave" (Henderson). "Mother, I Still Have You" (Jolson). "Out of the Dawn" (Donaldson). 8.48: Mildred and Connie, harp and violin—Selections from their repertoire. 8.51: The Radio Revellers—"Paradise and You" (Pacey). "Sincerely I Do" (Davis). "Sally Rosy" (Fend). 9.0: Arthur Douglas, Scotch comedian—"Scotch Song and Story." 9.3: The Radio Revellers—"My Mother's Eyes" (Baer). "Stay at Home Girl" (Hagen). "If All Come Over in the Wash" (Trent). 9.12: Freda Northcote, contralto—"Smilin' Through" (Penn). 9.15: The Radio Revellers—"Rio Rita" (Tierney). "The Kink-a-Lou" (Tierney). "My Mother's Eyes" (Baer). 9.24: Ernest Wilson, bass-baritone—"Cloze Props" (Charles). 9.27: The Radio Revellers—"Anywhere is Heaven" (Brady). "Down Where the Sun Goes Down" (Jones). "Can You Blame Me?" (Goodwin). 9.36: Mildred and Connie, harp and violin—Selections from their repertoire. 9.39: The Radio Revellers—"I Want to Be Alone with My Brown" (Leslie). "Ya Comin' Up To-night, Huh?" (Lewis). "Forty-seven Ginger-Headed Sailors" (Sarony).

9.48: Arthur Douglas, Scotch comedian—Scotch Song and Story. 9.51: The Radio Revellers—"High Tension" (Beet). 10.0: News service; meteorological information; British official wireless news from Rugby; announcements. 10.15: The Radio Revellers—"When You Know Me" (Baden). "I'm Thirsty for Kisses" (Davis). "I'm Sorry, Sally" (Kahn). 10.34: Freda Northcote, contralto—"My Blackbirds Are Bluebirds Now" (Friend). "Casablanca" (Evans). "Cradle of Love" (Wayne). "Harlequin" (Sanderson). 10.36: Ernest Wilson, bass-baritone—"Oh, Isabella" (Schuster). 10.39: The Radio Revellers—"Sweet Forget-me-not" (Lorenz). "You Ought to Hear Olaf Laff" (Baer). 10.43: Arthur Douglas, comedian—Scotch Song and Story. 10.51: The Radio Revellers—"Mexican Serenade" (Terese). "Down by the Old Front Gate" (Kassal). "I Don't Know Why I Do It" (Vall). 11.1: The Radio Revellers—"Hum and Strum" (Meyers). "Maybe I'm Wrong" (Harris). "Constantinople" (Carlton). "My Angelina" (Wayne). "There's a Rainbow Round My Shoulder" (Johnson). "Dada Dada" (Dore). "Oh, Is She Mad at Me?" (Friend). "High upon a Hilltop" (Baer). "When Love Comes Stealing" (Rance). 11.30: "God Save the King."

3AR

MORNING NEWS SESSION.

10.0 to 10.59: See Friday.

MORNING MUSICAL SESSION.

11.0: The Royal Philharmonic Orchestra, under the direction of Felix Weingartner; "Symphony, No. 7, in A" (Beethoven). Poco sostenuto; vivace. Allegretto. Presto. Assai meno presto. Allegro con brio. 11.40: Recordings. 12.20: British official wireless news from Rugby. Announcements. 12.30: Close down.

AFTERNOON SESSION.

3.0: Recordings. 3.30: Mildred and Connie. 4.30: Close down.

EVENING SESSION.

6.0: Recordings. 7.10: News service; announcements. Acceptances and barrier positions for the V.R.C. races at Flemington. 7.20: Recordings.

NIGHT SESSION.

8.0: The Station Orchestra—Overture, "Morning, Noon, and Night" (Suppe). "Sweet Revery" (Tschalkowsky). 8.10: Jean Sinclair, contralto—"Galler Herrin'" (Old Scotch). "Ye Banks and Braes" (Old Scotch). 8.17: The Station Orchestra—Suite, "The Carnival" (Ring). "Lollia" (Friml). 8.27: The James Girls—"Something Operatic." 8.34: Vassili Ester, piano recital—"Sonata in E Minor" (Grieg). "Faust" (Gounod-Liszt).

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: See Friday. 7.45: Lecturette, a talk on "Books," by Mrs. J. Doyle (M'Leods).

NIGHT SESSION.

PART I—A CLASSIC PROGRAMME. 8.0: A classic programme, arranged by Mr. Arthur Sharman. Ivy Plane, soprano—"Elsa's Dream" (Wagner), from "Lohengrin." Arthur Sharman, pianist—"Concert Waltz," Op. 12 (Rudolf Friml). Ruth Tregurtha in a recital of poetry—Yeats—"When You Are Old and Grey." "To An Isle in the Water." "The Embroidered Cloth of Heaven." "The Lake Isle of Innisree." James Stephens—"The Night." "A Bird in Fifteen Acres." Ivy Plane, soprano—"A Flower Thou Resemblest" (Rubinstein). "A Maid Sings Light, and a Maid Sings Low" (M'Dowell). "Lilacs" (Rachmaninoff). Ruth Tregurtha, in a recital of poetry by the following poets—Humbert Wolfe, John Drinkwater, T. E. Brown and Crosbie Garstin. Arthur Sharman, pianist—"Etude in E Flat Minor," Op. 10, No. 6 (Chopin). "Sixth Hungarian Rhapsody" (Liszt).

PART II—STUDIO PROGRAMME.

8.45: Francis Hawaiians—"Walkkiki March."—"Sweet Luana." 8.53: Mr. Chas. Willey, contralto—"When the Tide Comes In" (Barry). "The Birds' Noel" (Chaminade). 9.0: Metropolitan weather forecast; movements of the travelling dental clinic. 9.5: W. H. Davis, cornetist—Cornet solo, "The Rosary" (Nevin). 9.10: Eileen M'Lennan, soprano—"The Bubble Song" (Friml). 9.15: Francis Hawaiians—"Waiana."—"Palakiko Blues." 9.23: Mrs. Chas. Willey, contralto—"Reaping" (Clarke). 9.28: A. N. Falk, baritone—"The Call" (Olivier). 9.33: W. H. Davis, cornetist—"The Skylark" (Farrell). 9.38: Eileen M'Lennan, soprano—"Rackety Cow" (Friml). 9.42: Francis Hawaiians—"La Faloma."—"Silly of My Dreams." 9.50: A. N. Falk, baritone—"Youth" (Allislen). 9.55: A Wurliizer organ record. 10.0: News; weather. Close down.

5CL

EVENING SESSION.

6.0: Chimes. 6.1: Children's Happy Moments. 6.30: The Blue Bird Girls' Choir. 6.45: 5CL's sporting review. 7.0: Chimes. 7.1: Senior Birthdays League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: Dr. G. H. Wright, M.A., will continue his series of literature talks. 7.25: Mr. E. B. Pounsett will speak on "Carnival Day." 7.40: Mr. A. M. Whittebury, "Hints to Poultry Breeders."

NIGHT SESSION.

8.0: Chimes. 8.10: From the Palais Royal, North Terrace, a description of the Movie Ball; music by Boake-Smith's Palais Royal Band; interval. From 5CL Studio—Meteorological information, including Semaphore tides; overseas, grain report. Radio Problems Solved—"Atmos" will help you with your radio troubles. End of interval. Continuation of the Movie Ball from the Palais Royal. 10.15: General news service. British official wireless service. Meteorological information; announcements. Results of S.A. City and Suburban Amateur Billiard League tournament. 10.30: Close down.

6WF

10.0: Tune in. Gramophone and phonograph records from the studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin supplied by the Meteorological Bureau of West Australia. 1.3: Organ Recital by Mr. E. S. Craft, A.R.C.M., L.Mus., A., relayed from Wesley Church. 1.20: Community singing relayed from Wesley Church. 1.50: Programme continued from the Studio. 2.0: Close down. 3.30: Tune in. 3.45: Music and song relayed 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 Radio Trio. 7.30: Commercial and general information. 7.45: Talk by Mr. F. Alexander, M.A. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Variety programme from the Studio. Miss Audrey Dean, pianist. 8.50: Late news items by courtesy of "The Daily News" Newspaper Co., Ltd.; 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 programme given on 1250 metres, commencing at 6.45 p.m.

7ZL

EARLY EVENING SESSION.

6.15: Recordings. 6.30: "The Story Lady." 8.45: Betty Brithwaite. 7.0: Answers to letters and birthday greetings. 7.15: News session.

EVENING SESSION.

7.30: Under the auspices of the "Come to Tasmania" Organisation, A. J. Honey will speak on "All Australian Fruit Exhibition. 7.45: W. H. Cumine will speak on "Soccer." 8.15: 7ZL community singing—All. "Mother Machree," "Lay my Head beneath a Rose." W. Hume, bass, "Stone Cracker Jack" all. "Jeannie I Dream of Liliac Time," "Ramona," duet. T. Tappes (tenor), W. Thompson (baritone). "The Moon has Raised its Lamp Above;" all. "Drink to Me Only." "Oft in the Stilly Night;" R. J. Dobbie, elocutionist. "Levinsky at the Wedding;" "Blue Bells of Scotland." "When Irish Eyes are Smiling;" all. E. Roberts, baritone. "Just a Wearying for You;" all. "All by Yourself in the Moonlight;" "That's my Mammy;" quartet. A. E. Rowe, H. Poster, H. Allen, W. Thompson. "The Rosary;" all. "Desert Song," "Auld Lang Syne." 9.30: News session. 10.1: Close down.



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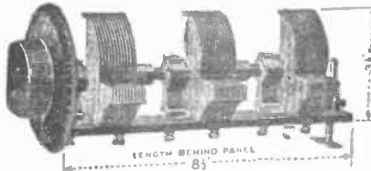


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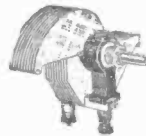
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The WIRELESS WEEKLY RADIO INFORMATION SERVICE

Under the direction of Ross A. Hull

A.M. (North Bondi).—You say, "I would like you to publish in these columns a full description of the requirements to get a transmitting license, and I want to know how to get about getting the forms, etc. to fill in. Where are the exams held?" You should know that there is no room in these columns for detailed articles. Briefly, you must have a practical working knowledge of receivers and transmitters. A.C. D.C. transformers, abbreviations, operation, power supply interference remedies, etc. and pass a sending and receiving test in Morse at the rate of 12 words per minute. Write to Mr. Crawford, Radio Inspector, c/o G.P.O., Sydney. The exams are held in Sydney. Mr. Crawford will give you particulars concerning the examination, which commences in 3 a.m. They are held quarterly. It is necessary to send 5/- application fee to Melbourne Seventy-five per cent. constitutes a pass. Suggest you join the "Proving Radio Club." Ring Mr. Barker, Bondi representative, M6601.

"Ziff" (Homebush).—A commercial product and trade secret. Regret we are unable to oblige.

P.B. (Melbourne).—State time of reception, weather conditions, lines received, wavelength, strength, etc. There are 300,000 kilocycles to one metre.

J.A.H. (Baulkham Hills).—Increase number of turns on coils by 20 per cent.

"URGENT" (North Sydney).—Probably eliminator is not giving sufficient output.

GENERAL.—Can any reader please supply Mr. W. Harper, 1 Lion Street, Croydon, with a copy of "Wireless Weekly" dated February 1, 1929, and oblige?

GENERAL.—F. Powles (VK3KO) and other readers, letters containing special supplement listing coil-windings can be obtained by forwarding 4d in stamps to "Wireless Weekly."

B.R.A. (Brisbane).—As you are living within 2 1/2 miles of G.C., and have no trouble in receiving 3LO, it is probable to form in the A.R.L.L. Handbook. Some of the points could not be worked out directly. They must be estimated—used in the formula, and probably re-estimated several times before the right one is struck. Can any reader please supply Mr. W. Harper, 1 Lion Street, Croydon, with a copy of "Wireless Weekly" dated February 1, 1929, and oblige?

G.L.M. (Strathfield).—It would be a day's work to calculate all that information. Suggest you calculate a few in the A.R.L.L. Handbook. Some of the points could not be worked out directly. They must be estimated—used in the formula, and probably re-estimated several times before the right one is struck. Can any reader please supply Mr. W. Harper, 1 Lion Street, Croydon, with a copy of "Wireless Weekly" dated February 1, 1929, and oblige?

"GREENED CRYSTAL" (Wagga).—Aerial coil two turns, 2 inches diameter. May be able to replenish G.C. in later issue. Forty-two gauge D.S.C. 150 turns on 3/4-inch diameter former. Will make a good S.W.R.P. choke. Aerial too long. Do not let it exceed 100 feet, including lead-in.

R.W.D. (Crows Nest).—Cannot be done.

"FOLO" (five Dook).—Add 10 per cent. more turns (aerial). The coils are only 3 inches diameter—diameter. Twenty-four gauge wire. Fifty turns. Three inches diameter.

GENERAL.—Can any reader please supply Mr. L. Brokers, 112 Cumberland Road, Auburn, N.S.W., with a copy of "Wireless Weekly" containing a three-valve Reborn or the Renown Three.

R.B. (Auburn).—Queries are not answered by post. See above.

A.N. (Woolahra).—Furness Wavetrap O.K. Wavetrap circuit has appeared in queries columns several times. Cannot be done. Build a wavetrap for your amplifier. Aerial O.K. You might be able to hear G.C. at 10 a.m. Monday. Search phone pick-up is a device used in place of the sound waves unit (which latter converts vibrations to electrical energy, which is passed through an amplifier, and which operates the diaphragm in sound waves) so as to reproduce the pulsations in sound waves. The pick-up is not answered through a transformer as it is necessary to hold a transmitting license before an examination in theory and practical radio work. Reason why your query was not answered is because you have not, on any occasion, enclosed other readers' warnings have frequently appeared. Other readers' queries (only ones), please note. Make letters shorter.

"NEUT" (Croydon).—No need to neutralise the detector stage of the Marco. C5 is a by-pass capacitor (former).

E.T. (Marriekville).—March 22, 1929.

J.R. (Bexley).—Quite O.K. Resistance voltage divider could be used in place of this arrangement.

G.S. (Dulwich Hill).—O.K. for A.C. operation. Circuit will have to be altered, as shown on slip accompanying A.C. valve.

**** (Mudgee).**—These scrawly signatures! Split primary can be used as per Solodny's. Connections just the same. Air King better. Personally (since you ask), I favor the S.G.R.F.S.W. Midget.

S. & S. Tallibigral.—No wonder. 4A25 is an R.F. valve, and is unsuitable as detector in a S.W. set.

E.L.F. (Cooma).—Build the Interference Eliminator as published in queries recently.

H.J.T. (Quirindi).—No. Other information is treated in detail in the article referred to.

A.R.M. (Sydney).—The A.C. valve was deemed more important than the S.G. at the time. However, as the article has been promised, it will appear in due course. Grid and plate leads probably too close. Place R.F. chokes in series with plate of detector valve and R.F. B plus lead.

A.B.R. (Wingham).—See remarks to A.R.M. above.

C.B. (Newcastle).—Depends on current required. How can we tell you if the addition will give you required current unless you tell us current required, or, at least, mention number of valves and type? Marco Four is better than Marco Five. Marco Four, which gives greater volume than Marco Five on local stations only. Reduce detector voltage.

J.E. (Sydney).—Sorry, do not know the set, and your description is very vague. There are no details upon which we can help. Suggest you return the set to the dealer, and ask him to test and install it.

R.H.L. (Manly).—Yes, worth while. Less distortion and greater output.

A.M. (Marriekville).—Certainly, see below.

F.W. (Richmond).—A.M. 27 Bennett Street, Nth Fitzroy, Melbourne, wishes to get in touch with you regarding your Midget S.W. receiver.

O.P.E. (Geelong).—Exactly same as Marco Four or Reinartz. Reinartz is a Reinartz with wavetrap added. Marco is a Reinartz with R.F. stage added. Write to Mr. Crawford, Radio Inspector, c/o G.P.O., Sydney.

A.W.K. (Lewisham).—See reply to OLM (Strathfield).

W.F. (Babinda).—Marnock Five. Renown Three-All-Empire good S.W. receiver. Re-programme that's only your view, but there are thousands of others who appreciate them.

A.R.P. (Graceville).—Plate or grid leads too close to high voltage or detector valve; faulty detector valve; open grid circuit, or primary of transformer reversed. As transformers are of different make, reversing connections to primary of first transformer, i.e., take lead from B plus of transformer and transfer it to the P terminal, and vice-versa.

A.McA. (Ashfield).—Eliminator should be earthed. Probably one of the valves is not making proper contact in its socket.

S.W. (Wollongong).—O.K. Full details will be found on slip accompanying Power Pack.

E.W. (Dulwich Hill).—Valves O.K. R.F. stages up to 45 volts. Detector up to 30 volts. Audios up to 135 volts.

T.T. (Rozelle).—Grid leak trouble or wrong (perhaps faulty) detector valve. Choke placement O.K. May be broken down. Sorry no room here as present. Follow out R.F. stage of Marco Four (February 1, 1929).

W.P. (Leichhardt).—No. It does not matter which way round filaments are connected. The only use of the filament is to emit electrons. Makes no difference which contacts are made to filament terminals on socket.

A.L.L. (South Queensland).—Thanks for interest. B voltage required, 120 volts. Valves excellent. Re-tuning—not unusual. Thanks for the circuit. Too late for "Hitting Below the Broadest Belt."

GENERAL.—Would any reader kindly forward R. K. M'Kea, c/o Post Office, Murphy's Creek, Queensland, copy of "Wireless Weekly" containing Morse code chart for sending messages 100 yards, as per "Proving Radio"?

"NEUT" (Melbourne).—Shielding would be an advantage. Do not advise using reaction on this receiver if you have been unable to neutralise it properly. Will be too unsatisfactory with several types of valve for detector, and try various grid voltages.

H.L. (Fairfield).—Too high voltage on detector, or interaction between leads or components.

W.C.R. (Wallsend).—Add one stage of transformer output. Ratio of transformer should be 3 1/2-1. Circuits have appeared in these columns frequently.

A.B.C. ELIMINATOR (Lakemba).—Yes; twice.

P.S. (Normanton).—Yes. List given in article.

G.N. (North Sydney).—Centre tap to earth. Commencement of loop to aerial. End of loop to moving

plates of reaction condenser. Centre tap to filament of valve. Aerial to grid to valve.

A.W. (Sydney).—Experiment with various resistance grid-leaks.

W.W. (Marriekville).—Any receiver of that family can be modernised! No. 0003 condensers would have too small capacity. 0005 O.K. Sets mentioned have little difference. Hardness is a good Reflex type receiver.

R.H. (Leichhardt).—Lamp is taking too much current.

GENERAL.—Can any reader please oblige Mr. Edward Hocking, Hornsby (only address given), with two dead Ever-Ready Super Service 45-volt "B" batteries, with which he desires to experiment on a new idea?

MUGA (South Kensington).—An error which has been corrected many times. Would make little difference, however, even if you carried it out the way shown in your letter. Meant to be 70 turns, capped every 10.

GENERAL.—Can any reader please supply J. D. Rendall, 8 Campbell Grove, Hawthorn East, 23, Melbourne, Vic., with Nos. 4 and 15 of "Proving Radio"? Inquirer offers to pay for copies and postage.

C.J.B. (Adelaide).—Sorry, but I was wide enough to laugh! The resistance of the crystal in the circuit would explain why you are only getting head-phones strength. The circuit is not a "Neutrodyne" if a crystal detector is being used. However, everything will be O.K. if the crystal is shorted out. As the crystal resistance is in series with the primary resistance of the first amplifier, you can see that the resultant resistance will be very high. Also the crystal will not carry the overload. You are using two R.F. stages, you know. Take fixed plates of condenser to grid of a valve. Plate of valve to P of resistance coupler (through an R.F. choke). Moving plates to filament of valve. Other filament terminal through a 20 ohm rheostat to A plus.

G.H. (Breenleigh).—00015 condenser suitable. Not worth while screening this set. Remove half rotor and half stator plates to make your 0005 condenser - 0002.

R.C. (Adelaide).—As per Marco Four, published February 1, 1929.

E.B. (Boomi).—Any of the S.V. adaptors recently published will be suitable.

R.A.N. (North Coast).—Yes, as long as you place components so that plate and grid leaks will be short.

N.V.D. (North Sydney).—Yes, providing the total filament current consumption does not exceed 75 amps. You did not mention how many or what type valves are being used. The voltage will have to be broken down by a suitable resistor. The resistance of this will depend on the current and voltage. Formula for calculating resistance to be used is: $R = \frac{E}{I}$ where R equals resistance in ohms, E equals voltage drop required, I equals volts C equals current drawn by filaments (total consumption).

T.R. (no address).—Yes, can be used. Instructions for connecting will be found inside the unit.

A.R.S. (Sans Souci).—No. Voltage too high, current too low.

C.M. (Gremorne).—Condenser or grid leak trouble.

QUERY COUPON

If you are in difficulties about reception or set-construction, let us know, and we will endeavor to set you right. Make your questions clear to the point, and, where possible, show lay-out and wiring design. Under no circumstances will we give answers to queries by letter or by telephone. All answers to queries in the columns of this department in the "Wireless Weekly" will be in the form of a query coupon, which you may use in future issues. This coupon is intended to be used in the form of a query coupon, which you may use in future issues. This coupon is intended to be used in the form of a query coupon, which you may use in future issues.

The Radio Information Service, 536/PT, C.P.O., Sydney
 Please forward the accompanying query coupon in the form of a query coupon, which you may use in future issues. This coupon is intended to be used in the form of a query coupon, which you may use in future issues.

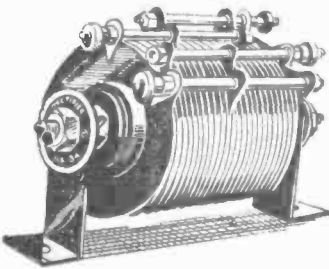
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All goods stocked by us are thoroughly reliable, and we can give you expert advice on parts, set construction, and circuits.

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W.E.C. Transformers	6 11
Advance Transformers	10 6
Exide 2V. 20 amp. Act	each 17 6

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PILOT A.C. PACK	12 0 0
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RADIOTRON, UY-227	1 10 0
RADIOTRON, UX-250	1 7 6
RADIOTRON, UX-171	45 0
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EMMO	10 10 0
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PHILIPS, Triokle	4 15 0
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4v. 10aet	2 10 0
4v. 60aet	3 0 0
6v. 40aet	2 10 0
6v. 60aet	4 10 0

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40v.	3 16 2
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	7 12 0

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EMMCO, 3/4 Amp.	5 15 0
TUNGAR, A and B	7 0 0
PHILIPS, 1453 A & B	6 10 0
PHILIPS, Triokle	4 15 0
EMMCO, 3/4 amp. Triokle	3 10 0
BALKITE, Triokle	3 10 0
RECTOX, Triokle	3 10 0
FERRANTI, Triokle	4 15 0

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15	1 10 0	5 0	90	17 10 0	22 6
20	2 0 0	6 6	100	20 0 0	25 0
25	2 10 0	7 6	110	22 10 0	27 6
30	3 0 0	9 0	120	25 0 0	30 0
40	5 0 0	11 0	130	27 10 0	32 6
50	7 10 0	12 6	140	30 0 0	35 0
60	10 0 0	15 0	150	32 10 0	37 6

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L.R. (Cardiff).—Keep eliminator well away from set. Earth the shielding. If hum still continues, may be grid trouble or, perhaps, rectifier socket not operating efficiently. The detector valve may also be faulty.

"SANGAMO" (Redfern).—No. 4 should be 100,000 ohms. No. 5, 1/4 megohm. Nos. 6 and 7, .006 mfd. T.C. (Enfield).—Has not appeared yet.

E.L.A. (Liverpool).—Microphonic valves. Turn speaker away from set and place receiver cabinet on sponge rubber feet. Use anti-microphonic sockets.

"SELECTREX" (S. Aust.).—The "Econolon Receiver."

F.K. (Ballina).—Sorry, OM cannot trace W200. It's nice to know some Hams appreciate "P.R." Why not give us a hand with the Morse lessons?

R.B.D. (Sydney).—Your request published below. Circuit of S.G. Marco Four appeared in queries columns recently. Slight alteration in R.F. Good work getting Japan or Marco Three. Reason why good reception is possible in country is because there are less tall buildings, less metal structures, less interference from electrical machinery, and less interference from local stations. Re J.P.C. Perhaps their aerial is more nearly parallel with yours than 2BL. The .001 condenser across the primary of the first transformer usually assists oscillation. Thanks for remarks about "Drake's Encyclopedia." Will pass on to Angus and Robertson. Thanks, also, for kind remarks re "Proving Radio."

E.L. (Victoria).—Detector A115. Other valves B3405.

GENERAL.—Can any reader please supply Mr. R. B. Dransfield, Moore Theological College, Newtown, Sydney, with copies of "Proving Radio," as follows:—5, 6, 7, 8, 11, and 187? Inquirer will pay for copies.

GENERAL.—Mr. B. Harrison, No. 6 Factory Street, North Parramatta, Sydney, writes:—"I have some back numbers of 'WIRELESS WEEKLY,' dating from February 22, 1929, up to date, and in which you have any reader may have these copies at 3d each, plus postage."

J.B. (Alphington).—See A.R.R.L. Handbook. We do not reply by post.

V.W. (Kyogle).—No, not amateurs. These stations are Phillips' experimental stations in Holland.

J.D.G. (Ayr).—Try change of grid leak. Try changing grid return. Reduce detector voltage. Try another detector valve. Try R.E. choke in series with plate of detector valve.

A.T.R. (Bulahdelah).—Carbon cells O.K. Yes, amplifier may be used. Connect pick up to grid and filament of detector valve. Marnock Five. Glad you like "P.R."

F.G. (Manly).—Not necessary to shield this set. Will help if hand capacity is bad. Wire suggested quite in order. Dial O.K. Re aerial and earth. This arrangement O.K., providing leads are kept short. Aerial and earth O.K. According to your drawing, aerial and earth should be very efficient. It is the aerial's relation to the earth that gives the capacity.

GENERAL: Can any reader please supply Mr. Cyril Bussey, "Amber," Railway Parade, Belmont, with a copy of WIRELESS WEEKLY dated February 8, 1929?

A.T.B. (Melbourne).—Your letter passed on to me. No copies available. See below.

GENERAL: Can any reader please supply Mr. A. P. Burt, 109 Kerford Rd., Albert Park, Melbourne, with copy of WIRELESS WEEKLY containing the "All Empire" S.W. receiver?

J.J. (Gundagai).—We do not make receivers for sale. However, a number of our advertisers are willing to construct any WIRELESS WEEKLY sets (S.W. Band)—and B.F. stage, when it will be a Marco Four. Circuit published February 1, 1929.

"Harkness" (Brisbane).—Try altering direction of 'erial.

F.T. (Brisbane).—Either method O.K. Use wire-wound resistors.

A.E.U. (Brisbane).—It can be made into a Marco Four by removing the wavetramp and replacing this with the R.F. stage as per Marco Four. If interference still obtained from O.G. the wavetramp can be incorporated in the R.F. valve.

S.M. (North Sydney).—You will probably find the primary of your first transformer is at fault.

A.E. (Cremorne).—Try reversing primary connection of first transformer.

F.D.B. (Waterloo).—Keep eliminator two feet away from set, and connect shielding to earth.

E.F.B. (Hastings River).—Pentavox O.K. Sorry we have no copies left. See below.

GENERAL: Can any reader please supply Mr. E. F. Brownlow, Beechwood, Hastings River, with copy of WIRELESS WEEKLY containing the Pentavox?

C.M.T. (Tinnistall).—Sorry, have no definite details on radio beacons. As far as we know, the signal will vary as regards audibility for different stations. I.e., the signal will never be inaudible, because another like signal from a station in line, and in front of the course of the plane will be transmitting a duplicate signal on the same wavelength, which will transpose itself on the other signal (behind the plane). The power will depend on the length of the flight. Distance between the two beams will probably be only a few metres at the most.

J.B. (Earlwood).—Marco Four. B405 for last stage.

V.G. (Broken Hill).—See A.R.R.L. Handbook. The information you require is given in greater detail than can be treated here.

GENERAL: Can any reader please supply Mr. R. Cameron, Wynaiya, Beaudesert, Queensland, with copies of "W.W." containing "Proving Radio," dated January 4, 1929, January 11, March 87? He will pay for the copies.

J.P. (Parramatta).—Eliminator O.K. Would be wise to place it in cupboard or on high shelf where children are about, as this eliminator is not closed in.

A.N. (Annandale).—Circuit incorrect. See that by Percy Giffen, published recently under the title, "A Screen Grid S.W. Adaptor."

A.H. (Kelsie).—Have published your S.O.S. below. One control O.K. for country.

GENERAL: Can any reader please supply Mr. A. H. Hazelwood, "Hazeldeur," Kelsie, with the copy of "W.W." containing the One Control Marco?

Ham Notes and Short-Wave Doings

WIRELESS WEEKLY has received numerous letters since RADIO stopped publication, asking that amateur notes be started in this paper. The difficulty has been to get interesting notes from amateurs, but now VK2KA has started the ball rolling, and other amateurs are invited to follow his example, by forwarding any news or notes on short-wave activities.

CHARITY BEGINS AT HOME. BUT HAMS DON'T THINK SO.

VK2HC, Quirindl, is the best fone station on 80 metres at present, being QSA 4. FB: Keep the 80 metre band alive. Ray OB. VK4AW is also putting over fair fone QSA 4, but the wave breaks up. Mike is in earth lead. When it DID perk, it was sure FB. Sa, OB, don't try to QTK me. Never send letters to you in green and red ink. Hi! VK2KX sure has FB pdc sigs also. Sa—2KA sends slow Morse every night, 1800-1830. Good stuff for "Proving Radio Club." 2KX input is only .24 watts, but sigs are V.P.B., and he has wkd 2nd, 3rd, 4th, 5th, and 7th Districts, also ZL 1st and 2nd Districts. Reports are always pdc FB OM. More dope on this station later.

VK2KW has a nice pdc QRI. If there's any rag-chewing to be done, just call 2KW! VK5IT is vy consistent on 80 metres, and is always glad to ragchew.

VK7DX as usual QRQ, never QRS! Sa OB, we don't all like QRQ when working a new station. Hi!

VK3LX is next to rank with 7DX, with pdc QRI QSA 3. Sa, it's a pleasure to hear 3LX and 7DX QSO.

Our brothers across the pond in ZL are sure a fine lot to ragchew—always obliging: FB idea. ZL2AB rolls in at 1730 SMT onward QSA 4 pdc. Incidentally very nice chap to meet. Blush not, sweet damsel.

ZL1FU, another FB, QSA 4 RAC station. This is a new station, but his sigs are FB to copy.

ZL1FW also good QSA 3 RAC. A lot of ZL sigs get to Aussie OM but some never look for VKCQ.

The general opinion at present is that 80 metres is the best band as far as ZL or VK work is concerned. Weather conditions are very favorable to good reception, and sigs get out well.

VK2NO has started up again on 42 metres, and his note is almost pdc. He seems to work all the Yanks. Heard one Yank telling him he was the only station to be heard with any strength. VK2NO replied that his temporary feeder was kissing the tin roof every few secs., owing to wind, and supposed the sigs wobbled. The Yank replied "Perfectly steady." 2NO has been appointed official Air Force Station, so we shall soon hear him up on 80 metres.

VK2AW is also putting out a good sig. VK2RO must have a good crystal. Best note I've heard for some time.

A much-sought VK is 2NS, but to work him with all the boys on—well, you couldn't get a reserved ticket! But the stations waiting will sure click sum day. Patience, my boys!

Another VK, i.e., 3OR, has a very loud dc QRI QSA 4. No need for you to call CQ—OB. The boys call you instead!

Well, cheerio, boys, until next week. Sure wish you plenty QRW. Hi!

ZLM writes Re QRM on Ham's Band, Yesterday, PM. Suva Radio announced, "This is Suva Radio testing telephony on approximately 20.95 metres," which is a bit thick. What appeared to be the same station was going this AM modulated with a 1200-cycle buzzer. Copied the mysterious NA for 30 minutes, yesterday, sending press talk in the middle of our band; as the items are all related to England, I think this is a G station.



IGRANIC L.F. TRANSFORMER TYPE "J"

THE Igranic L.F. Transformer Type "J" has been developed to meet the demand for a Low Frequency Transformer, which, while being of small dimensions, comparatively light in weight, and reasonably priced, is thoroughly efficient in performance, and which will give amplification of a standard comparing favorably with heavier and more expensive types of instruments at present on the market. The Igranic L.F. Transformer Type "J" meets all these requirements admirably. It is a remarkably efficient instrument, measuring only $3\frac{1}{2}$ inches long by $1\frac{1}{2}$ inches wide, by 2 inches high, and weighing approximately 10 ounces. Its light weight and small dimensions constitute features which render the instrument particularly suitable for incorporation in portable receivers.

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W.E.5



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The Marco Four.

Now that winter is here and the rain and cold keep you indoors, rake out that old set and let us modernise it so that you may get the best out of the air. You will find our prices right and our work guaranteed. Let us quote you—any advice free.

Resco sets may be obtained from £16/-/- complete with twelve months' guarantee and free service. Terms can be arranged. Write Desk R for particulars.

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38a PITT STREET,
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B1817

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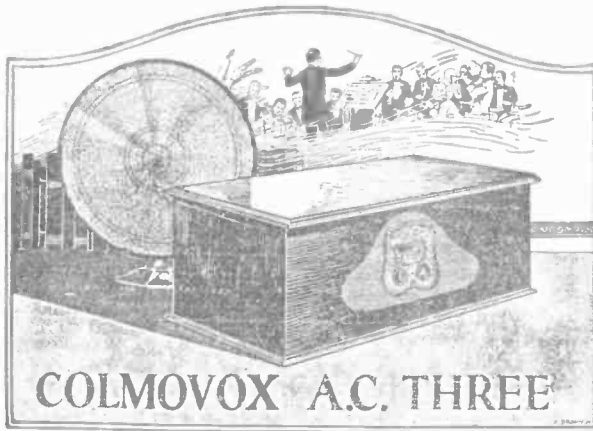
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A.C. THREE (table model), CASH PRICE, £29
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Radio Receiver Royalties

NEWS has been cabled from England that the English Courts have held that a royalty of 12/6 is payable by radio dealers and manufacturers holder in wireless receiving sets. for the use of the Marconi Company's patents. The cable stated that the radio trade has been thrown into turmoil as the result of the decision, because it means that a three-valve set is increased in price by 37/6, and a five-valve by £3/2/6.

Inquiries as to the position in Australia reveal that the Marconi patents are held by Amalgamated Wireless, which company collects a relatively small royalty from the transmitting companies only. In England, the transmitting authorities pay royalties as well as the makers of receivers.

Mr. E. T. Fisk, managing director of Amalgamated Wireless, states that there has been a great deal of uncertainty in England and other countries as to the value of the Marconi patent rights, and manufacturers and traders in those countries have not known what were their liabilities. Two years ago Amalgamated Wireless suggested to the Commonwealth and New Zealand Governments that trade and manufacture of radio receivers would be facilitated and the cost kept down, if a relatively small royalty was paid by the transmitting stations only, and no charge made upon the manufacturers or dealers. Both Governments accepted this proposal, and it was made the subject of an agreement. The result is that since November, 1927, set manufacturers and dealers in Australia and New Zealand have been relieved of any obligation in this respect.

All Electric Radio

If it is the best as well as the lowest priced you are looking for, see ours.

3-Valve Electric Sets. £27/10/-, completely installed with Speaker Terms. £4/-/- deposit and 10/- weekly.

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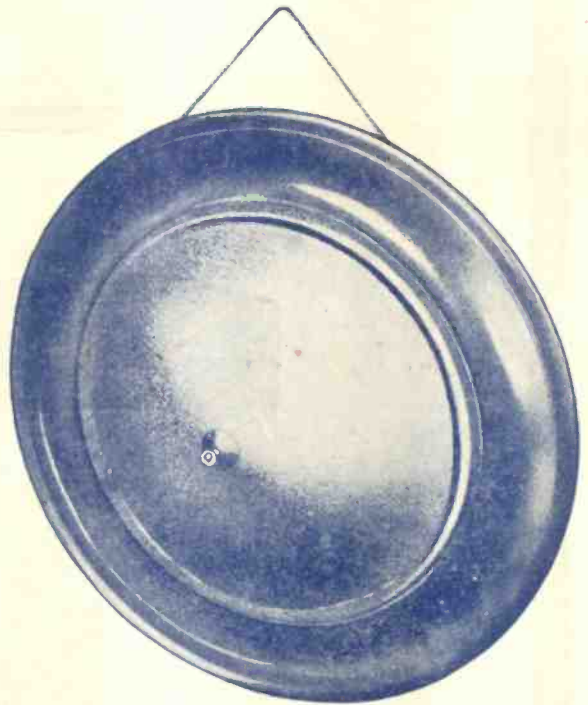
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