

Detailed Broadcasting Programmes a Week in Advance

Wireless Weekly ^{3^d}

INCORPORATING "RADIO IN AUSTRALIA & NEW ZEALAND"

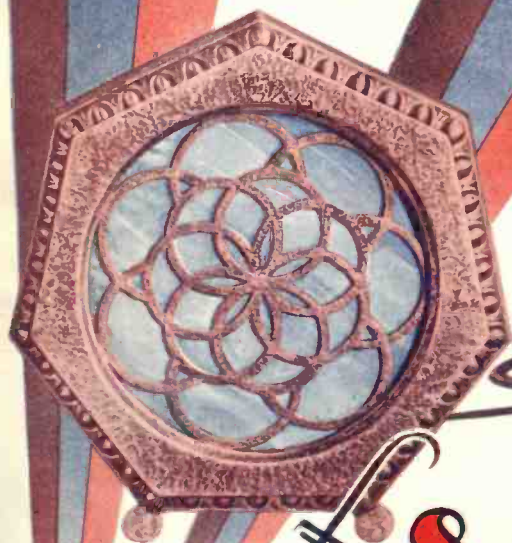
VOL. 14. NO. 8

FRIDAY, AUGUST 16, 1929

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

The NEW "CONCERT GRAND" SPEAKER

Triple tone control.



£ 8.10

PHILIPS

A 3-Valve
Screen-Grid
Receiver for
Battery
Operation

DESIGNED FOR
COUNTRY FOLK

THE RESEARCH
LABORATORY—THE
CRADLE OF RADIO

By Ross A. Hull



---as faithful in reproduction as the microphone itself!

BLUE SPOT SPEAKERS are as Faithful in Reproduction as the Microphone itself. Listen for the difference. Hear the Grand Organ thunder in all its majesty—hear the pure even tone of the

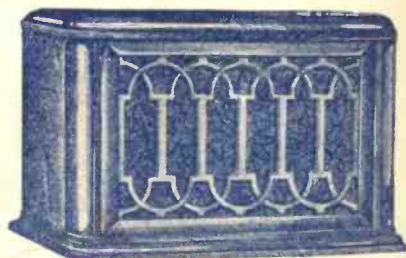
Violin, the fullness of the symphony orchestra.

You catch the Spirit of the Performance from the very first note. It is only the Broadcasting you hear, no overtones or static noises. Test a "Blue Spot" Speaker for yourself.



The above Illustration depicts Model 49B. The Cabinet is artistically designed and Mahogany finished and houses the Famous Blue Spot Cone Speaker, the cone floated on a baffle plate by means of segments of soft leather to give equal response over the entire Audio Range.

Price £3/15/0



The Illustration depicts Model 59B. An Attractively Designed Mahogany Cabinet houses the famous Blue Spot Cone Speaker, the Cone floated on a baffle plate by means of soft leather segments to give equal response over the entire audio range. The Famous 66K Adjustable Driving Unit ensures perfect Fidelity of Reproduction.

Price £6/6/0

Wholesale Distributors:

FOX and MacGILLYCUDDY LTD.

Merino House, 57 York Street, Sydney. Phones B2409, B2410

THE "SALONOLA" ALL ELECTRIC TABLE MODELS

Mechanically identical with our famous
"Salonola"

**Full-Size Console
Cabinet Models**

---but much more convenient, because
you can place it just where you want it.

A new device---

**DETACHABLE
LEGS**

---are fitted as standard (Patent
applied for). If you wish to place your
Set on a table or a cabinet you can
dispense with the legs in a moment.



**SALONOLA
"DE LUXE"
TABLE
MODEL**



**SALONOLA
"STANDARD"
TABLE
MODEL**

NO EXTRAS TO BUY
AMPLION CONE LOUD
SPEAKER INCLUDED

Salonola "Threes"

	CASH			or	TERMS
	£	s.	d.		
All Electric "Standard"	27	10	0	6/9	wkly.
All Electric "De Luxe"	31	0	0	7/9	"
Battery "Standard"	25	0	0	6/3	"
Battery "De Luxe"	26	0	0	6/6	"

Salonola "Fives"

	CASH			or	TERMS
	£	s.	d.		
All Electric "Standard"	42	0	0	10/9	wkly.
All Electric "De Luxe"	43	10	0	11/-	"
Battery "Standard"	32	10	0	8/-	"
Battery "De Luxe"	34	0	0	8/6	"

Salonola "Sixes"

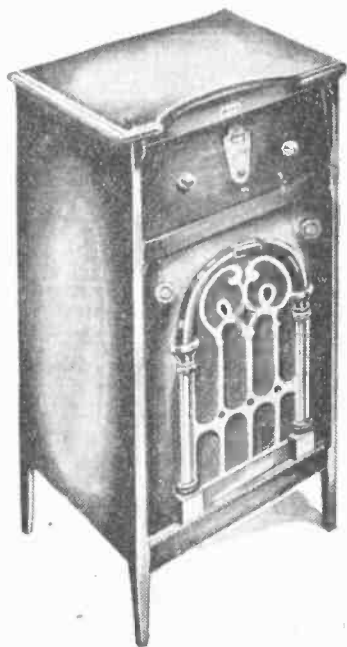
	CASH			or	TERMS
	£	s.	d.		
All Electric "Standard"	47	0	0	12/-	wkly.
All Electric "De Luxe"	48	10	0	12/3	"
Battery "Standard"	42	10	0	10/9	"
Battery "De Luxe"	44	0	0	11/-	"

OPEN UNTIL 9 P.M. FRIDAYS

HOME RECREATIONS (AUSTRALIA) LTD

PILOT PARTS

MAKE BETTER RADIO SETS!



The Imperia Three

Harringtons Imperia Three is made exclusively of Pilot Radio parts and employs the Pilot A.B.C. Power Pack.

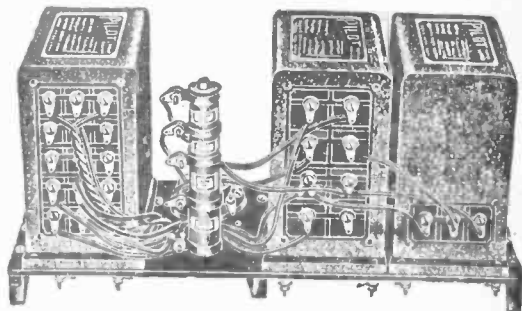
This set is recognised as an unexcelled performer, and is Australia's fastest selling set.

Leading manufacturers everywhere are following the lead given by Harringtons and use Pilot parts in preference to all others.

Ensure the best results—use only the products of the world's greatest parts plant—Pilot.

PILOT

Leads in A.C. Set
Development.



The PILOT A.B.C. Power Pack

The most highly-developed type of A.C. Supply that can be bought to-day. No matter what the price, quality could not be improved. And yet the PILOT POWER PACK, complete with Rectifying Tube and Sockets, sells at

£10/7/6

Almost any kind of Set can be built up around the Pilot Power Pack. Compactness is another notable feature. Assembled "lengthwise" the complete unit requires a space of only 19½ in. by 5½ in. Arranged "sidewise" (as illustrated), the base panel need be only 13 in. by 5 in.

PILOT RESISTORS

All types of Special Nichrome Wire Wound for A.C. Set Construction. Ask for particulars.

Sole Australasian Agents,

Harringtons Ltd.

RADIO, PHOTO AND CINE MERCHANTS

(Est. 1889.)

386 GEORGE STREET, SYDNEY

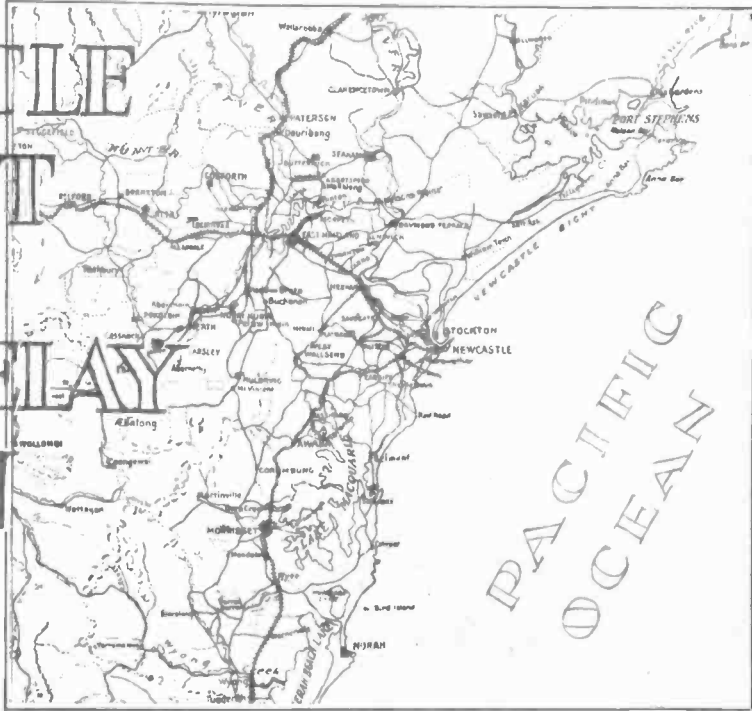
Wholesale Only: 213 Clarence Street,
Sydney.

Branches all States and New Zealand.

NEWCASTLE DISTRICT *to have* FIRST RELAY STATION

Listeners in the area shown on the map who have complained of poor reception in the past are to have their own relay station situated on the Hunter just out of Newcastle.

By H. W. JOHNSON



THE official announcements confirm the opinion already expressed that the first relay station would be in the Newcastle district. There are many districts in New South Wales having good claims for the establishment of local stations for the purpose of relaying the programmes of the city stations, and the enterprising residents of those places are doubtless engaged in efforts to convince the Postmaster-General that a station should be erected in their particular town. Apart from the advantages of the use of cheaper sets that a local station would ensure, the principal advantage would be the disappearance of the annoyance of fading. Only a local station, or one at least 80 to 100 miles distant, will enable that difficulty to be overcome.

We must assume that the authorities have investigated the whole of the conditions of the case, and have found it necessary to decide on a limited number of stations, according to the amount of money that will be available. That limitation, however, should not be a severe one, as it has been stated officially that about £750,000 will be spent on the relay stations during the next three or four years. Another influence in deciding on the number of stations will be the number of wavelengths and the telephone trunk lines that can be set aside for the relay stations. And we can only hope that the separation between the wavelengths of the stations will not be too close; otherwise there will be endless trouble with sets that are not sufficiently selective. Here again we can but rely on it that the Government has not concluded its deliberations too quickly.

Apparently the Newcastle district has been selected for the first station, on the ground that it contains the greatest aggregation of

population outside the metropolises. The population of the Newcastle district, including the coal mining districts, must be as high as that of Adelaide or Brisbane. And because the nearest station is about a hundred miles away there are comparatively few listeners. Those who have taken to broadcasting have complained repeatedly of the disabilities they suffer with regard to fading and local electrical interference—disabilities which, as already mentioned, can be overcome only by bringing the transmitting station nearer; in short, by establishing a relaying station. Obstructions to pleasing reception of that character may exist without being so noticeable or objectionable at distances much less than that which separates Newcastle from Sydney; the greater field strength of the transmissions nearer the station are sufficient to drown the noise or interference.

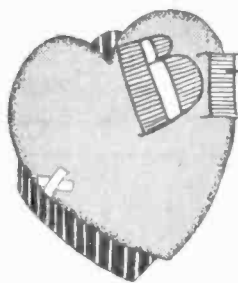
What will be the effect of the new station? Let us assume that it will be established somewhere on the Hunter, inland from Newcastle, but not too far to spoil crystal reception in the city and suburbs of Coalopolis. Following the Royal Commission's findings about a year ago it is certain that the Government will not allow any station to be put up in the residential parts of a city; there has been a salutary lesson from that practice in Sydney.

The station will be as great, or even greater, in power than the station 2FC or 3LO. The specification for the stations that were required by the Postmaster-General stipulated a power of three kilowatts in the aerial, not in the final amplifier, as is the present method of determining the rated power of stations by the Postal Department. And as the power in the aerial is about half of that in the final amplifier, it follows that

the new station will be more powerful than the present five kilowatt stations—five kilowatts of present rating. Another factor that will contribute towards making the new station more powerful is the stipulation in the specification that the modulation must be of the low-power type, and of at least 70 per cent of the carrier. In fact, it is stated that 100 per cent modulation will be preferred. With such deep modulation the resultant field strengths will be sufficient to give good crystal reception up to 25 or 30 miles. And if the station is placed somewhere in the centre of the district the result should be that crystal reception should be possible throughout the whole of the districts comprising the Newcastle and Maitland mining areas.

But crystal sets are not the only receivers to be catered for; there will always be a preference of valve sets in the country areas, unless they be in the less prosperous mining settlements. Valve set reception, on sets equal to good four-valves of the ordinary type, will be possible with much more satisfactory reliability in the New England and western districts than at present. Up to a distance of about 100 miles, that is, before the fading belt commences, valve reception should be good, day and night.

Listeners in the Hunter Valley and up towards Tamworth and west from Maitland will thus have some encouragement, and local news and items of entertainment from Newcastle itself, in addition to the Sydney programmes, will be available to thousands who are not listeners to-day, as well as to those already following the programmes.



BETWEEN YOU AND ME AND THE MICROPHONE

OH MR. OFFICER IT'S NOT AS YOU THINK — WE ARE RADIOLY IN LOVE



A Horrible Experience; or Our Heart Laid Bare.

IT'S all over now; but it was a horrible experience while it lasted. We fell in love.

People persist in talking of falling in love. One falls, for instance, into a horse-trough; into the monkey-pit at the Zoo; into hell; into a swoon, and so on; AND —one falls in love. The last is the most economical; it gives you all the previous experiences in one. (Broadcasting comedians, please acknowledge.)

Yes; we fell in love. We met at the house of a friend. He was a radio crank and the talk blithered round to the wonders of radio. "Assuredly," said our mutual friend, "the ends of the earth are being brought together, and intimate, world-wide communication is being made possible by wireless telephony. And that is the consummation to which all the human race aspires." We saw this same statement in a rehash of a "Sunday Times" article a few days later; and congratulated our friend on his perfect memory; but not on his taste. We never could stand these people who cheer wildly about the ends of the earth coming nearer and nearer together. They are extremists of the very worst sort. Their opposites are the people who see the end of the world coming altogether. The first kind doesn't know what a calamity it is cheering about; the second doesn't know what a joyful occasion it is hooting about. Darn the ends of the world! Let 'em stay where they are. We don't want 'em in Sydney.

She said: "Do you believe in marriage?" We said: "No; certainly not." She said: "No, nor do I." We said: "No, women always bore us to tears—a silly gabbling lot; we don't ever want to have anything to do with them." She said: "Men are all beasts; I hate the sight of them; I don't ever want to have anything to do with them." From that moment we perceived in her our Ideal Affinity. From that moment she perceived in us HER Ideal Affinity. Like attracted like. We fell in love.

Our friend felt himself left out of the conversation. "Talking about marriage," he said, "it's possible to be married by wireless these days. Parson at one end, the two idiots at the other. It may even be possible one of these days," his eyes lit up with the fervor of prophecy, "it

may even be possible for a separated couple to live together by means of wireless." We said, "How do you mean?" She said. "Indeed!" He said, "Why, the husband could arrange with the broadcasting company to put over a good-morning call to his wife every morning, and the wife could reciprocate. Little topical messages could be added from time to time, such as, 'I am going out to the theatre to-night,' or 'Look what these razor gangs have been doing!' or 'Did you sleep well, dearest?' For the evening, the procedure would be similar." We said: "Remarkable!" She said: "How romantic!" Our eyes met in a long glance of understanding. The next day we bought an engagement ring, and put it on the right finger of the left hand of our beloved.

We have another friend—a house agent—otherwise no more a blackguard than we. "You're getting married!" he exclaimed. "Good. You'll need a cottage, or a flat. I advise a flat. We have Sydney's best flat at our disposal. We shall inspect Sydney's best flat at nine-thirty to-morrow morning. Or ten-thirty?" We said: "But we don't want a flat." He said: "Now, now, how about eleven-thirty? I've got a car to run you out in." We said: "No, we don't want a flat or anything. We're not going to live together." He said: "Eh?" We said: "Well, not in the usual way." He said: "Then what are you getting married for?" We said: "We're going to live together by wireless." He said: "What!" We explained.

He said: "You always were a damned fool, James. Come and have a drink, and forget it. You need a holiday." We assured him we were perfectly sane and sober. He said: "But it's so damned foolish, James. You'll be in the public laughing stock. It's ridiculous. All Sydney will laugh! It's absurd. For heaven's sake, cry off, if you can!"

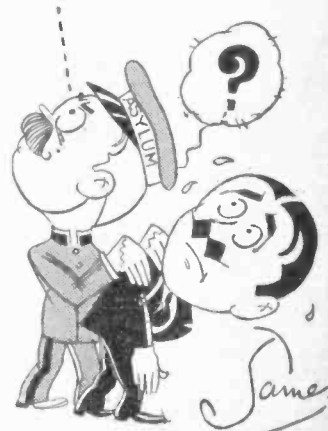
And the fact is, as we thought about it, it began to look more and more foolish. But what could we do? We couldn't cry off, because we are a gentleman, and

gentlemen don't do those things. We WERE in a fix. Our only course was to marry. Then we could either live apart and communicate by radio, as per contract, or we could live together and become utterly bored. Living with a strange woman—forever, and ever, and EVER! It was impossible. We went home as worried as anything. There was a letter on the hallstand.

"Dear James,—Since I saw you last I have talked to mother. She says it's utterly ridiculous; she says we can't think of doing what we were going to do. She says we must either live together when we are married or not at all. I mean, not get married at all. Mother says our family is too respectable to be laughed at. Well, James, you know I like you very much, dear, and you know I don't care whether people laugh or not, but I hope you won't mind, because I think it is best for both of us. You see, I couldn't possibly live with a man who is always out in the broadcasting studios all night—you see you never get home at night until morning, and I would get frightened of rats. Besides, I like you very much, James, you know that; but I really couldn't stand the company you keep. Those studio people. Please don't be angry, James. I am returning your engagement ring. It is all for the best. Your loving —"

Spare the name—we are a Gentleman. As we said before, it's all over now; but it was a horrible experience while it lasted. WE fell in love!

Wonder who'll be at 2BL to-night—?



The Centre of Radio Development

In this frank article Mr. Hull takes Australian manufacturers to task for slavishly copying American apparatus and for not assisting the progress of radio in Australia by maintaining their own radio research laboratories. The laboratory is the cradle of all radio progress, and without it we must rely on foreign development before making an advance. Thus we keep steadily always one or two years behind world progress. Mr. Hull then describes a number of American laboratories he visited to illustrate how seriously the laboratory is regarded by American manufacturers.

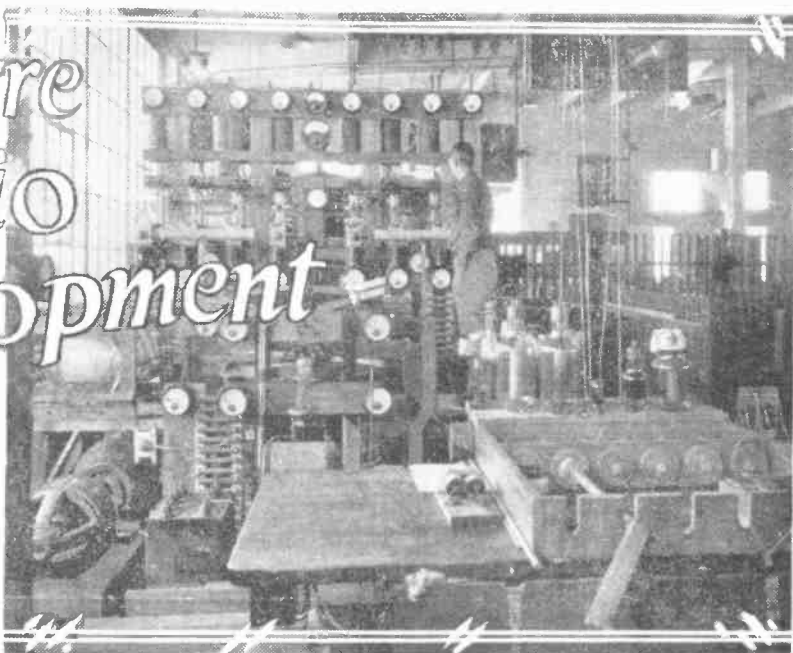
By ROSS A. HULL

IT takes nothing more than a close study of technical radio publications from America, England, and Europe to provide substantial evidence of the fact that radio progress in Australia has so far been nothing much more than a programme of lavish copying of ideas generated overseas. This condition is understandable and excusable but it is made regrettable by the way in which Australian "developments" lag so seriously behind the original work accomplished in the big laboratories of the world. Personally I have come across countless design construction, and operation methods in Australian broadcast receivers and transmitters which, though now considered "hot stuff" out here, had long passed that stage in America when I arrived there in 1926.

Research Facilities

In common with many other experimenters, I was under the conviction, before I left this country, that the source of almost all the ideas and methods on which the technique of Australian radio was built lay in America. Almost three years of study in that country and constant tripping through the bigger laboratories and manufacturing plants, provided most impressive evidence of the reasons why this was, and still is, the case.

Even without figures on the subject it is possible to estimate that if Australia's entire radio research facilities were collected on the one spot they would be accommodated comfortably in a small city building of, say half a dozen floors. In fact, one can visualise the possibility of living quarters being provided in the same building for Australia's radio research engineers, their families, and all the comforts of home from top to bottom. Similarly, one can doubt the possibility of America's radio research facilities being accommodated in the city of Sydney—with everything else moved out. It is hardly to be wondered at that our original worth-



while radio developments could be described fully with a single word—that we must go overseas to find even the slightest amount of originality.

The study of Australian-built receivers and component parts, in which I have been interested since my return, has been interesting, and at times humorous. It has been one continuous sequence of discoveries of ideas, designs, and methods seen previously in the manufacturing plants and laboratories in the States. There is one thing, however, which is increasingly "getting my goat." It is the adoption, not only of American methods, but the actual copying of American apparatus in all its detail. I recall a visit a couple of years ago to one of the radio manufacturing concerns in Boston. The president of the company was brimming with enthusiasm over the new dial he was putting into production. In his office he showed me a sample of the new escutcheon plate, and in the strictest confidence told me of the rather unconventional manner in which he had arrived at its design. The plate was modelled, he explained, from the metal back of a hair brush which he had happened to notice on his daughter's dressing table! The dial sold well for a year or so, and was eventually supplanted by something more effective and more modern. The very same old "hair-brush" dial, however, is now being copied down to the last detail by an Australian manufacturer. A study of American radio publications of a year or two ago and an examination of present-day Australian equipment will serve to provide many parallel examples.

Naval Laboratories

During my stay in America I was fortunate enough to be able to visit the big centres of research activity, some of them on several occasions, and was blessed with facilities which enabled me to get a much closer view of their internal workings than is usually accorded the casual visitor. For the last year or so it was actually part of my daily grind to accept the invitations of manufacturing concerns and laboratories in the Eastern States and spend a few days or a week out of every month rambling through them with my eyes and ears full open. As in the case of the Naval Research Laboratory at Belleview, near Washington, I was, for some strange reason or other, permitted to

get a detailed inside view of the whole place, which is ordinarily forbidden to any but United States citizens.

I know that many enthusiasts here are annoyed by my continual exhibiting of a soft spot for American development work and the apparatus resulting from it, but I must insist that anyone who has seen as much of the American aspect as it has been my good fortune to see cannot fail to have similar ideas on the subject.

It is possible, for instance, to recall the receiver performance measuring equipment in the development laboratories of, say, the General Electric Company, the Westinghouse Company, the Radio Corporation, and the Wireless Speciality Company—these laboratories having, as one of their interests, the development and production of the R.C.A. Radiola receivers. Appreciating that these are but a few of hundreds of somewhat similar laboratories, it is then possible to contrast them with the handful of voltmeters and milliammeters which comprise the laboratory equipment of Australian manufacturers, some of whom are already afraid lest we should attempt to "Americanise" WIRELESS WEEKLY.

Receiver Tests

Though it is not intended here to enter into a technical description of the average American laboratory and its equipment, it can be mentioned that the sort of gear one runs across in most broadcast receiver development laboratories comprises apparatus which permits the rapid measurement of all phases of receiver performance. Whereas the Australian receiver manufacturer is ordinarily in the habit of comparing receiver performance by listening to one outfit, twiddling its knobs, and then doing the same with another, the manufacturers overseas send their sets across to the laboratory, where the entire performance is measured accurately and written unmistakably in the form of curves. Such characteristics as the actual radio frequency amplification at various points on the frequency band, the audio frequency gain and the detector sensitivity are made available a few minutes after the receiver is placed in the copper screened booth provided for the work. Then, such performance characteristics as the radio frequency selectivity, the audio frequency fidelity, the overall fidelity beyond the loud

speaker and the overall selectivity are soon available, as is the "hum" voltage output, the maximum undistorted output, and the percentage of overload at any output.

So far as we know, very few, if any, of these measurements have as yet been applied to the development or production of Australian receivers, and receivers, consequently, are still said to be "terribly sharp," "as broad as a barn door," or to have a "wonderful tone," simply because the man who tested it thought so.

Aside altogether from this sort of work—which is essentially that of the development and production laboratories, there is the activity in pure research. Typical centres include the Bell Telephone Laboratories in New York City; the research laboratories of the General Electric Company at Schenectady; the Westinghouse Company at Pittsburg; the Stromberg-Carlson Company at Rochester; and a host of others—with most of which I was able to become to some extent familiar. These laboratories are not, of course, devoted to radio research alone, though that phase almost invariably benefits from correlation of the data evolved from studies of other problems.

The Bell Telephone Laboratories, for instance, in which were developed the design features found in the better broadcasting stations throughout the world, have as their prime interest the study of land telephone development. Even so, their activities include many other studies, such as telephoto work, television, talking pictures, acoustics and hearing, radio telephony, and the deeper researches into electronic physics, chemistry, optics, and applied mathematics. The scientists and engineers in this one laboratory alone are numbered in thousands.

It is little wonder that Australia has been so completely dependent for its radio technique and methods upon the output of laboratories such as this in America, England, and Europe. Until such time as real laboratories are established here there will be little genuine and justifiable origin. Since we must utilise the basic ideas originated by others, why is it not possible to do it in a sincere, frank sort of a way? Why should we be afraid lest our radio be "Americanised" when it is already riddled with "Americanisms" through and through?

3LO and 3AR Programme Features

*New company to carry on
old-time dance
nights*

Next Old-time Night

THOUSANDS of listeners throughout Australia will be delighted to know that one of the popular old-time nights will be given from 3LO on August 19. As on previous occasions old-time choruses will be sung, and Bendall and Aumont's orchestra will be in attendance, with the popular M.C. in his accustomed place.

Soldiers' Band Recital

A FINE programme will be given from 3AR on August 18 by the band of the R.S.S.I.L.A., under the direction of Mr. R. G. Scott. This is one of the most popular bands in Melbourne, and, apart from numerous concert engagements, has succeeded in raising substantial sums for charities. Assisting artists will be Lorraine Wright, the popular soprano, and Paul Jeacle, the clever saxophonist, who will entertain with some musical novelties.

The Bells of St. Paul's

LISTENERS should tune-in to 3LO on August 19, when the St. Paul's bell-ringers will give a short recital. Many letters reach the studio from country listeners, who say the chimes help them to remember that the Sabbath has once again come round, while one farmer places his loud speaker on the verandah, so that the neighbors may hear. Comparatively few musicians have mastered the intricacies of Bob Majors and Triple Bob Majors, and the St. Paul's bell-ringers who broadcast the glad chimes through 3LO are among the finest ringers in Australia.

University Conservatorium Students' Concert

ON Wednesday night, August 14, a programme arranged by Professor Bernard Heinze will be broadcast by the students of the University Conservatorium from 3AR.

Dance Night at 3LO

WEDNESDAY night, August 14, is to be a dance night at 3LO, when music will be provided by Ken Cotton's dance band. E. Mason Wood, Syd. Exton, and Bessie Banks will sing during the evening, and Alan Adcock will be in an entertaining mood.

Famous Russian's Quartette

WELL known as a member of the celebrated Imperial Russian Trio, Arved Norit has organised a successful quartette for broadcasting, which will be heard from 3AR on Thursday evening, August 15.

"The Metros" at 3LO

"THE Metros," one of the most popular quartettes in Melbourne, will be on the air shortly from 3LO in a fine programme of vocal selections. The individual members, Mr. Ralph Thompson (first bass), Mr. William Todd (second bass), Mr. Percy Mathers (first tenor), and Mr. J. Widdowes, are all soloists of note. From an extensive repertoire the "Metros" are always able to arrange an excellent programme.

Estelle Mark at 3AR

WELL known as the leader of the famous "Femina Quartette," Estelle Mark is a singer of great distinction, and with worldwide repute. She is to sing from 3AR on Wednesday afternoon, August 14, with the "Estrellita Trio," the other members of which are Cecilia Kilduff, the well-known violinist, and Margot Sheridun, the successful young pianist.

SONYA MICHELL ANSWERS CRITICS

"WHAT!" exclaimed Madame Sonya Michell, "They say I can't play Chopin? They shall hear!" And so her selections for August 22 will be entirely from the works of that great composer.

"I have played Beethoven and Chopin for some of the world's greatest masters, for Paderewski and for Emil von Sauer, and won their approval," continued Madame Michell. "A Vienna newspaper, after I had played there, once remarked, 'We wish we could hear her play Beethoven more often'—and Vienna knows its Beethoven. The London 'Times' once said my playing of Chopin was 'unhackneyed, individual, and entirely satisfying,' and the 'Westminster Gazette' described it as showing 'great beauty of tone and depth of understanding.'"

Madame Michell's remarks were made as a consequence of an article in WIRELESS WEEKLY under the caption "Ban on Beethoven and Chopin," in which she advocated a two years' holiday on the part of all concert artists from the works of Beethoven, and possibly of Chopin, on the ground that they are played too often, to the exclusion of other worth-while compositions. Listeners would enjoy these numbers much more, declared Madame Michell, if they could have a long vacation, in which they did not have

to listen constantly to the same old-repeated concert pieces.

"Since the publication of that article," declares Madame Michell, "whispers have reached my ears to the effect that some who read it have insinuated that I did not play Beethoven and Chopin because I couldn't. They shall hear my Chopin, and, if people wish it, I shall provide a programme of Beethoven sonatas, too."

Interviewed on the subject of Mr. C. N. Baeyertz's reply to her article, "A Ban on Beethoven and Chopin" (W.W., August 9), Madame Sonya Michell made the following statements:—

"I do not know Mr. Baeyertz, nor his qualifications as a critic, but I have no doubt that in the past, as I am told, his abilities have made his name known in Australia to the well-informed. And certainly, if Mr. Baeyertz is as careful in his criticisms of music as he is in correcting my 'Trios of Beethoven' to 'Trios by Beethoven' he should be a very capable man indeed.

"As Mr. Baeyertz says, I was born in America; but I outlived that crime long enough to spend the greater part of my life on the Continent, where I went, by the way, when I was still a child. It was on the

Continent that I gained my knowledge and appreciation of those modern musicians of whom Mr. Baeyertz speaks with such intimate understanding. I hope Mr. Baeyertz may yet live to go to the Continent and hear these compositions performed there.

"As to Chopin, Mr. Baeyertz has quoted a beautiful judgment of him. And when Mr. Baeyertz himself judges Beethoven's music to be 'still unsurpassed for nobility, grandeur, and sublimity—emotive and intellectual,' his judgment is in perfect consonance with that of hundreds of thousands of other people.

"Whether Mr. Baeyertz is right or wrong is a matter of no importance. His article shows his taste and knowledge.

"But as a critic Mr. Baeyertz will recognise that different people hold different opinions. My opinion, expressed in my first article, was that it would be very pleasant if we could all go for two years without having to listen to the works of Beethoven or of Chopin. I formed that opinion because I have noticed in New York and at other places that people are bored to death with Chopin music and Beethoven music. I stick to my opinion.

"I am not annoyed with Mr. Baeyertz for having another, and a contrary, opinion."

The SERVICE MAN'S TALE

Anglers have nothing on Radio Service men when it comes to telling the tallest tale. Just listen to these stories.

"I stayed there for half an hour, watching those two valves playing see-saw."



THREE service men were sitting in back of the store which they made their headquarters and from which they travelled daily to learn and remove the cause of silence in unruly radio sets. Just now, however, they were enjoying a brief respite for, wonder of wonders, there were no urgent calls.

"What do you think of this," said the most recent addition to the trio, drawing forth a letter from his pocket and showing it to his companions. It was addressed to his company, and read:—

"Dear Sirs.—Have decided to retain the speaker referred to in my last. My reason for this is because, when getting it ready to pack up I heard something rattling inside the cabinet, and when I extracted it I found it was a big beetle about 1½ inches long and ¾ inch wide, not unlike a cockroach, but harder, and absolutely dead. I then tried the speaker, and it was O.K. My theory is that the beetle got in through one of the holes in back of cabinet, and got electrocuted, and remained lodged in some position detrimental to the correct working of the unit.—Yours faithfully (signed) R. R. Lee."

"That's nothing," said the second service

man. "We get that every day. I had a funny call this afternoon, though. Among the jobs handed me was one from 'way up the line.

"The set was a six tube A.C. job, and the complaint read that the stations would fade away and then come back of their own accord. I asked the lady of the house for more information before I tackled the set, and she told me that sometimes it died away altogether and she had to shut off the set.

"Well, I walked over to the set and turned it on. I waited the usual forty seconds, and then started to twist the dials, and stations came in thicker than flies around a jar of honey. And they continued to come in for more than ten minutes.

"What's wrong with this set?" I asked the lady. "It seems to be playing all right now."

"Wait awhile," she answers.

"I did, and before long the signal started to die away like the last line of the poem recited by an eight-year-old at a school exercise. I lifted the cover of the set and noted that a detector valve was as cold as ice.

"Aha," I turned to face the lady of the house. "I've found the trouble."

"Well, boys, I swear that I no sooner turned my head than the old signal started to fade in just as loud as it had been before. I stuck my head in the cabinet again, and, behold, the detector had come back to life and was glowing merrily on its way.

"However, that wasn't so strange in itself, so I went over to my bag confidently to get a new A.C. valve and remarked to the better half of the household that there was a dud valve in the set. By the time I had it unwrapped and walked back to the set again the signal had faded to nothingness. I reached in the set to take out the detector valve when I noticed that that member of said radio receiver was still going strong, but that the third radio frequency valve had gone galley west. Now there was a stickler.

"I stayed there for a half an hour watching those two valves playing see-saw with each other until, after a while they began to get out of step with each other and they both went out together. I replaced both valves and, of course, the set was O.K. But I ask you now, wasn't that a corker?"

The youngest serviceman, not to be outdone, courteously acknowledged the story, and continued:—

"You old fellows meet some thick ones, but listen to this. About six weeks ago I got a call over in Mosman from the temperamental wife of a nail merchant. She told the boss her set was playing very 'low,' and what could he do, and if he could do it he should begin at once.

"So the boss hands it to me and I got seventeen other jobs to finish by 5 o'clock unless I want to be a scab.

"A very high-strung sort of female lets me in the front door and looks accusingly at me as though it was all my fault.

"If you're the radio man, why don't you fix it?" she asks real social like before I had chance to set down my bag.

"Yes, ma'am," I mutters. "It'll be fixed right away, ma'am."

"Well, she wanted speed, and I didn't feel like sticking around there all day with 17 other jobs on my hands, but, nevertheless, three hours later, at 12.30 to be exact, I was still in the same sociable surroundings, with beads of sweat on my brow, and as jumpy as a mouse looking for a piece of cheese in a house full of hungry cats.

"It was a seven-valve radio frequency job with a 210 in the last stage, a hundred-foot aerial, and the best I could get was 2FC loud enough to be heard half the length of the room. I tested all the valves a dozen times. I tested the B eliminator, the 'A' battery, the trickle charger, each individual circuit in the set, and everything imaginable. I went over the aerial and the earth until I was dizzy, and then I went up on the roof and connected a voltmeter and a battery in series with the far end of the aerial, and one of the vent pipes. The meter did not register, indicating an open. A half an hour later I found the trouble in the lead-in between the roof and the ground floor window. There had been a defect in the wire, and while the insulation held together the wire inside did not make contact at a break.

"I had spent over four hours on a simple job, and in the company of a female tyrant whose disapproving stares burned holes in the back of my neck."

The young serviceman paused triumphant. But not for long.

"Both of you are just babes in the woods when it comes to this service game," retorted the veteran after the juniors had finished their tales. I had a case that beats yours seven different ways. It took 17 calls to Chatswood to locate the trouble. Believe me that job was a nightmare to me.

"It started one freezing afternoon when a call came in from Chatswood from a customer in that dump who had just bought a £60 electrified job with storage battery, trickle charger, power amplifier, and all the fixin's. The boss detailed me to hop the ferry and rush right back.

"The snow was thick all over the ground when I arrived at Chatswood, and I had the pleasure of another hour's wait for a 'bus, not to mention a 30-minute walk after that. A pleasant little woman greeted me at the door and led me to the trouble-maker after I had stamped the snow off my feet.

"There it is," she chirped. "It don't play."

"So I heard," I replied, not meanin' to be wise—just funny.

"I snapped the switch, and in booms 2FC, of course. The little lady had just reached the door, and upon hearing her beloved radio turned around.



"If you're a radio man, why don't you fix it?" she asks.

"Oh, what a quick job," she coos, "you must be awfully smart.

"Well, I know my business," I comes back, not wishin' to turn down any little credit that I get. Goodness knows I get enough kicks. Nevertheless, I tested everything in sight, but finding it O.K. I set down the trouble to ignorance, and started back to Sydney. The trouble was ignorance—my own.

"Next day the same call came in, and I got a sour look from the boss as he handed me the job. This time I tested everything before I turned on the set, valves and all, and found them O.K. I snapped the switch, and the blooming thing went off pretty as could be. Well, what could I do? Nothing, which was just what I did.

"The third time the call came in I thought I'd lose my job, but, after a bawling out, the boss detailed Jones to look after the set. Jones left before you came, Smitty.

"Jones came back a couple hours later and reported that the set was O.K., and that he would guarantee it. Tested everything in sight, he did, and he swore that the little dame must be trying to put one over on us.

"The next morning the little lady's husband came in the store, and, believe me, he wasn't kiddin'. He called the boss seventeen kinds of a nut, and told him that if the set wasn't fixed he would wrap it around his (the boss's) neck.

"Bring the set back," ordered the boss. "We'll replace it with this new one. Both of you found the valves, batteries, and amplifier O.K., so we'll leave them down there."

"Well, I did as I was told; took the new set down, installed it, tested it, and found it O.K., and brought the old one back to the store.

"Everything went fine for three days, when the same call came in again. From then on life was Hades for me until a couple of weeks later, when I made the last call, snapped the switch—and the set didn't work. On a hunch I started replacing the valves, and found that the detector was blooey.

William Murdoch and Australian Broadcasting Orchestra

ON Saturday, August 17, through 2FC, William Murdoch, the world-famous pianist, in association with the National Broadcasting Orchestra, will play Grieg's Concerto in A Minor. This will be a very big orchestral night, and, in addition, Mr. Murdoch will play a group of orchestral solos. Mr. Horace Keats, conductor of the A.B.C. Orchestra, is delighted at this opportunity of conducting with Mr. Murdoch.

"Here was the trouble. The elements in the detector were loose, and it just so happened that when we weren't there the grid in the bloomin' valve touched the filament, and the set went dead. Between the time they turned off the set and we called on the job, some kind of a jar must have separated them again, and everything was O.K. until another jounce made them touch again when we were gone.

"Talk about queer ones. I guess that has yours beat."

Just then the boss called the narrator to the front of the store to talk with a customer who had difficulty in replacing a burnt-out valve.

"Sound's like a fish story to me," said Smitty, after he had gone.

"Yeah, that bird's famous for 'em," retorted the other.

Bob M'Questen's Melody Boys

AMONG the most popular broadcasting features are those broadcast by Bob M'Questen's Melody Boys, who will be heard from 3AR on Thursday evening, August 15. Mr. M'Questen has become popular over the air through his Sunday night broadcasting, and, to use his own words, is "tickled to death" over his success with his big unseen audience.

New Company Has Unrestricted Copyright Privileges

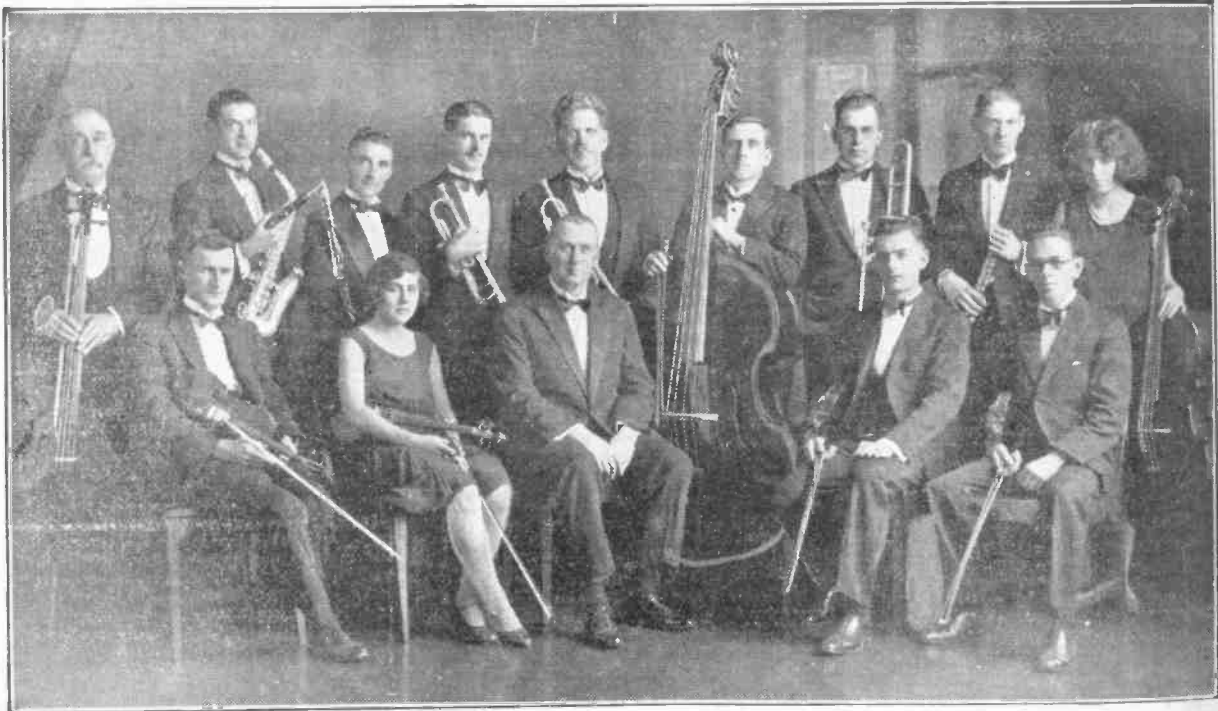
MR. FRANK ALBERT, of the Australian Broadcasting Company, has been successful in negotiating arrangements with the Australasian Copyright Owners' Association for a variation of the copyright fees that have been in vogue for some years in connection with broadcasting from the "A" stations throughout Australia.

The principal advantage of this arrangement, which applies to all programmes supplied by the Australian Broadcasting Company from the national broadcasting service, is that the company has unrestricted rights to broadcast music. In the past a definite quantity of numbers only was permitted to be broadcast, and a scale of charges per 1000 numbers was imposed thereafter. Under the new arrangement, however, the Australian Broadcasting Company can put on the air music in an unrestricted manner, and there is no penalty imposed in accordance with the amount of music that is broadcast. It is only by an arrangement of this description that it is possible for the "A" class stations to put on the air the quantity of music that is going out now. It is obvious in the past that to prevent copyright fees from being so high that it would be impossible to carry on, a large amount of the time for broadcasting had to be devoted to oral subjects or to non-copyright music.

Under the circumstances the new Broadcasting Company will have considerable advantages over the old companies, and this will materially assist in improving the service of music for the listening public. The arrangement has the approval of the Postmaster-General's Department, and the agreement is for three years.

English Entertainer

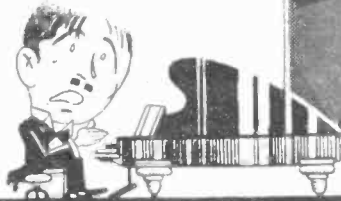
MAYNARD DAKIN, the English entertainer, will make a reappearance at 3LO on Friday night, August 16, when he will be heard in some entirely new selections.



The National Broadcasting Orchestra, which will play, in association with William Murdoch, the world-famous pianist, on August 17. From left to right the players are:—Back Row: F. W. Julian (cello), Clive Amadio (clarinet and saxophone), F. Groves (clarinet), Leon Amadio (trumpet), J. Pheloung (principal trumpet), J. Almond (contra-bass), E. Pheloung (trombone), Neville Amadio (flute), Muriel Lang (cello), Herbert Wardley (violin), Dulcie Blair (violin leader), Horace Keats (conductor), Vincent Aspey (violin), Max Saunders (violin).

This Week's Programme Personality

On Wings of Songs with Sonny Miller



WE often wondered how American song writers produced their songs. But after a short interview with "Sonny" Miller we cease from wondering. We know. In fact, we have composed a song as a kind of exercise. Perhaps you would like to see this song we have composed? Of course. Well, let us explain beforehand, the thought was not ours in the first place. We went back to Shakespeare. "Hark! Hark!" says Shakespeare.

"Hark! Hark! The lark at heaven's gate sings,
And Phoebus 'gilds arise,
His steeds to water at those springs
On chaliced flowers that lie;
And winking Mary-buds begin
To ope their golden eyes;
With everything that pretty is,
My lady sweet, arise!
Arise!
Arise!"

Everyone knows that song. It was set by Schubert, who made a mess of the job—that is, as far as Shakespeare was concerned. He took the laurel from Shakespeare and placed it on his own beautiful brow, with a few extra diamonds for effect. Purcell should have set it. But nowadays people don't hear this song as often as they might; therefore we have attempted to do a service to our age and Mr. Shakespeare by translating his song into the idiom of our generation. Judge how well we have succeeded:—

WHILE THE NAUGHTY OLD ROOSTER CROWS.

"Why, there's that darned old Rooster
Crown' thru' the dawn,
Perched high above the fowhouse
Just like a big Foghorn!
And now the sun is rising
To cheer the world again,
And I can see him smiling
"Right thru' my window pane!"
CHORUS (softly and dreamily).

"My little Sweetie,
Get up! Get up!
I love you completely,
Get up! Get up!
For there's no morning nor dawning until you arise—
Sun in your eyes—
Oh! Can you surmise
Just how I love you—I love—just at the Sunrise?
My little darling—my cutie—
Just fly to my arms
Just like a Starling—my Beauty—
Without any quains.
Fling off the bedclothes and come tight downstairs!
Then we'll go walking where—nobody cares!
Yes, we'll go walking where—nobody knows,
While the naughty old, naughty old Rooster
Crows!"

All we need is a Schubert, or preferably a Purcell.

It was up at the offices of the A.B.C. in Market Street. We were sitting down, pondering on the waywardness of life, when someone said:—

"Mr. Miller—Mr. Dobargle." Hearing our name mentioned (what do you think of it?—we took quite a long time to think it up). We looked up into the lapels of a beautiful, heavy, wool overcoat, in which black mingled with white in a pattern which, while perfectly obvious, defied our limited knowledge of tailoring modes. Intoxicated with the overcoat, we nevertheless rose to the occasion. "How do you do, Mr. Miller?" "Pleased to meet you, Mr. Bocargle." We helped Mr. Miller to a chair, and took one ourself. While we explained that we represented WIRELESS WEEKLY and wanted an interview. We viewed Mr. Miller.

He looked young and exceptionally contented, as though that day's lunch had been good, and dinner would be better, and tomorrow's breakfast, lunch, and dinner would be better and better, and better, and so on for an infinity of to-morrows. Black hat:

Tune in to "Sonny" Miller on Friday night

waving a little in a comfortable, subdued rapture; grey eyes, fresh, contented cheeks just arrived from the shaving-powder; and lips that parted to their full extent, in the well-known "charming" manner when he spoke, completed the outfit. His shirt was of a color which has its parallel in the music described by Keats—"A Spirit Ditty of No Tone." His collar could not crease at the edges, because there weren't any edges; it was built so wide as to go right in under his waistcoat. His tie was also beyond description; but under extreme pressure we might venture the opinion that it was between a watercolorist's wash-pink and pure nothingness.

Mr. Miller began life in London; went over to the States; and remained there for 15 years before coming out to Australia. He has been in the "show business" since he was nine years old. He has been writing songs during that time; and has lately been promoted to class "A" of the American Song Writers' Association. To gain membership in this association one must have written at least two "hits;" and classes begin at "E."

For the past three years he has been writing songs for special productions at the rate of three per week; and altogether he has

published 120 songs, of which 28 were "hits." "A good percentage," he said cheerfully. He was one of the originators of the "whispering baritone" type of song, four years ago, "before Smith got on to it;" and cried these gentle offerings from station WIBO, Chicago, twice daily for a whole year; there was such a demand for his stuff that he had to cut out all theatrical work.

Mr. Miller wouldn't care to say how many songs he's written altogether. But he is emphatic on the manner of writing them. Firstly, you must get the idea. You can get an idea anywhere, says Mr. Miller. In the bath—in the street—while you are lunching—while you are going to lunch—talking to someone—talking to yourself—not talking—listening—anywhere. You can get an idea anywhere; but you can't tell exactly the place you've going to get it. You must wait till it comes to you. The idea usually forms the title of the song. For instance, Mr. Miller was talking to someone only the other day about a trip into the country. "On a dreamy afternoon you can see—" said also friend. "Wonderful," exclaimed Mr. Miller. "On a Dreamy Afternoon! Glorious!" A song entitled, "On a Dreamy Afternoon" may shortly appear before the Australian public. Its as simple as that.

"I wrote one song in a taxi cab," said Mr. Miller. "Irving Berlin's 'Russian Lullaby' had just come out, and I was just going out to a party. The man who works with me was coming, too, and he was whistling an air; and suddenly I got the idea of 'A Russian Doll.' So while we were in the taxi we worked it out. We went straight from the taxi into the party. He said, 'Hear! Irving Berlin's latest?' They said, 'No. Let's hear it.' So he sat down and played this song we'd composed right through. A few weeks after it was out with our names on it. That took just twenty minutes to do. I wrote another song on a 'bus'."

Having got the idea, the song writer must remember that love is the only thing that really matters. All songs must revolve about love. So the idea must bring in the love theme somewhere. If it doesn't it's got very little chance of succeeding. Nobody writes songs that haven't anything to do with love. Then it becomes a question of form and metre.

"The only hard business about song writing," says Mr. Miller, "is getting enough experience to know just what is right and what

Isn't. When I look back on some of my earlier attempts, I've got to laugh. There are so many fine points you can't explain: you only know them through long experience in the business—because song writing's all a business, you know. Thousands of people send in songs to the publishers—words of songs—but they're no use, because they're not in the right metre. The standard song must have a 16-bar verse and a 32-bar chorus. If it is any different from this, it must be pretty good, or it will be discarded immediately. Some songs are written with 48-bar choruses; but these are rare."

Then, having got your idea, written your 16-bar verse, and your 32-bar chorus, you get hold of someone who can write music for songs. Because, although music is important, the words are the more important. The words and the title. This other chap attends to the music of the song, which should be noted for its simplicity of melody and "dancy, swinging rhythm" (thank you, Mr. Miller). Words and music, by the way, generally hunt in couples; and that is the reason you so often see two names continually juxtaposed, if there is such a word on different songs.

Then, having the words and music complete and together, you go to the publisher and play it over to him. He judges it for its worth as a song, as a dance, and, generally, all round as a selling proposition. Then he either takes it or leaves it.

A "hit" song used to be worth something like £6000 to its writer. Now, owing to the talkies, for some reason or other, it is only worth £3000. But the talkies have raised American song writing from something of a slump. Writers are being brought from New York over to Hollywood with a drawing account against royalties of £40 a week.

The writers now on top of the tree in America are the De Sylva-Henderson combination. These two writers in the past two years have become millionaires. They are now in Hollywood. At present they have five shows running on Broadway, for which they have written the songs, including "Good News," and they have scored more hits in two years than any other combination. They run their own publishing business. Irving Berlin, of course, still runs the mansion on Olympus. He also is a millionaire, and his own publisher. He always writes his own words and music. Walter Donaldson is re-

garded by Mr. Miller as the greatest melodist writing—his greatest success being "My Blue Heaven," but he can't play his own compositions for nuts. "In fact," says Mr. Miller, "it's generally that way. When people who write the big hits begin to play their own work you feel you want to go out of the room." Gus Kahn completes the quartette of the great. He and Walter Donaldson combined to write "Whoopie."

"The greatest thrill in my life," says Mr. Miller, "is when I go down the street and hear someone whistle something of mine. Sometimes I think it is a friend, trying to take a rise out of me; but then I look back and see it is a perfect stranger, and I can tell you, it's a great sensation! Writing songs is very easy. You just don't think about it. You get in the habit; and, of course, you are always on the lookout for a new idea. But my advice to all would-be song writers, forget about it. If you're not crazy at the start you will be at the finish. It's very, very hard to get in. To get your name known. To get things published. To get experience."

But Mr. Miller doesn't look as though the life pained him deeply.

ONE OF THE NEWEST OF THE 1929 A.C. SETS

The first of a series of straightforward reviews of new receivers available for the broadcast listener.

By ROSS A. HULL

THOUGH we have read, written, talked, and dreamt of radio quite continuously for a considerable number of years, we have never yet reached the point where we failed to get a devil of a thrill on coming across some new radio apparatus engineered with particular brilliance or constructed unusually well. Of course, new radio apparatus, whether it be good, bad, or indifferent, is invariably of interest to any radio enthusiast, and it is not to be wondered at that we are looking forward with pleasurable anticipation to the testing of a group of the better modern receivers available in Australia.

The first of the series to be discussed is the new RCA Radiola 44—the most recent of a line of receivers with which we have been familiar since the beginning. Having seen some of the recent RCA receivers in the process of design, development, and production, it is natural that we were particularly keen to make an examination of the most recent model.

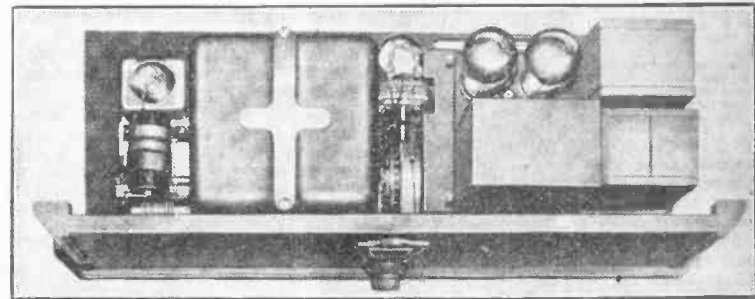
The 44 is essentially new. It is one of the very few receivers which have appeared at any time to which the term "revolutionary" could be applied justly. Without the slightest doubt it is material evidence of just as great an advance in receiver design as was the neutrodyne of a few years ago. The only real trouble with the receiver, as far as Australia is concerned, is that it represents such a radical departure from present-day Australian practice that prospective non-technical buyers, unable to appreciate the significance of the design features, may consider the thing a freak.

(a) MECHANICAL DESIGN.

The receiver is a four-valve affair (excluding the rectifier), designed for A.C. operation, completely self-contained, and quite capable of a performance equal to that of the average seven-valve rig. The internals of the set include two stages of screen-grid radio frequency amplification—using the new UY24 valves; a screen-grid power detector employing a valve of the same type, and a single stage



One of the valves in its special shield.



Top view of the R.C.A. 44 chassis.

of audio frequency amplification in which the new UV245 is allowed to perform. In addition, of course, there is a power supply unit, in which a UX280 is used and from which the "A," "B," and "C" voltages are obtained. The three screen-grid valves of the radio frequency and detector unit are arranged in a die-cast trough, which also contains the three-gang condenser. The trough is divided by low partitions into three sections, each of which holds a valve together with its associate inductances and tuning condenser. Heavy copper shields are inverted over the second two sections in such a manner as to provide the very complete shielding essential for effective operation of screen-grid valves. In addition to this, secondary shields are provided to enclose the lower portion of the first two valves, so avoiding the least extraneous capacity between the input and output circuits of the individual amplifiers. The shielding certainly is an object lesson to the experimenter who has been trying to get a real performance from screen-grid valves without success.

The "power" screen-grid detector and the single audio frequency amplifier constitute further evidence of radical departure from previous practice, as does the design of the radio frequency coupling transformers. One can imagine the intensive development work which preceded the solution of the genuine problem of obtaining reasonable gain from screen-grid radio frequency amplifiers without a drastic sacrifice of selectivity.

(b) EXTERIOR APPEARANCE.

Externally the receiver looks just as unconventional as its technical features actually are. In

place of the usual metal escutcheon plate is a moulded wooden affair, with a strong feeling of "futurism" in its lines and low-toned colour. Replacing the usual tuning scale is a translucent screen on which the scale readings and approximate frequency settings are projected from a pierced drum at the rear. The only two controls on the outfit—tuning and volume control—are arranged concentrically, and have the appearance of a single knob. Other external gadgets are the main switch, and a second one which serves to introduce a decided cut in sensitivity in order to avoid valve overloading during the reception of local stations.

(c) OPERATION.

In operation the receiver was found to have slightly greater sensitivity than a typical seven-valve outfit using three element valves, while its selectivity was of a much higher order. It is probable that technical readers experienced in work with screen-grid valves alone will appreciate the latter statement fully.

As might be expected from a "plate" detector and single stage audio amplifier, the musical quality seemed to be strictly in accordance with that of the broadcast station being received. Notwithstanding an almost entire absence of hum, the amplifier appeared to have a splendid low frequency response—an unusual characteristic in an a.c. receiver these days.

With the 44 feeding into one of the new RCA 100 speakers, we sat back and actually enjoyed listening to a few items from S.I.O. and some of the local stations. We switched the set off thinking that, after all Australian broadcasting wasn't half bad—after a frame of mind which was, for us, extraordinarily exceptional.

FOR YOUR APPROVAL



THE artists pictured above appear for the listeners' approval in next week's programmes. They are: Mr. William Murdoch, the pianist who played with the Conservatorium Orchestra last Saturday, and who will play with the A.B.C. Orchestra next Saturday. Josef Kaartinen, saxophonist will take deep breaths and exercise his nimble fingers on Friday, at 2FC. Mr. Lindley Evans, another pianist, who has been heard more than twice recently, is also on Friday night's programme, but from 2BL. Rene Rich has a rare habit of making loud-speakers sound like violins; 2FC, Tuesday. Mr. Ballance is noticed below. When Miss Maisie Ottey sits down to 2BL's baby grand on Saturday, the announcer's feet will jig up and down under the table, and the control operator will murmur, "Hot stuff, Mais!" Rae Foster is a soubrette.

The Antique Trio

MADAME EVELYN GRIEG thought of combining old instruments of the viol family with her silver-toned dulcitone. The Antique Trio will be heard on the air on Wednesday, August 14, in 17th and 18th century music, comprising old-fashioned minuets, songs, and trios, some of which were written for the clavichord, the viola, including the viol da Gamba. The dulcitone resembles in size and tone the little clavichord which was in use before the days of the pianoforte. The treble viol (to be played by Vota Wareham) is about 300 years old, and has a very sweet tone. The ribs of this instrument were waved on the assumption that as sound travels by waves, in constructing the ribs of the viol likewise the quality of the tone would be improved. The viol da Gamba bears the date 1688, making it 241 years old. The maker was one John Baker of Oxford, during the reign of King William and Queen Mary. It differs from the cello in that it has six strings, also it is shaped differently, having a flat back and sloping shoulders. This last will be played by the well-known Australian violinist, Mr. Keith Kennedy, who is the owner of both of these antique stringed instruments. These instruments must have passed through some strange experiences. Such a combination with the dulcitone is probably unique.

Maurice and Wit

THAT popular pair, Maurice and Wit, will be heard from 2FC in pleasing numbers on Wednesday, August 24. Previously Maurice was doing solo work and Connor and Wit were enjoying a tremendous success in revues. With the withdrawal of Connor the present partnership was formed.

David Bertini and Ernest Powell

DAVID BERTINI and Ernest Powell will be heard from 2BL on Friday, August 16. David Bertini, violinist, won two scholarships at the Conservatorium, Leipzig, and was a student of the famous Hugo Becker. Ernest Powell, pianist, comes from London, where he studied music at the Trinity College. He has toured the world as a soloist.

The Harmony Four

"THE Harmony Four" is the name of the mixed quartette under the direction of Mr Molyneux Phillips. They appear from 2BL on August 19. All the members are well known to listeners as soloists: Mr. M. Phillips, tenor; Miss Amy Ostinga, contralto; Miss Daisy Mangan soprano, and Mr. Raymond Beatty bass. Mr. Phillips toured New South Wales with Verbrugghen and his State Orchestra, appearing at the State Conservatorium in Melbourne, and also in Adelaide. Miss Ostinga's voice is well known to listeners, as she has appeared from both 2BL and 2FC for the past eighteen months. Miss Mangan and Mr. Beatty have also appeared from 2FC and 2BL as soloists.

The Denning Lee Quartet

THIS tuneful combination will be heard from 2BL on Friday, August 16. Mr. Peel has sung in the East and the Northern Territory with great success. Miss Madeline Madson (soprano) has had wide experience in concert work and in various operatic societies. Miss Rodon (mezzo-soprano) is well known to the Brisbane public. Colin Ferret (basso) is contemplating a trip to America to continue his studies. The voices of the quartet blend exceptionally well, and their fine harmonising will be worth hearing.

William Everard and Dorothy Manning

THESE two duetists will be heard from 2FC shortly. Mr. Everard has toured England, South Africa, and Australia as leading tenor in musical comedies and opera. His ability can easily be judged, for he went to South Africa to join Wheeler Edwards' Gaiety Company on a six months' contract, but they kept him there for four years. Miss Manning has toured the principal countries of the world, and appeared on J. C. Williamson's and Fuller's circuits for many years. This pair will be heard from 2FC on Friday, August 16, featuring opera, comic opera, and musical comedy.

Leonard Nelson

TO describe Leonard Nelson, whom you will hear for yourselves on Thursday, August 22, over 2BL, one needs a new vocabulary. He is something entirely original. He has had to battle his way against odds all his life since the age of eight. In fact, the hard life has only taught him to laugh at the dark side. He has the contagious gift of real merriment.

Mr. Maurice Ballance

"I HAVE brought my book of press cuttings," said Maurice Ballance when he was asked for an interview. "It saves me the trouble of blowing my own trumpet." He produced an enormous sheaf of newspaper notices. "Excellent work in musical plays—splendid performance—voice of great volume—musical quality unusual in a bass voice," were a few of the phrases. Maurice Ballance will be heard on Thursday, August 22, over 2FC.

Wireless Weekly

Incorporating "Radio in Australia and New Zealand."

FRIDAY, AUGUST 16, 1929.

LOST:

TWO PERSONALITIES

LISTENERS of several years' standing will remember the halcyon days of broadcasting in New South Wales. 2FC and 2BL were virile, though friendly, competitors, each possessing a distinct and likeable personality. Amalgamation gave listeners many other benefits, but never the pleasure of listening to two stations of such pleasing individuality; later, single control, under the generalised National Broadcasting Service plan, has destroyed whatever remained of this quality completely.

Recalling previous programmes, in which the endeavor of one to outdo the other gave interest to tuning in both stations, it seems a sad feature of the present-day arrangements that the same artists should appear frequently at both stations on the same night. Of what benefit is the elimination of repetition of market and news announcements, when the performers themselves are duplicated in both programmes.

The old spirit of competition cannot be restored. Instead, we have an equal standard, but the present arrangements are not improved on this account, when the possibilities of distinctive individuality are reflected upon? What listener has not thought of 2BL, say, as a first-class low-brow station, with a splendid jazz band, sporting talks and descriptions, and plenty of light entertainment; and 2FC, on the other hand, as a first-class high-brow station, with a fine symphony orchestra, dramatic pieces, and good vocalists.

This definite classing of these stations would provide the listener with an alternative programme, with different and distinct attractions, according to his mood.

At the same time, it would also avoid the annoying juxtaposition of high-brow and low-brow items, such as was heard recently from 2BL when Keith Grant, the accomplished New Zealand tenor, sang Handel's "Largo" to an organ accompaniment, sandwiched between Palmistra, the "wizard of the piano," playing "Make It Snappy," and the Spanish Serenaders, in a burst of jazz on their mandolins.

Two personalities are lost, but the opportunity for distinctive individuality is still present. Listeners are waiting for the broadcasting company to make the most of it.

A Comprehensive Relay Scheme

THE real significance of the much-used word "relay" will not be appreciated until relay stations and the system of inter-State relaying have been fully established throughout Australia. Immediately the Australian Broadcasting Company takes over the whole of the "A" class studios a comprehensive scheme of inter-State relaying of important programmes and events will be commenced.

By this means listeners in Perth will have equal facilities to those in Melbourne for listening to a description of the Melbourne Cup and other big events and programmes.

When the scheme is in operation a grand concert programme can be arranged in one capital city and relayed to every other city, and also through the network of relay stations to be established by the Government. Thus, listeners all over Australia, instead of hearing one or two big orchestral or other musical combinations, will be able to listen-in at intervals to several, and with the principal station in every city broadcasting the same programme the expenditure on special features can be considerably increased.

The Postmaster-General's Department will play the most important part in carrying out the technical or engineering part of the relaying, as upon them will be thrust the big task of not only providing trunk telephone lines, but also of conveying the programmes which, reduced to frequencies and vibrations, are superimposed upon an electrical current and sent through many intercepting or "boosting" stations, where the energy of the depleted current is amplified

and helped over the next long stage of its journey to the broadcasting station. The task of the officers of the P.M.G.'s Department is, therefore, enormous, and upon their efficiency will depend the pleasures of a million listeners.

The relay services between Melbourne and Sydney have already been established. The other States will have to wait, however, until the national broadcasting services are completely functioning.

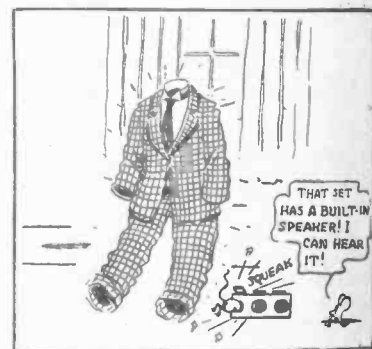
Irene Shamrock--Bert Lee

MISS IRENE SHAMROCK will be heard over the air from 2FC, with Bert Lee, on August 23. Miss Shamrock confesses that she can lay no claim to her Irish name, since she only adopted it for stage purposes. Why she was born in France on Shamrock Day, March 17, and came to England when she was ten years old. Her experience in broadcasting is extensive, as she was a great favorite with English audiences of the British Broadcasting Company's stations, and should be just as popular here. When she was in Africa she played the title role in "Mercenary Mary," and was hailed with delight in Brisbane, where she made her appearance in "This Year of Grace." Her partner, Bert Lee, served an apprenticeship in London, where he played in "Kid Boots" and also in revue. The nephew of Whittaker Chambers, a London star comedian, he played with the O'Brien Company in Sydney before he sailed for New Zealand. He also broadcast with the B.B.C. before he came to Australia, and enjoyed a great success.

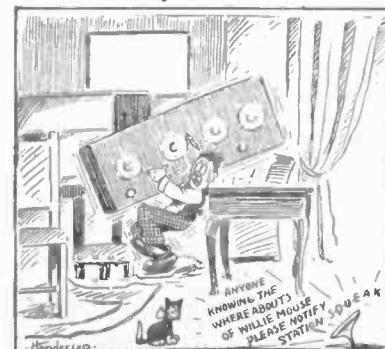
:: The New Set Arrives ::



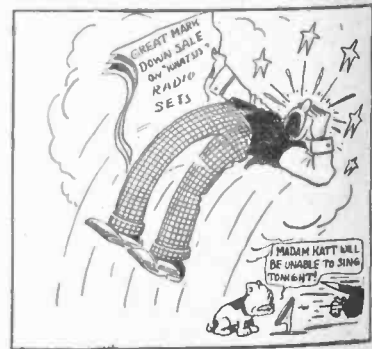
Caught With the Goods



As He Flees After An Argument With the Wife About A New Set



As It Seems When Moving The Set From One Room To Another



The Day After He Buys His New Set, He Discovers The Price Has Been Cut In Half.

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 of 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.

Accurate Programmes

Dear Sir,—Listening-in to the opening of stations 2FC and 3LO I heard Mr. Doyle say that he regarded listeners and the Australian Broadcasting Company as a big club. I write this letter as one of the members. I have never at any time complained at the programmes given over the air, as I understand it would be impossible to please everybody.

I have been very pleased with the new company's programmes, but in my opinion they have made the greatest mistake in broadcasting in not keeping to their programmes as advertised. I consider that it is the same as going to a theatre and buying a programme and finding out afterwards that the artists on it were appearing the night after, or some other time. I have tuned-in to a station and waited till the programme finished, and was a little disappointed to find that the special items I was waiting for were not put on at all.

While I feel it would be impossible to run a programme right to the minute. I should think it an easy matter to run the artists in rotation. If one then tuned-in he would know where he stood. If others are of the same opinion as myself on the subject I would like to hear their views also.

Yours, etc.,

M. QUADR.

Barellan.

columns on July 19, I say without fear of contradiction that were the P.M.G. to take over the installation of every radio set the customer would be at the mercy of one of the most efficient (?) Government departments in existence during the tenure of his agreement with them.

I am in the trade, and I think I am voicing the opinion of the dealer and the service man when I say that Government control of the broadcasting is to be deplored, let alone Government control of every installation in the Commonwealth. In passing, Mr. George O'Kell is to be congratulated on his very clever (?) example of alliteration—personally I think it should have been sent to the kindergarten.

Yours, etc.,

C. M. CLAY.

Kogarah and Orange.

2FC-2BL Same Station

Dear Sir,—Prior to the taking over of the programmes by the Australian Broadcasting Company great promises were made by the directors of wonderful programmes to be submitted; in fact, we were promised an absolute revolution.

Anticipating something out of the ordinary. I had my set tuned up, but now we find the new company is providing practically the same programme from 2BL and 2FC, the same artists appearing, only at different times. Perhaps this is the promised revolution, as under the old regime absolutely different programmes were submitted from each station.

If this is to continue, why retain the two stations, as a person operating a small set, being dissatisfied with the programme at 2BL, cannot change over to 2FC, but must tune-in to B class stations or close down. I would like to read other listeners' views on this matter.

Yours, etc.,

4-VALVE.

Mayfield.

Country Services

Dear Sir,—May I say a word in connection with the reduction in country services? I notice the new company is curtailing the 2FC market and weather reports and news sessions, especially in the evenings between 7 o'clock and 8 o'clock, and substituting music instead. At a distance from the city reception is bad in the daytime, and a man on the land coming in from work at night likes to hear the latest market and news of the day, as often he only sees a paper once or twice a week. Music is all very well at times, but how many men will sit and listen to it for any length of time? Besides, nearly everyone in the country has a gramophone or player-piano these days when he wants a bit of music, without keeping a set in order, and city people are handy to picture shows and theatres and get their papers every day, so why not cater a bit more for the country, where we don't see or hear much? The market reports and news sessions from 2FC were a boon to us, but if the new company doesn't give us back our news sessions in the evenings I don't fancy I'll bother renewing my licence.

Yours, etc.,

OUTBACK.

Girimbone.

Standardised Control

Dear Sir,—While not wishing to be instrumental in starting a controversy as to the relative merits or otherwise of a standardised receiver, as suggested in "The Safety Valve"

Shock Excitation at Coogee

Dear Sir,—2BL is only about two or three yards away from us, and it is very hard to chop it off sometimes. Not only ourselves, but everybody round this place is saying the same thing. We have a six-valve Igranic super-heterodyne, and 2BL seems to interfere with other stations. It is annoying having a wireless set here when 2BL is interfering. There have been about 30 different sets here, and the owners could not do anything with them. I can prove what I say as follows: I had a little one-valve set, out of which I got only three stations—2FC, 2BL, and 2UE I took it to Waterloo, and I can almost get anything. I got five stations without 2BL interfering, and even got the Melbourne whistle, very faintly. But at Randwick you can't do anything—it is hopeless.

Yours, etc.,

W. H. WILLIAMS.

Randwick.

Unfairness of Zoning

Dear Sir,—The following grouch has been worrying me for quite a while, and I feel it is time to give vent to it through the columns of the "Safety Valve." Why are people living on the North Coast placed in zone 1 by the authorities, and charged the full licence fee? Up this way daylight reception of Sydney stations is impossible unless a large multi-valver is used, and even then for almost six months of the year the x's spoil reception. With a smaller set you can obtain excellent results at night, but not in the daylight. Still we have to pay the same licence fee as the city man, who, with even a crystal, can get what station he wants around Sydney at any hour for the whole year round.

My own opinion is that the zones are purely for the purpose of bringing in the most revenue, as No 1 is the most densely populated, and No. 3 the most sparsely. Why not charge according to the distance from the nearest "A" class station; that would give us country folk a fair deal.

This grouch is carried by all set owners up this end of the State. Perhaps we will feel happier when the new "B" class stations are erected throughout the State. Let's hope so!

Yours, etc.,

F.K.

Ballina.

Brass Bands and Fights

Dear Sir,—I would like to make a few suggestions. If we could get a few brass bands and the fights and wrestling, I think it would be a good thing for listeners living away in the country. I think it is wrong to say that broadcasting from the ringside spoils the gate. I know last year I had friends listening, and they got so interested that they made a special trip to Sydney to see a bout, but we could not come down every week, as it is 150 miles from Sydney. I think there are many in the country interested in sports, but who are too far away to go to them. What difference is there in broadcasting fights and wrestling, and races and football? We hear them, and I don't think it spoils the attendance there, so let's have the Stadium events instead of so many orchestras.

With regard to the old dance nights from 3LO, I think that not 90 per cent., but 100 per cent. of the listeners received a setback when the announcer said it was the last old-time dance night. I hope the new company will consider it, and give it back.

In reference to the leading article (26/7/29): What makes the country licencees slow in registering their wireless sets is that the local dealer sells one and installs it, telling them that they can licence it at any time, and if anyone asks, to tell them it is on trial. I think the dealers should report at once when they sell a set.

Yours, etc.,

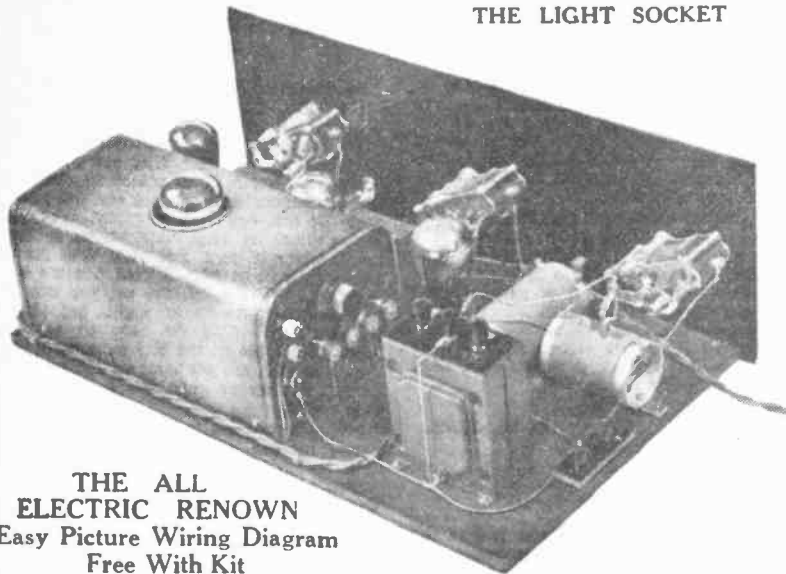
STADIUM EVENTS.

IT'S ALL ELECTRIC

And—You Can Build It Yourself

You Know the Renown Special Three. Now Know the All Electric Renown

AN ELECTRICAL MASTERPIECE. NO BATTERIES "A" NOR "B." ALL POWER FROM THE LIGHT SOCKET



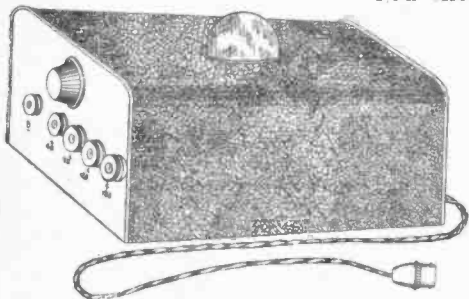
ELECTRIC RENOWN KIT

1 Polished Luzerne Panel, 21 x 7 x 3-16	9 d
2 Capacitrad Condensers, .0005 at 18/6	7 6
1 Capacitrad Condenser, .00025	1 7 0
2 Bakelite Arrow Knobs, at 1/2	12 0
1 Large Bakelite Vernier Dial (Dora)	2 0
1 Single Circuit B.M.S. Jack	6 0
1 H. & H. A.C. Toggle Switch	1 7 1
2 Pilot UV Sockets, at 3/4	2 9
1 Pilot UX Socket	6 0
1 5-Ply Baseboard, 20 x 12 x 5/8	3 0
2 Engraved Terminals and Board	3 6
1 Renown Coil Kit (Impregnated)	9
1 A.W.A. Ideal Transformer, 5 to 1	13 6
1 A.W.A. Ideal Transformer, 3 1/2 to 1	18 0
1 Pilot Isograd Condenser, .00025	18 0
1 2 Megohm Gridleak	2 6
25ft. Special Hookup Flex	1 3
1 Amolo B and C Eliminator	2 9
1 Philips Filament Transformer	6 5 0
2 Philips A.C. Valves, E415, at 27/6	1 10 0
1 Philips Valve, B405	2 15 0
2 yds. Twin Flex, at 5d	15 0
2 Small Battery Clips, at 4d	1 3
	8
Total	£17 15 0

TOTAL COST OF KIT
£17/15/0

THE ALL ELECTRIC RENOWN
Easy Picture Wiring Diagram
Free With Kit

The Renown Three is famous for its Interstate performance
You should hear the Electric Model

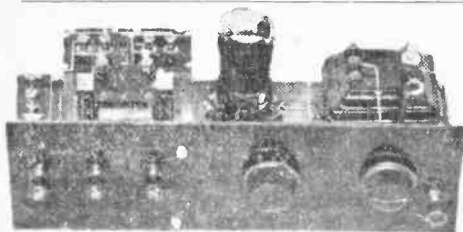


The New Amplo B Eliminator.
THE NEW AMPLO "B" & "C" ELIMINATOR, £6/5/0

WHY BE WITHOUT A "B" ELIMINATOR?

You can get 4 different voltages from the wonderful Amplo B Eliminator.

£5/15/0



The Original Economic B'liminator.

Highly Improved, Altered, and Adjusted

Sold in Kit Form Only.

59/6

VARIABLE CONDENSERS

Andrews Low-loss.

Size .00035, 3/6

The Wonderful BILLOW VERNIER DIAL

Fit any Condenser 2/2

MAGNAVOX LOUD SPEAKERS

Model AC80,

£7/15/0

PHILIPS WONDERFUL AUDIO TRANSFORMER

Silver-wire Primary.
27/6

Panels True to Size.

Bakelite or Hard Rubber

12 x 7 x 3-16	4/3
15 x 7 x 3-16	5/6
18 x 7 x 3-16	6/6
21 x 7 x 3-16	7/6
24 x 7 x 3-16	8/6

AMPLION LOUD SPEAKERS

AC21, 57/6

Hegra Cone Speakers, 27/6

"Yours for Lower Prices and Service that Satisfies."

THE ECONOMIC RADIO STORES

Address Mail Orders, 492 GEORGE STREET.

COUNTRY CLIENTS.—Our Mail Order Service reaches every corner of the Commonwealth. Send your orders to us conditionally that your money is refunded if you are not satisfied with goods. Returns must be made within ten days of receipt. We pay carriage on all orders of 10/- and over, except on Batteries, Cabinets, and Loud Speakers. Articles specially procured cannot be exchanged. Terms Cash, or Cash on Delivery. No Discounts.

SYDNEY, 25 New Royal Arcade, near Palace Theatre. 'Phone, M6138.

NEWCASTLE, 13 Union Street, off Hunter Street West. 'Phone, New, 1022.

PARRAMATTA, Corner Church and Macquarie Streets. 'Phone, UW9601.

SYDNEY, 126A Pitt Street, near King Street. 'Phone, M6139

A Three Valve Screen-grid Receiver for Battery Operation



WHILST our technical articles have, during the past few weeks, catered mainly for the reader interested in A.C. operation, we have not by any means forgotten the readers to whom such methods are impracticable.

The latter, of course, include those who are unable to afford the expense of a power-pack; those who have not recourse to A.C. mains; and finally those who prefer under any conditions a battery-operated receiver. Though undoubtedly the A.C. receiver is a great step forward in the task of reducing the running cost of radio receivers, there will always be a great number of "hangersons," as is evinced by ye olde crystal set.

Perhaps the two most important reasons for using A.C. are: (1) Reduced cost of operation; (2) the end of battery troubles insofar as run-down "B" batteries and necessary charging for "A" accumulators are concerned.

Owing to the fact that the set is entirely battery operated, it will prove ideal for the country listener who has not A.C. laid on. He can expect quite good results, though these will vary, being dependent upon the locality of the listener.

The receiver is ideal for the city listener also, in so far as selectivity is good. Only one stage of audio frequency amplification is included, but the city listener should get ample speaker volume on local stations. The screen-grid radio-frequency stage should enable him to receive inter-State stations under good conditions.

THE CIRCUIT

As will be seen on reference to the circuit diagram, there is nothing very extraordinary about it. At one time we could have discoursed at some length on the merits of the screen-grid valve, but now the listening public are (as usual) taking these modern improvements as a matter of course. The receiver could have been termed (for that matter) just another "standard" circuit, but, of course, it is necessary to differentiate between the circuits a little.

The two tuning condensers have a capacity of .0005 mfd. By using the Pilot Air Vernier dials the trouble of drilling three holes for

mounting each condenser is entirely done away with.

The receiver has a stage of screen-grid radio frequency amplification, followed by a detector and one stage of transformer-coupled audio frequency amplification. The by-pass condensers, C3 and C4 have a capacity of 1 mfd. The grid condenser, C5, is one of .00015 mfd. capacity. By-pass condenser C6 has a capacity of .001 mfd.

Note that the reaction coil is fixed, and that regeneration is controlled by the variable resistor R2, by-passed by condenser C4. The variable resistor R3 is a volume control.

It is not shown connected in the layout diagram in order to simplify the following of other connections. It is, however, shunted across the secondary of the audio transformer, as shown in the wiring diagram, the

Country readers who have been waiting patiently for the vogue of A.C. sets to die down a little will now find in this article the type of receiver they have been looking for. Simple and inexpensive, yet employing the latest in screen grid operation, it meets the demands of the country listener for a cheap, modern, battery-operated set excellently.—R.W.M.

moving contact going to the audio valve grid.

The resistor R4 is an Amperite, and is used in the filament circuit to keep the voltage at normal value.

The resistance of this Amperite will depend on the types of valves used. It is suggested that the constructor adhere to the type described, as otherwise the perpendicular S.G. valve will have to be used, and this means an alteration in layout, which latter important subject will be discussed presently.

The screen-grid valve used in the original receiver was an Osram S625. This valve (which is of the horizontal type) requires a filament voltage of 6. The filament draws 25 amperes. The plate voltage should be somewhere in the vicinity of 120 or 135 (same as audio), and the screen-grid voltage should be about 80 (maximum).

The Amperites available for valves of the 6-volt type, usually step down the voltage to five, but this will be quite in order, since the valve manufacturer states: "The valve will function normally at a reduced voltage

varying between 5 and 6 volts." If it is desired to use a filament rheostat in the filament supply of the S625, one of 4 ohms maximum resistance will be suitable.

The detector valve is a D.E.L. 610, and the audio a D.E.P. 610. The transformer is a Philips. This transformer is very small, but is remarkably effective.

THE LAYOUT

Imagine that the panel is facing us (as in the photograph). It will be seen that the front panel layout is very symmetrical and neat. The control at the extreme left is the volume control, whilst that at the extreme right is the regeneration control. The Pilot Air Vernier dial on the left-hand side of the panel controls the condenser, which tunes the R.F. condenser, whilst that on the left controls the detector secondary.

Between the two dials is placed the filament switch.

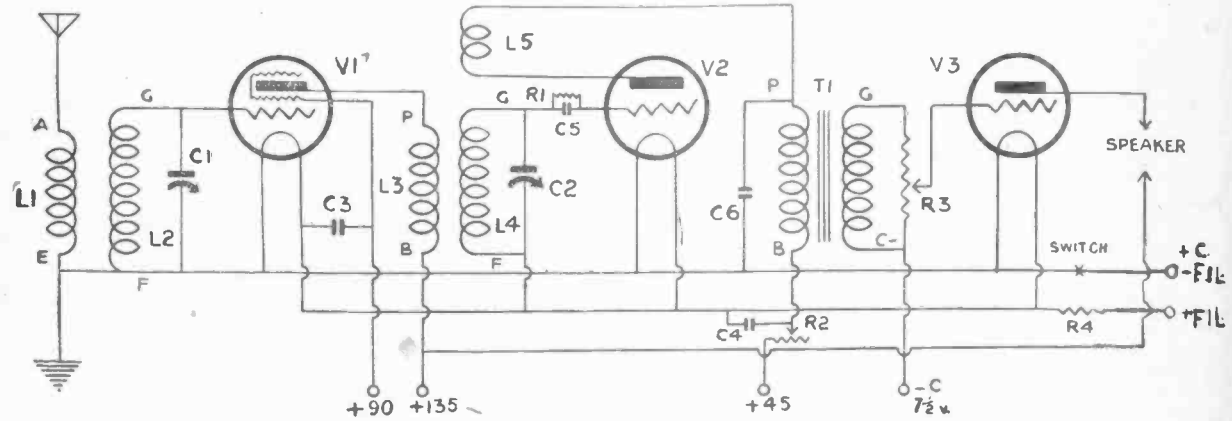
Now imagine the panel to be placed face down on a table. The baseboard and its components will be facing you. In the extreme left-hand corner will be seen the battery leads, which have been brought up through the baseboard in the form of a cable. This method does away with the awkward and certainly useless battery strip, which causes all battery leads to run parallel, and often in positions where trouble is likely to be caused, and is an awkward piece of apparatus to get at once the receiver is firmly placed in a cabinet.

On the left-hand side of the baseboard is placed the R.F. coil, and following this the .001 Bypass condenser, then the audio valve. The filament and plate end of the screen-grid valve come next, then the screen, through which is placed the valve. Level with the screen, and at the back of the baseboard, is placed the audio transformer. On the other side of the screen is the other half of the screen-grid valve. This half contains the control grid (grid proper), and the screen grid. The other valve is the detector, and attached to the grid terminal of that valve's socket will be seen the grid condenser, and leak. This is followed by the detector coil, and finally the two 1 mfd. by-pass condensers.

Looking at the layout in general one might note several important things—among them being these:—

The two coils (in order to save screening) are placed as far apart as possible. The whole layout, which appears to have been made with the sole object of giving a neat appearance, is actually one of the best arrangements that could have been made with efficiency only as an object.

CIRCUIT IS SIMPLICITY ITSELF, YET EMPLOYS S.G. VALVE



All R.F. wiring should be done above the baseboard, with a double object of keeping leads short, and also keeping it well clear of battery cables. All other wiring is done beneath the baseboard, a hole being drilled neatly beside each terminal of the component, and a flexible lead taken along the bottom of the board, then up through another hole, at its destination.

CONSTRUCTION

The time has come when we refer to a beginner's receiver as a valve receiver. Crystal sets and one-valve regenerative receivers are now considered to be a poor start. Even the veriest beginner can make the most difficult of receivers if he gives the subject concentration and care. There is, however, nothing difficult about the receiver here described. It is perfectly straightforward, and, perhaps, the greatest care should be in making certain that he is wiring to the correct compartments, as these match each other almost so perfectly that even the expert may slip unless he thinks for a moment.

Drilling the panel is a simple matter. A rather large hole has to be made for the window of the vernier dial, but the template supplied shows how this may be drilled out in a few minutes. Reference to the drawing shown with this article will give an idea as to the respective positions of the panel components. The holes for the variable resistors should be made $1\frac{1}{2}$ inch from the sides of the panel, and $2\frac{1}{2}$ inches from the bottom. The switch should be mounted $1\frac{1}{2}$ inches from the bottom of the panel, and $\frac{7}{8}$ inches from the side, i.e. in a central position. The hole for the shaft of the vernier dials should be $\frac{4}{8}$ inches from the sides of the panel and $2\frac{3}{4}$ inches from the bottom. When the holes for these shafts have been drilled the templates supplied will show where the other holes have to be drilled.

The dials, switch, and variable resistors may now be mounted. Next place the panel against the baseboard in the position it will occupy (do not mount it yet), and mark the points where the terminals of the switch and variable resistors level up with the baseboard. Drill holes here through the baseboard for your leads. It would be difficult to drill these holes when the panel was mounted.

A coat or two of Ezywuk or shellac should be given the baseboard, and the components laid out in accordance with the back of panel wiring diagram shown. Do not mount the components until holes have been drilled near their terminals for under-base-

board leads. The variable condensers can then be attached to the dials, and the panel mounted to the baseboard by means of the three wood screws shown in the photograph.

Messrs. Metropolitan Electric Co. have made a screen specially for this receiver, but if the reader desires to make his own, he should drill the hole in his sheet of aluminium (mentioned in list of parts), in exactly the same manner as the window for the vernier dial was made. The diameter of the hole should be 2 inches, and $1\frac{1}{2}$ inch of the screen should be bent over in a vice, and hammered flat, in order that it may be mounted by means of wood screws to the baseboard. Aluminium is easy to work, and a half-round file will soon smooth up the rough corrugations made by the drill.

WIRING

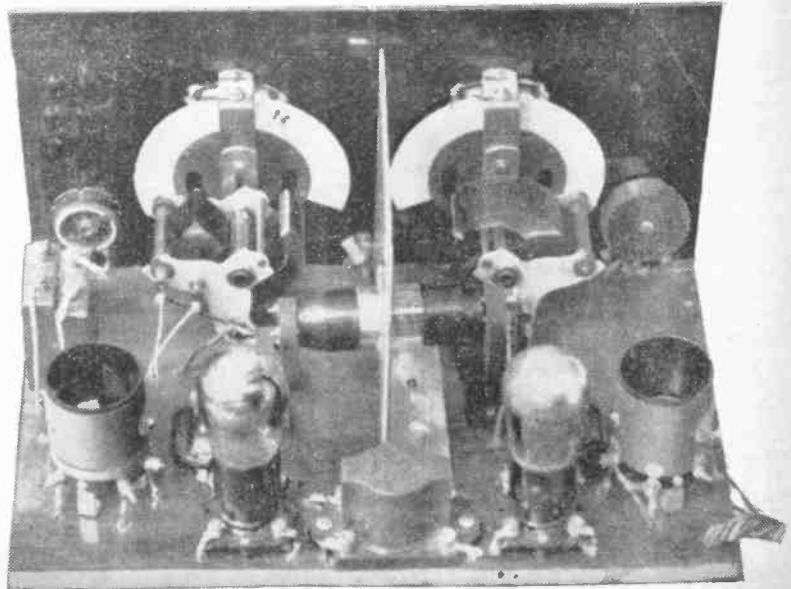
The wiring of the receiver is, of course, the most important subject of all, and for this reason the greatest of attention should be paid to instructions, particularly in this receiver, as a mistake can quite easily be made, owing to the similarity of the two compartments.

Remember to do all R.F. wiring above the baseboard, and to keep all leads as short as possible.

If desired, a hole can be drilled ($\frac{3}{4}$ inch diameter will be sufficient), through which battery cables may be run, or the leads may be taken (if the receiver is to be housed in a cabinet with the batteries) direct to their destination. All other than R.F. wiring should be taken from the component, through the hole drilled in the baseboard, underneath the wood, then up through the hole placed at its destination.

Commence by connecting the earth terminal (last turn) of L1, to the last turn (P) of L2, thence to one of the filament terminals of each valve socket, to one side of the battery switch, and thence underneath the baseboard to the negative terminal of the "A" battery, and to the positive terminal of the C battery. Return to the F terminal of the R.F. coil (L2), and take a lead from here to the rotor plates of C1 (R.F. condenser).

Now take a lead from the first turn of L2, (G) to the control grid of the R.F. valve,



BATTERY OPERATION MAKES SET IDEAL FOR COUNTRY USE

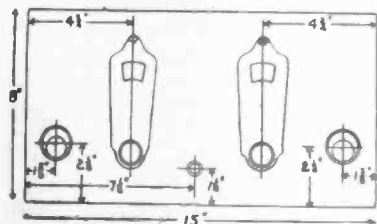
and to the stator plates of condenser C1. From the remaining filament terminal of the S.G. valve take a lead to one side of C3 (by-pass condenser, 1 mfd.), thence to one side of by-pass condenser (also 1 mfd.) C4, on to the remaining filament terminal of the detector and audio valve sockets, to one side of the filament resistance R4, and the other side of this resistance to the positive terminal of the filament battery.

Return now to the screen grid of V1 (R.F. valve), and connect it to the remaining side of by-pass condenser C3, and thence to B plus 80. Connect the plate of the screen grid valve to the P terminal of L3, and the B terminal of the same coil to B plus 135, which should also connect to the positive terminal of the speaker (that lead with a red line running through the insulation).

This completes the R.F. wiring. Proceed with the detector stage as follows:—

Connect the G terminal of the coil L4 to the stator plates of condenser C2, and thence to one side of the grid leak and condenser. The other side of these (they are placed in parallel) connect directly to the grid terminal of the detector valve socket (V2). From the F terminal of coil L4 carry a lead to the rotor plates of condenser C2, thence to A positive.

Next, take a wire from the plate of the detector valve, V2, to one of the terminals



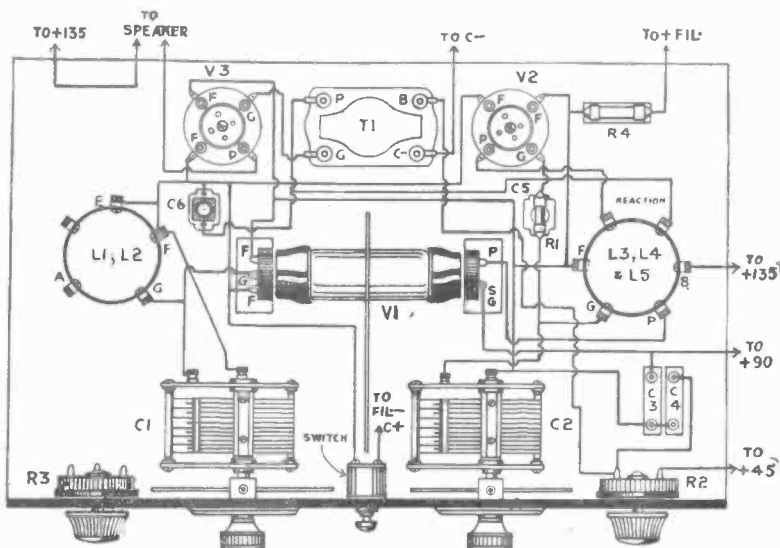
of the audio transformer, and also to one side of by-pass condenser C6 (.001 mfd.). The other side of this condenser should connect to A negative.

Next, take a wire from the plate of the detector valve, V2, to one of the terminals of L5, and the other terminal of this coil to the plate terminal of the audio transformer and also to one side of by-pass condenser C6 (.001 mfd.). Note: If, on testing, results seem poor, reverse these reaction coil connections.

The remaining terminal of condenser C6 should be connected to A negative.

Now from the B positive terminal of the audio transformer connect a lead to the remaining side of by-pass condenser C4 (1 mfd.), and also to the contact arm of variable resistance R2. From the other terminal of this reaction control, take a lead to B plus 45.

Turn attention now to the grid terminal of the transformer, and connect this to one end of the winding of R3 (volume control). The other end of this winding should be connected to the C negative terminal of the transformer, and thence to a tapping on the "C" battery (about 7 1/2 volts). From the contact arm of the potentiometer (R3) carry a lead to the grid terminal of the audio valve socket (V3), then connect the plate



terminal of the valve to the remaining side of the speaker or 'phones.

Only one more lead has to be made. Loosen one of the mounting screws which holds the valve screening partition to the baseboard, and underneath this screw place a soldering tag. A wire should be soldered to this and taken to the E terminal of L1.

OPERATION

Assuming the aerial has been attached to the A terminal of L1, and the earth wire to E of the same coil, and batteries have been connected as described in the wiring, carry a lead from "A" negative (filament supply) to "B" negative (plate supply).

Pull the filament switch outward, and set R2 at minimum resistance (as far to the right as it will go), and R3 should be treated likewise.

If set howls, gradually turn R2 anti-clockwise until this stops, then, keeping both dials moving, tune from 0 upwards. 2FC will be found at about 80 degrees. Adjust dials to give maximum volume, then turn R2 (reaction control) slightly clockwise, until utmost volume is obtained without distortion. Next, vary the screen grid voltage (B plus 80 or 90), until best results are obtainable. It will probably be necessary to adjust the reaction control each time an alteration is made to the S.G. voltage. Then try varying the grid bias.

When the receiver is functioning perfectly the volume can be decreased by turning control R3 in an anti-clockwise direction.

If no sound is heard, disconnect the lead from R3 to the grid of the transformer, and connect the grid of the valve directly to it. If set is then O.K. it will show that the volume control is connected wrongly. As a matter of fact, it is rather difficult to tell which terminal is the correct one without testing, but generally the contact arm is that terminal in the centre.

If at any time greater volume is desired, another stage of audio amplification can always be added, but generally speaking the

volume obtainable will be all that is desired for an average-sized room.

The apparatus used in this particular receiver includes: L1 to L5, Radiokes coil kit (special); T1, Philips audio transformer; C1, C2, Advance "Centralign" .0005 condensers; C3, C4, 1mfd. "T.C.C." fixed condensers; C5, .0015 mfd. Sangamo condenser; C6, .001 mfd. Sangamo condenser; R1, 2 megohm gridleak, Electrad; R2, 50,000 ohm variable resistor, Pilot; R3, 500,000 ohm Royalty potentiometer; R4, Amperite rated at .75 amperes; V1, Osram S625; V2, Osram DEL 610; V3, Osram DEP 610. In addition are required: Filament switch, two Pilot vernier dials, valve sockets, baseboard, panel, screen, etc.

Polish Amateurs

WE have received a batch of Polish Q.S.L. cards from Poland. These have been passed on to Colville Moore, who are distributing them to the various owners. With the cards we received a letter quaintly worded. An exact copy appears below:—

"Gentlemen,—Considering diverse wrong informations about our club and about our Q.S.L. Office, waiting on the entire country, we have the honor to warn you against similar cases. At the same time we request all Q.S.L. cards to polish (the small 'p' is theirs) hams may be directed exclusively through the Q.S.L. Office of L.K.K., whose original seal is shown by the copy beneath:—

VIA "L.K.K."

Lwow, Pol'nowskiego 6.
Poland.

"In case you are receiving any other information but from us, please each time direct it at once to our office, and ask for inquiry, we shall be glad to give you as soon and satisfactory as possible.

"Occasionally we give notice of the fact, that L.K.K., at present the only shortwave-organisation of general and representative character for Poland, joined I.A.R.U. September 30-th, 1928.

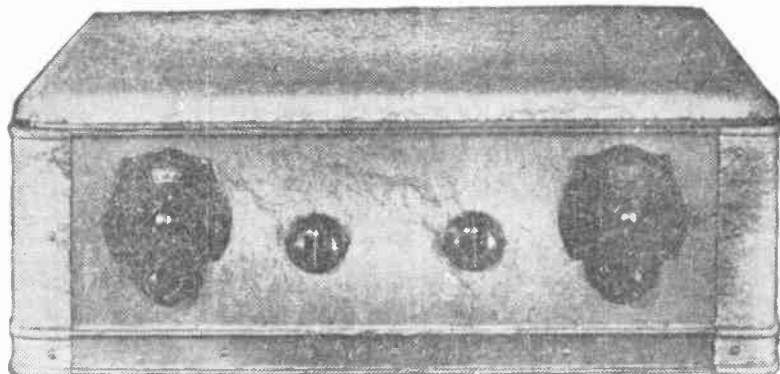
"We are ready for mutual services."

RADIOKES QUALITY COMPONENTS

are employed in the construction of most modern receivers—whether the set is designed for local or district reception. RADIOKES products are a necessity if maximum efficiency is your aim.

The D.C. Three Receiver described in this issue, as well as the famous D.C.3.33, specifies and employs Radiokes quality coils, shields, condensers, etc.

The Standard A.C.4 and the well-known A.C.3.33 Power-operated Sets insist on the employment of many Radiokes Quality Accessories—these are acknowledged as being of undisputed merit.



Radiokes Knock-down Steel Cabinet is specified for housing some of these excellent receivers, and is quite suitable for accommodating many other types of sets.

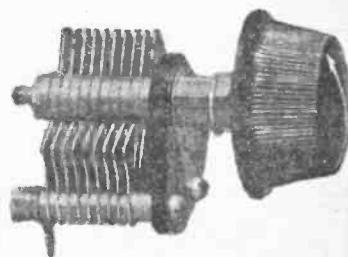
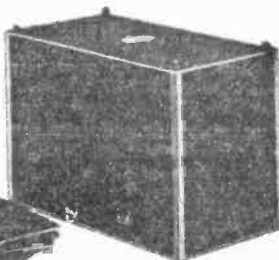
The modern vogue is for this bronze ripple finish metal cabinet, which will so easily blend with any scheme of room decoration.

This gives to your home-constructed set an appearance equal to a high-grade factory-built product—a permanent and durable cabinet and an external shielding which is so necessary in modern Radios.

PRICE FOR CABINET £2/2/6 each



Most receivers of 1929 use at least one of these excellent little R.F. chokes. PRICE, 8/6 each.



Radiokes Collapsible Box Shields are excellent for housing the various R.F. Stages and preventing interaction between various sections of the circuit.

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

Made in standard size, 6in. x 9in. x 5in., suitable for all usual wants.

PRICE 15/- each.

Radiokes Midgets are made in several sizes, sufficient to cover most ordinary requirements.

Ask your dealer to show you one of these little condensers, feel its velvety action, study the precision of its workmanship, and notice the high-grade finish. Radiokes thereafter will be your choice.

PRICES from 4/3 to 8/6 each.

Obtainable from your radio dealer or direct from

METROPOLITAN ELECTRIC CO., LTD.,

RADIOKES HOUSE, 126-130 SUSSEX ST., SYDNEY

Eliminating Inductive Interference

R.W.M. examines the interference problem and supplies some solutions

THE subject of inductive interference has been one which has engaged the earnest attention of experimenters for many years. The listening public, however, understand little of the inner details, and are aware only of the fact that it ruins good reception.

The writer, who has made special study of this subject, has noted how many radio papers say "Little can be done about it." If one's lip could turn up in the manner described by some novelists, then truly the writer's lip has turned up many times on reading such nonsense. Much has been done in these past few years, not only by experimenters, but also by manufacturers, and, as a result, there are many good receivers on the market which do not (in themselves) cause unwanted noises.

Since the advent of broadcasting in Australia, and since the more sensitive sets have met with the approval of the public, the interference problem has become correspondingly greater, and now that the all-electric set is making its bow, many owners say "The trouble is not in the set. It is outside interference."

Wherever it may be from, this interference must be cleared, and kept cleared, if we are to enjoy perfect reception. The public can do more to further this end than anyone else. There are certain types of electrical equipment on the market which cause more interference than all the equipment of the local electric light system, yet while the power lines carry this interference it is a condition over which the electrical engineers have no control.

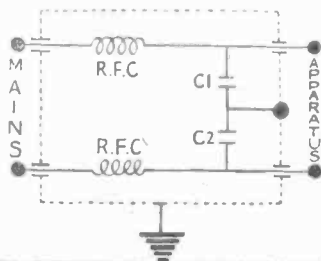
Sources of Interference

In most cases it is found that the source of interference is due to electrical apparatus owned by neighbors, such as coffee heaters, vacuum sweepers, dentist's drills, motor ignition, and so on, ad lib. This type of interference influences a very large area. Using a short-wave receiver, the writer, by actual experiment, has found that the spark of a motor-car can be heard for a radius of three-quarters of a mile! That doesn't sound much, but the motor-car is the source of one of the smallest troubles. As a matter of fact, a motor-bus, firing on all cylinders, can be heard for about five minutes as it travels along the street.

The public, of course, cannot demand that these sources of interference be removed, as they may be mechanically perfect, and are generally a source of revenue to their owners. Vibratory battery chargers are an example.

What is the answer, then? The public must co-operate. One cannot tell by looking at a certain piece of apparatus whether or no it will cause interference, but by purchasing apparatus from reliable dealers, and inquiring at the time if the apparatus will be a probable source of interference, or can be installed so as to cause little or no interference, the conditions now existing can be avoided. Also, where it is definitely known that interference is caused by certain apparatus, and it is impossible to eliminate that interference, operating the apparatus out of broadcasting hours will help still further.

The writer has had occasion to search for several sources of interference. He inserted a paragraph in the local paper to the effect that he was willing to make endeavor to track down sources of radio interference, and, if possible, to eliminate that interference. No fee would be required. He was overwhelmed with letters, and the location of the writers proved that in many cases interference was spread over a very great area from one small piece of apparatus. A loop



INTERFERENCE FILTER

receiver was used to trace down the source of trouble.

Six letters were received from people living in one boarding-house.

Curiously enough, not one person of those six knew that the others had written. The loop receiver showed that a constant 60-cycle discharge practically ruined reception in no fewer than 15 apartments.

The trouble was eventually traced to a small indicator lamp, with three flasher buttons (three colored lights). It was these three flasher buttons that caused the 60-cycle discharge. Each time a lamp went on, interference was caused, and the same trouble occurred when a lamp went out. The owner of this lamp had no radio set, and was not aware of the interference it was causing his neighbors. A filter of simple design (which will be explained later) was installed, and the interference killed entirely. These flasher buttons are in common use at the top of petrol pumps, coloured lights in shop windows, barbers' signs, and novelty advertising signs, etc. If the reader is experiencing similar trouble, and does not desire to install a filter, he can be rid of the trouble by removing the flasher button and burning the light steadily.

Some types of electric heating pads which are apparently so comfortably silent, cause electrical interference which spoils radio reception over a very large area, and is very hard to locate, due to the intermittent nature of the interference. This is caused by the opening and closing of the thermostats.

Two cheap electric fans spoiled reception over approximately an area of one square mile at Mosman. The filter to be described here was installed in each case, with the result that the interference was entirely eliminated.

Loose Connections

Another common cause of interference is the loose connections in electric light switches, electric irons, vacuum cleaners, curling irons, floor lamps, egg heaters—in fact, any loose connection in electrical systems will cause interference. The remedy is to keep all contacts tight and clean, so that there will be no arc. When this arc occurs, it is simply following out the principle of the old-time spark transmitter, which (note carefully) will be abolished before 1930, at the command of the Washington Conference Committee, owing to the interference caused.

The market to-day is flooded with types of vibratory battery chargers which cause interference. Chargers of the dry-plate type, or valve-rectifying type, should be purchased where possible, as these do not cause much interference, and, as a rule, are very silent in operation.

Where interference is definitely determined to be caused by telephone, tramway power line, or electric light companies, report the case to the particular company. One is liable to a heavy fine for interfering with any of this wiring, and the electrical engineers of each company or concern are usually able to assist in the elimination of the trouble.

If you own a piece of electrical apparatus that causes interference, it does not mean that you must sell it and purchase something new. By installing a filter of a type designed to carry the load, and properly earthing the conduit or lead cable, you will eliminate the interference and in no way impair the operation of the apparatus. In fact, the filter protects it.

As a rule, all conduit and lead-covered cables are earthed. That lip of mine curves derisively, however, when I note some of the contacts. As a rule, this consists of a metal clamp (underneath which is a piece of 7/22 connected to the conduit), attached to a rusty pipe, which sometimes is not even efficiently earthed itself. The remedy is to clean contacts, and, if necessary, attach the earth clip to a tap or water pipe that is well earthed.

For those who live in thoroughfares where the trams cause interference, the trouble can be lessened by running the aerial at right angles to the tram overhead cable. Keep the aerial as far away from this overhead line as possible, and do not make your aerial too long. Instead of using an earth connection for the receiver, use a counter-poise.

Don't Blame the Transformer

Just a word about the most common complaint which is perhaps the most unfounded of all. I have reference to the term "leaky power transformer." Judging from my own experience, and that of others, I do not believe there is any such thing as a "leaky transformer," as meant by some people. A knowledge of transformers confirms this. A transformer will not leak anything but oil. It will burn out first. Yet many calls come to the harassed lighting engineers that "There is a leaky transformer on the pole outside my house; please remove or fix it!"

For the benefit of those who are mechanically inclined, and wish to construct a filter system, a schematic diagram and data on construction are here furnished.

The radio-frequency choke coils are wound on 2½ inch diameter bakelite tubing. The windings do not have to be bank or fancy wound—just plain layer wound. The gauge of wire used is determined by the current to be carried. If this is 2½ amperes, No. 16 d.c.c. wire should be used, and the coil should hold 275 turns.

If the current is 5 amperes, use No. 14 d.c.c. wire, with the same number of turns. Filter condensers of either one or two mfd. capacity (C1 and C2), capable of standing twice the mains voltage, should be used. The whole of the apparatus should be installed in an aluminium shield, which should be connected to earth. A Radiokes box shield was found to be O.K., and it looks very neat. The filter condensers should be connected across the R.F. chokes, with the mid-tap earthed, as shown in the circuit diagram.

It is hoped that this may help impress upon your minds the necessity of co-operation, and help those who are having their reception spoiled by avoidable interference.

Dont leave it to luck

TRANSFORMERS
CONDENSERS
VERNIER DIALS
A.C. PRODUCTS



RHEOSTATS
CHARGERS
POWER UNITS
ELIMINATORS
HEADPHONES
SOCKETS

DEMAND

— EMMCO'S —

GUARANTEED RADIO PRODUCTS



Mello Drum Control and Chassis
Mello Vernier Drum Control, most solidly constructed and capable of carrying five or more condensers on 1/4-inch shaft. Escutcheon finished in Oxy Silver or Oxy Copper. Specially adapted for screen grid valves.
PRICE, Illuminated 25/-
PRICE, Illuminated 24/-
Price, with 3 condensers mounted on chassis, illuminated 24/4/-
Price, with 4 condensers mounted on chassis, illuminated 25/5/-
Price, with 5 condensers mounted on chassis, illuminated 26/6/-
All made in two capacities, .0005 and .00085.



PURATONE

Emmco Audio Transformers

Pep Punch, Ratios 2-1, 3 1/4-1, 5-1	10/6
Midget, Ratios 2-1, 3 1/4-1, 5-1	13/9
Puratone, Ratios 2-1, 3 1/4-1, 5-1	15/6
Metal Case, Ratios 2-1, 3 1/4-1, 5-1, 7 1/4-1	17/6
Cavaller, Ratios 2-1, 3 1/4-1, 5-1	21/-
Golden Voice, 3 Stages	42/6



MELLO METAL

Emmco Vernier Dials

Mello Metal, Oxy Copper or Silver	9/6
Same, Illuminated	12/6
De Luxe Bakelite	9/6
Same, Illuminated	13/6
Standard Bakelite, Black or Mahogany	7/6
Velmo Dial	6/-
Baby Velmo	5/-
Back Panel Dial	5/6
Knobs, Black or Mahogany	1/-

Emmco Eliminators

ABC Eliminator for .06 Valves	£15/15/-
Do., for .25 Valves	£19/19/-
Super Power B Eliminator, for sets up to ten valves	£12/12/-
MAXUM "B" Eliminator, for sets up to seven valves	£8/15/-
A Socket Power Supply. Replaces the "A" Battery	£12/12/-



MAXUM "B"

Emmco A.C. Transformers

An A.C. or Power Pack Transformer made up in attractive metal case.
Type F225, for Radiotron and Mullard Valves, 3 pairs Tappings. PRICE, 35/-
Type FA15, for Arceturus Valves, 15 volt Tappings. PRICE, 30/-
Type FP4, for Philips Valves, 2 pair Tappings. PRICE, 30/-
Type F0538, for Osram Valves. PRICE, 35/-



Made by ELECTRICITY METER MFG. Co., Ltd.,

Sole Factory Representatives:

MANUFACTURERS PRODUCTS PTY., LTD.,

SYDNEY, 137-139 CLARENCE STREET.

'Phone, BW1328.

MELBOURNE, Sugden Place.

'Phone, F2355.

RADIO Proficiency

This week (fifth article) we treat the charging and care of accumulators, and deal with such subjects as sulphation, charging rate, methods of charging, resistance lamps, faulty accumulators, gassing, back-pressure E.M.F., life of an accumulator, and evaporation.

ACCUMULATORS depend entirely upon the internal chemical action for the current and voltage available. When the cell has been in use for some time the emperage and voltage are decreased, and the resistance is increased.

Before the cell can be used again it must be charged. This is done by means of D.C. The positive terminal of the D.C. supply is connected through suitable resistances to the positive electrode of the accumulator, and the negative terminal of the mains is connected to the negative electrode of the accumulator. The makers of an accumulator issue directions which must be carefully followed if the battery is to be maintained in a state of efficiency. When the accumulator is new it is general practice to give a long, slow charge. In spite of this, the accumulator will usually give short service until it has been charged and discharged several times.

When the electrolyte is poured into the cells it will fall in specific gravity, and will continue to do so for the first 12 or 18 hours. The battery should then be placed on charge. During this charge the specific gravity will gradually rise over a period of about five hours. During this time gas is given off freely from all plates. This gassing is inflammable, and no naked lights should be brought near a charging accumulator. The tops of the accumulators should be left off in order that the gas may escape freely. The gassing will continue for some time after charging, and the bubbles of gas which rise in the electrolyte will often cause the top of the accumulator to become wet with electrolyte. This should always be dried off, as it constitutes a "short." At the end of the charge the voltage of any one cell will be between 2.5-2.7 volts, but this will quickly fall to 2.2 volts, or a little lower.

The battery should not be left unworked for more than a week or so without recharging.

With large cells, in which a hydrometer can be inserted, the specific gravity of the acid is the most reliable guide. With small cells the acid should be tested occasionally by transferring some acid with a syringe to a narrow tube, and using a hydrometer float in the latter. Hydrometers can be bought for about 3/.

During the accumulator's first week of use it should be given plenty of work, and extra charging.

After charging the general appearance of the plates will provide evidence of the full charge. The positive plates will be a chocolate brown, and the negative plates a slate grey. The voltage should be between 2.5 and 2.7 volts per cell; the plates should be gassing freely; and the specific gravity of the electrolyte should be about 1.220.

The voltage should never be allowed to fall below 1.85, and the specific gravity below 1.170. If this is done, sulphate will form on each plate, and when the plates are totally covered the voltage will be zero, because this sulphating stops the action of the electrolyte on the elements.

For this reason a cell should not be left for any lengthy period in a discharged state.

Actually the charging process consists of removing the sulphate from each plate. By the action of the charging source acid is restored to the electrolyte, thus raising the specific gravity. When the sulphate has been entirely removed from the plates the hydrogen and oxygen gases have no more work to do, so they rise in bubbles to the surface of the electrolyte and escape. The cells should be allowed to gas until the voltage is equal to that mentioned above, i.e., 2.5-2.7 volts per cell.

If a cell is to be left idle for some time it should be given a full charge, as the plates are less liable to be attacked by the acid when charged. If the period is to be a long one the accumulator should be left in charge of some battery service station, who will see that the battery is kept in good order for a small fee.

The charge in ampere hours should generally be about 10 per cent. more than the discharge in ampere hours. Thus if ten 201A valves (each draw 20 amps) are used on a receiver for one hour, the total discharge will be 25 x 10. (To multiply 25 by 10 we merely move the decimal point one place to the right.) The total consumption in ampere hours will then be 2.5. This is the charging rate in ampere hours. The charging rate in ampere hours will be 2.5 plus 10 per cent. or 2.5. Ten per cent. of 2.5 is .25 (to divide by ten more the decimal point one place to the left), so that the charging rate in A.H. will be 2.5, plus .25, which equals 2.75 amps.

This figure, of course, will vary. The correct charging rate, consistent with good care of the battery, is always stated by the maker. We will consider how this charging current is obtained.

Suppose two small accumulators, each giving 1.9 volts, and with an internal resistance of .1 ohm, are to be charged by a current of four amps available from 220 volt mains through leads which have a resistance of .1 ohm.

If they were connected directly across the mains an enormous current would flow. The pressure of the mains has to overcome the back pressure of the cells (which have to be connected in series)—i.e., 3.8 volts, and the resistance of the cells and leads (.3 ohms altogether), i.e., two cells with internal resistance each of .1 ohm, and leads resistance .1 ohm. Thus 220-3.8 volts equals 216.2 volts, are available to drive the current through .3 ohm. By Ohm's Law the current will be:—

$$\frac{216.2}{.3} \text{ equals } 721 \text{ amperes.}$$

which would burn up the cell.

In order that just the right amount of current shall now, some form of resistance must be included in the circuit. The form of resistance generally used is the lamp resistance. This consists of a number of electric light globes (usually of the carbon filament type), arranged in parallel, but connected in series with the battery and the mains.

The more lamps in parallel the greater will be the current that will flow through the circuit (those who performed the rectifier

experiment with the mains, described in "Proving Radio," will appreciate this). The reason is that the lamps are in parallel, and resistance in parallel reduces the total resistance of the circuit. Naturally we wish to use as few lamps as possible, so that we choose high candle-power carbon lamps.

Suppose that the 220 volt lamps available for our purpose are two 50 c.p., and a number of 16 c.p. lamps of the carbon filament type.

$$\begin{aligned} 50 \text{ c.p. (4 watts per c.p.) take } 200 \text{ watts:—} \\ & \frac{200}{220} \text{ equals } .9 \text{ amps.} \\ 16 \text{ c.p. (4 watts per c.p.) take } 64 \text{ watts:—} \\ & \frac{64}{220} \text{ equals } .3 \text{ amps} \end{aligned}$$

Thus two 50 c.p. lamps (1.8 amp.) and seven 16 c.p. (2.1 amp.) lamps in parallel would allow a current of 1.8 plus 2.1 equals 3.9 amps to flow.

If a number of 50 c.p. lamps were available, four of these (3.6 amp.) and one 16 c.p. lamp (.3 amp.) would give 3.9 amperes. This would be preferable, as fewer lamps are required. When only a few cells in series are being charged, their back pressure is negligible in comparison with the pressure of the mains. The lamps in the circuit are taking practically their "full brilliancy" current. High potential batteries (50 volts and upwards) have naturally a greater back-pressure, and the lamps used do not get the full pressure of the mains.

For example, a 150 volt battery used in a receiver requires, for charging, a 2 1/2 c.p. 220 volt carbon lamp in series. Normally this lamp would take about .05 amps, but in this case the pressure applied would be 220—150 equals 70 volts, so that the lamp would not take as much as .05 amps, and would not burn at full brilliancy.

It should be understood that though reference is made here to use of D.C. mains for battery charging, this method is not always used. D.C. mains are not always available, but D.C. is necessary, so that where A.C. is installed (and there are more A.C. installations than D.C.) a transformer is used to step down the voltage, and a rectifier makes the output D.C. In still other cases a D.C. generator is used.

The average life of an accumulator is not much more than 18 months. Often it will be found that the battery will not hold its charge long before this period is up. This is due to the gradual disintegration of the active material on the plates, which settles at the bottom of the cell and short-circuits the plates. For this reason the accumulator should never be shaken or knocked more than can possibly be helped, and the cell should never be charged too much or at a too high rate, as this causes the plates to heat up, expand and buckle, causing the active mixture to fall to the bottom of the cell.

CORRECTION

In "Radio Proficiency" No. 3, an obvious error appeared. It was stated that the total resistance of the lamps would be 200 over .09, equals 2.5 ohms. This should, of course, read "The total resistance of the lamps would be 500 over 200, equals 2.5 ohms."


Quality Parts at Better Prices

W.R.C.
3 GANG
CONDENSERS
15/-

ELECTRON AERIAL WIRE
2/9 Now 2/3
HOOSICK VERNIER DIALS
6/6 Now 4/6

W.R.C.
3 PLATE MIDGET
CONDENSERS
9d

**HOOSICK
U.X. SOCKETS**
Fixed 1/3
Cushion 2/6

PILOT  **No. 350**
RESISTOGRADS
Special at **4/6**

FILTER CONDENSERS
1000-volt test.
4 mfd. 7/6
2 mfd. 5/6
1 mfd. 3/9
.1 mfd. 2/9



ALL PILOT PARTS STOCKED

VARIABLE CONDENSERS
FIXED CONDENSERS
AUDIO TRANSFORMERS
NEUTRALISING CONDENSERS
MIDGET CONDENSERS
VERNIER DIALS
RHEOSTATS

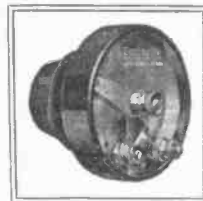


ELIMINATOR TRANSFORMERS
ELIMINATOR 30 HENRY CHOKES
A.C. VALVE SOCKETS (U.Y.)
"B" RESISTANCES
"C" RESISTANCES

FIXED CONDENSERS

Compact .00025 Cond. 4/9
Philips 4-volt. Valves 4/6

From 1/-



Centralab Radiohm
6/6

For Ease of Reaction Control.

Pollock R.F. Chokes 3/9
Pollock Reinartz Coils 3/9

Watch for
the Rola Dynamic
Speakers

For Purity
of Tone
Use Rola

UNITED DISTRIBUTORS

151 CASTLEREAGH STREET, SYDNEY
ALSO AT MELBOURNE, BRISBANE, WELLINGTON, N.Z.

CURVES AHEAD

The Experimenters' Department of Technical Progress
 Conducted by ROSS A. HULL M.I.R.E.



What Happens During Modulation?

MR. PETER H. ADAMS, VK2JX, of Lindfield, brings up problems much discussed of late in various technical journals, in connection with the theory of side-bands on a modulated carrier. He says, in part, "Although I have read many articles which allude to this theory, I have yet to see one in which the theory itself is explained. In the first place I had always assumed that it was the amplitude only of the radio frequency current that was varied in the process of modulation. And further, since the better broadcasting stations of the world are crystal controlled I fail to see how the frequency of the radio frequency current can be made to vary, even if the tendency of the modulation is to do so."

"Personally I am not inclined to accept the theory at all, but as it seems to be sponsored by many American engineers there must be something in it. I should like very much to have some views on the subject."

We agree with Mr. Adams that it is very difficult to form a picture of the carrier and the side-band frequencies from a physical standpoint. We would state, however, that there is no doubt whatever concerning the creation of side-bands during modulation—the fact having been demonstrated mathematically again and again in the technical journals. Then, their existence is made rather obvious, from a practical viewpoint, by the fact that in the equipment of the trans-Atlantic radiotelephone link not only is the carrier frequency eliminated before it reaches the transmitting aerial, but half of the side-bands are deleted by the use of straightforward band-pass filters.

The chief difficulty is in arriving at a satisfactory mental conception and in deciding whether there exists the carrier frequency together with a group of separate side-band frequencies or merely a single carrier wave, the amplitude of which is not only varied at the carrier frequency but also at the modulation frequencies. Things are complicated quite a lot by the knowledge of the fact (readily verified in practice) that if one doubles the carrier frequency, or listens to the second harmonic, the frequency of the modulation is not doubled, though the percentage of modulation is.

Possibly the simplest way to attempt an explanation of the character of the modulated carrier is to draw an analogy to the output of, say, a violin on which a single note is being played. The fundamental frequency being produced could be thought of as the carrier, while the harmonic frequencies could be thought of as the side-band frequencies of the radiotelephone transmitter. Of course, the thing is a very crude analogy.

Should the output of the violin be photographed with the aid of an oscillograph it would appear as a thin line in the general form of a wave of the frequency of the fundamental. However, super-imposed on this main wave would be the harmonic frequencies, appearing as irregularities breaking up the smoothness of the wave form of the fundamental. If we send electrical impulses corresponding to the existing frequencies through a good amplifier, they will all be reproduced in the speaker. However, it is possible to imagine a highly selective audio

frequency amplifier which would respond only to one of the harmonics or only to the fundamental frequency. In other words though all the frequencies can be seen together by the oscillograph (which is designed to have a broad "tuning" or a very flat frequency characteristic) they can, nevertheless, be abstracted or separated from each other. In the audio amplifier for broadcast reception the aim is to avoid selectivity, or to attain a broad characteristic, in order that it will respond not only to the fundamental frequency (the "carrier"), but also to all the harmonics (the "side-bands"). In the radio frequency amplifier the very same thing holds good. The aim is to provide a high degree of selectivity, but to retain sufficiently broad tuning to permit the amplifier to respond not only to the carrier frequency, but also to the side-band frequencies. Of course, in the output of the broadcasting station the side-band frequencies are extremely low in comparison with the carrier, but even so the "breadthness" of tuning necessary in the radio amplifier can be compared with that in the audio amplifier.

The same thing holds good in the case of the transmitter. The circuits of the transmitter must be broad enough in tuning to pass not only the carrier, but the side-band frequencies, and in a transmitter in which the modulated valve is succeeded by many radio frequency amplifiers it is actually possible for the side-band frequencies to be cut off on account of the selectivity of the tuned circuits. One side-light on this point is that the transmitters used for television work—when the side-band frequencies may run far beyond 10,000 cycles—resistance coupling is used between the radio frequency amplifiers in the transmitter in order to secure the necessary broad tuning.

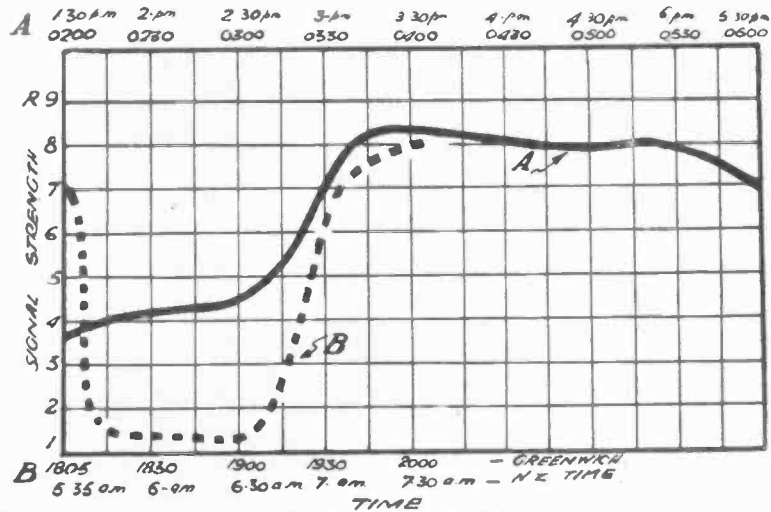
We have always considered the business of trying to visualise the transmitter output as a particularly interesting one. We would certainly welcome any further comment or discussion.

Improved Reporting

THE typical experimenter's report of signals received is couched in such terms as, "Your signals were QSA," or "The speech and music were very strong." Rarely does one come across a report which actually contains detailed and carefully-made observations arranged in such a manner as to constitute data of real value. Reports of this nature are so rare, indeed, that we are printing details of the only example we have run across in years as an object lesson to those experimenters whose interest is the logging and observing of signals from great distances.

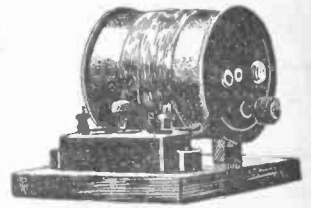
The reports in question apparently were planned by the experimenter sending them to supplant the ordinary "QSL" card. For the reporting of short-wave broadcast signals, however, they represent such a distinct advance over the "QSL" card that they are really no longer in the same category. Each report is on a letter-size mimeoed sheet, on which is printed the location of the receiving station, details of the equipment, a blank graph of signal strength against time, together with spaces for remarks on the quality of modulation, the intelligibility, interference, and the nature of fading. On the completed report the curve showing the variation of signal strength is, of course, filled in, as indicated on the tracings of some actual curves reproduced on this page.

The experimenter responsible for the reports which happened to come on to our desk is Mr. F. W. Sellens, of Northland, Wellington, N.Z. They were the result of observations on the Phillips station, PCJ. We don't know Mr. Sellens, but we do think highly of his method of reporting. We recommend it highly to any experimenters doing the same sort of observation work.

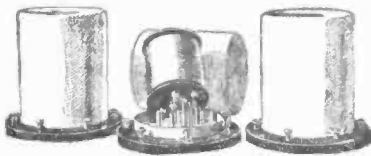


How a New Zealand ham reported on PCJ.

CUT OUT INTERFERENCE WITH THIS "LEWCOS" WAVE TRAP



"LEWCOS" WAVE TRAP
PRICE 22/6



"LEWCOS" SCREENED COIL UNITS

Originally designed for incorporation in the famous solodyne circuit, which was developed in the "Lewcos" Laboratories, the "Lewcos" Screened Coil Units are the most suitable for inclusion in the modern types of A.C. operated receivers. They are wound with Litz wire, thus reducing high frequency resistance to a minimum. The units are made in a variety of types, suitable for any circuit, and may be used as a complete unit, or may be purchased separately.

Price £4
Complete

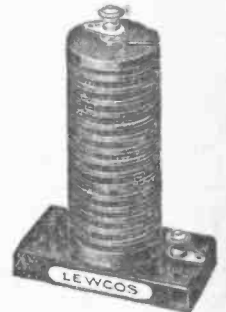
OTHER "LEWCOS" PRODUCTS

"LEWCOS" SHORT WAVE KIT.

Price 15/-
Base 3/8 extra

There is no longer any need to put up with interference in your broadcast reception. The "Lewcos" Wave Trap is specially designed to overcome this annoyance, and is used with utmost success by many broadcast listeners.

The "Lewcos" Wave Trap is the most efficient instrument yet designed to overcome the ever-present problems of interference in broadcast reception. It is easily fitted, being simply placed in the circuit between the aerial and the aerial terminal on the receiver. Its operation is extremely simple, a small adjustment to the variable condenser being all that is required to effect the elimination of the unwanted station. It is ruggedly made, and its efficiency has been proved by many, who have expressed by letter their entire satisfaction with its performance.



HIGH FREQUENCY CHOKE

The ideal job for short-wave sets. Designed to clear up reception and to prevent instability of the audio amplifier. There is no howling with the "LEWCOS" HIGH FREQUENCY CHOKE. Particularly recommended for use with screened grid receivers. May be fitted easily to your present broadcast receiver.

Price 12/6

"LEWCOS" STANDARD 6-PIN COILS AND TRANSFORMERS.

Price 17/8
Standard 6-pin Base .. 3/8

"LEWCOS" WINDING WIRES—All Gauges.

"LEWCOS" FRAME AERIAL WIRE.

Made of Copper Strand.



BRITISH & BETTER

Obtainable all good Radio Dealers.

THE LIVERPOOL ELECTRIC CABLE CO., LTD.,

IN CONJUNCTION WITH THEIR ASSOCIATED COMPANY.

LONDON ELECTRIC WIRE AND SMITHS, LTD.,

LEWCOS HOUSE, 233 CLARENCE STREET, SYDNEY.

Telephones: M 3821, MA 1966.

Building An INDOOR ENDURANCE TRACTOR

Here is another 'plane to build
—the best and largest of the
indoor models for racing.

HERE is the indoor endurance 'plane, with its 19-inch wing, its big propeller, and its light, strong construction. It is your Baby R.O.G. on a larger scale, and you will find it is ever so much easier to build.

The tools you'll need are a pair of round-nosed pliers, a sharp knife, and a small block plane. In addition, you'll want a sheet of fine sandpaper.

First of all, study your drawings. They really contain all the information you need to construct the 'plane. The text merely supplements the drawings. Remember, as you work, that this is a contest model, and that you're striving for as light construction as you can get, consistent with strength.

Start with the motor stick, shown in Fig. II. Sandpaper a 15-inch strip down to $\frac{1}{4}$ by $\frac{1}{4}$ -inch. If the motor stick is perfectly made, it may be sandpapered down slightly smaller than that without danger of its cracking under the strain of the rubber motor. Taper off the motor stick slightly at each end to save weight. This won't reduce the strength of the stick.

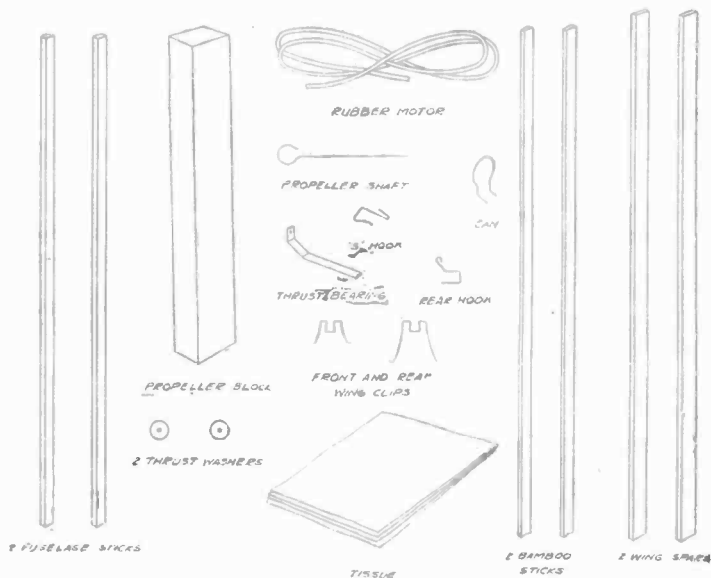
The thrust bearing, shown on the front end of the motor stick (and in the drawing of the kit), is $\frac{3}{4}$ -inch long, drilled with a No. 72 drill, and bent as shown in Fig. II (and in the kit drawing). If you haven't a drill, you can punch the hole with a phonograph needle. This piece and other metal parts are supplied in the kit. Glue and bind the thrust bearing to the front end of the motor stick with a drop of aero glue.

Your next step is to bend the rear hook, shown at the left end of Fig. II, and fasten it to the rear end of the motor stick. The hook should be just high enough off the stick so that the rubber motor will not rub in unwinding. (All these metal parts are shown in detail in the kit drawing.)

Remember this: If your thrust bearing and rear hook are too high, the stick will bend, and perhaps break when you wind your motor. If they are too low, the motor will rub. Strike a happy medium through experiment.

Bend the "can," shown in Fig. II, so that it has a hole $\frac{1}{4}$ -inch in diameter, and glue it to the centre of the motor stick. This can will act just like the eyelet of a fishing rod—to prevent the stick from breaking. The rubber motor will pass through it.

You're ready, now, to bend the frame of the fin from a strip of 1-32 by 1-16-inch bamboo. The frame should be approximately the same shape as the drawing, Fig. II., with the base and the height just three inches. Bend the bamboo over an open flame, taking care not to char it. Bamboo bends easily when it reaches the right temperature, and re-



All the parts you will need for the construction of your Indoor Tractor.

tains its bent shape when it cools. Notice, particularly, that the base of the fin extends $\frac{3}{4}$ -inch beyond the triangular frame. This part goes into a groove under the motor stick, and is glued there.

Before you glue the frame to the stick, you'll want to split it down to size. The piece you have now is large enough for several frames. With your knife, carefully split off a frame 1-64-inch wide and 1-32-inch thick. Better split off a slightly larger piece, and work it down by taking off splinters from the side, and then sandpapering.

Now cut your groove in the bottom of the motor stick, and glue the projecting base of the fin into it. Be sure that your fin is not at an angle when it dries.

The stabiliser, shown in the drawing, is a four-sided figure, formed by stretching a thread from the base of the fin around the ends of a bamboo cross-rib and back to the motor stick, where it is fastened so that the thread comes to the bottom of the motor stick—not to the top! Your bamboo cross-rib is just 1-32-inch square, and 6in. long. Glue it in a groove that you can cut in the bottom of the motor stick, as the drawing shows. Your next job is to put on the thread outline, which isn't at all hard. Be sure to have the thread taut enough so that there's no slack. At the front, where the thread is tied to the motor stick, paint the winding with aeroglué to stick the thread to the wood. Paint all the other points in the same manner.

Now paint the whole outline, as well as the fin and motor stick, with celloero. This strengthens the stick and the frame. Next, cut out your tissue for the fin and stabiliser. Cut each piece about $\frac{1}{4}$ -inch longer than the finished dimension, to allow for trimming. Then give the frame of the fin another coat of celloero and lay the tissue flat on it. After the celloero has dried, you can trim the tissue with a safety razor blade.

You cover the frame of the stabiliser—on the under side—in the same fashion. Don't fold the tissue over the thread! Just allow about 1-32-inch of paper to extend beyond the thread on all sides.

Now go to work on the wing, shown in Fig. III. First, finish a strip to exactly 1-16 by $\frac{1}{4}$ by 16in. This piece, when split in two, will be your two wing spars. Notice, in Fig. III., that the wing isn't flat, but is bent to form a very flat V. This angle is called

the dihedral angle. Its purpose is to give stability to the ship. If your wing were flat you wouldn't be able to fly your 'plane.

Bend your strip in the middle by holding the centre over the spout of a kettle. Check the angle by holding one side flat on the table and measuring the height of the other end from the surface of the table. It should be just about $\frac{1}{16}$ in. high. After the piece is bent, split it down the middle to form your two wing spars, and finish each with sandpaper to 3-32-inch width.

Next, study your bamboo wing tips in Fig. III. Both tips are bent from a single strip of bamboo, 1-32 by about $\frac{1}{4}$ by 6in. The curve should be graceful, and should fit evenly into the ends of the spars, as the drawing shows. Notice that you half-lap or half-cut away the ends of the spars to receive the tips.

When your piece of bamboo is bent, split it down the middle and finish each tip to 1-64 by 1-32. Glue them in place.

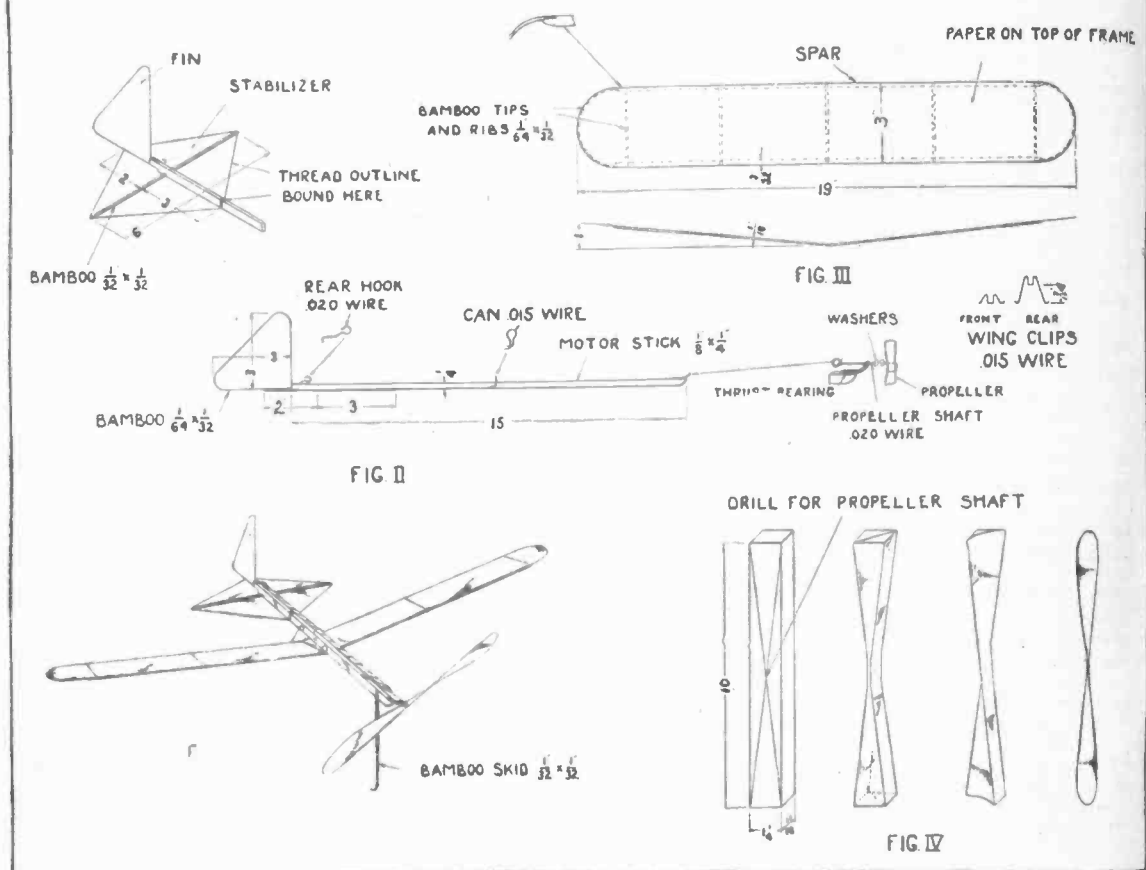
Now finish your five bamboo ribs and glue them in place according to the drawing.

The wing clips must be bent just right. Notice their shape in the drawing. Note that one is 7-16-inch higher than the other. The higher one is the rear clip, and serves to hold the wing at an angle to the motor stick. If you didn't have this angle, the 'plane might not rise.

The groove in the top of each clip fits over the motor stick tightly enough to hold the wing on the stick. Bend your clips carefully. They're important. If they don't hold the wing squarely on the stick, your 'plane will be an erratic performer. When you're satisfied that you have two well-made clips, glue them to the centre of the wing spars—the high clip at the rear of the wings, and the other at the front.

The wing is now ready to be covered. Cut a piece of celloero tissue about $\frac{1}{4}$ -inch larger than the frame of the wing, except at the centre, where you should cut the paper just three inches wide so that it will fit between the wing clips. Coat the centre rib of the frame with celloero solution, and place the paper in position upon it. When it has dried, continue the job, painting each section of the frame from the centre out and then covering, a section at a time. Don't stretch the paper from front to rear, but always from the centre towards the tip. And don't try to stretch the paper too tightly.

INDOOR ENDURANCE TRACTOR



Follow the diagrams above when building.

Trim the paper close to the edge and paint with cellaero to stick the rough edges to the frame.

Fig. IV. shows you the steps to follow in carving your propeller. Finish your block exactly to size—14 by 11-16 by 10in. long Sandpaper the block just to these dimensions Then draw diagonals on the 14 by 10in. face of the block and stick a pin through the intersection of the diagonals. This hole will be for your propeller shaft.

Now for the carving. There's no need to go wrong on carving the propeller. (Aviators call it "prop.") The drawing shows your first step in carving. Just take out all wood, down to the diagonals, being sure to leave about 1in. at the hub.

Next, draw a diagonal at the end of the block, as the drawing indicates. At the other end of the block draw another diagonal between the other two corners. Thus, the diagonal at one end, will run at right angles to the diagonal at the other end.

Now lay your block on the table as it is in the second stage, and decide just where you must carve next. Then carve the block to the third stage. You're really carving to those end diagonals you've just drawn.

At this point, you'll want to put a slight dish in the surface of each blade. This dish, or curve, in the blade is called the "camber," and runs the length of the blade. You get the camber by working each blade with sandpaper. Run the camber all the way from the

tip of each blade to the hub. Don't make it too pronounced.

Your final step is to carve away the other side of each blade. When most of the wood is carved away, finish with sandpaper until you can see light through the wood. Most beginners make their propellers much too thick. The blades shouldn't be more than 1-32-inch thick along the centre, and not more an 1-64 at the tips and edges. The hub shouldn't be more than 5-64 thick.

The propeller shaft is shown in the drawing. Bend it from a piece of .020 music wire about two inches long. Bend the hook at the one end. Then pass the other end through the propeller, bend the end into a square U, shove this U back into the wood, and glue the shaft in place.

Now put a couple of small washers, or a small bead, on the shaft to prevent friction between the propeller and the thrust bearing. Pass the hook of the propeller through the hole in the thrust bearing on the end of the motor stick. (This may seem hard to do, but it isn't.)

Your rubber motor is a strand of 1in. flat rubber, 30 inches long. Tie the ends in a square knot, so that you'll have a double strand 15 inches long. Hook one end over the propeller shaft, run the motor through the hole in the knot—over the rear hook.

Split off a skid of bamboo, and glue it to the front end of the motor stick. Figure 1

shows you the skid. It should be long enough to hold the front end of your 'plane at least 5 1/2 inches from the ground.

Now for the fun. Put your wing on the motor stick. Check over your wing and tail surfaces to see that they are symmetrical, balanced. Then let the ship glide to the floor. If it tries to climb and then settle back, your wing is too far forward on the stick. If it shoots straight for the floor, set your wing forward.

Wind up the motor until your rubber shows a double row of knots. Then release your 'plane from your hand. If you've worked with reasonable care and accuracy, the ship will glide away on a steady, smooth flight that will surprise you. Perhaps you'll wind up your motor by turning your propeller in the wrong direction. In that case no harm done. Your plane will try, ineffectually, to fly backward. Wind it up again, correctly.

Select a large room for your trial flight. This is a large ship, and turns in a large circle. You can, though, reduce the size of the circle by bending the end of the fin. You do this by steaming, or blowing on the fin and bending it with your fingers. Be sure to bend the fin in the opposite direction from that in which the propeller turns.

If you've bumped into difficulties, talk the plans over with your manual training teacher, Scout or club leader. If possible join a model aeroplane club. If there's not club in your neighborhood, organise one

Write to Norman Lyons, WIRELESS WEEKLY, Sydney, and ask him for help in organising and conducting your club.

Remember that the indoor endurance is your contest model. Don't be satisfied with your first 'plane. Build another, more carefully. Try an 11-inch propeller. The larger propeller turns more slowly, and gives you a longer flight. But you must have a well-made ship to stay in the air at slow speed. The world's indoor flying record—173 seconds—was made with one of these 'planes. Go after that record!

In next issue of WIRELESS WEEKLY you'll get another helpful article.

The Stately Wurlitzer

FRANK LANTERMAN at the organ has become an "institution"—so to speak—at 3LO. He receives hundreds of letters every day containing special requests, and he does his best always to play the most popular of them.

Hints for the "Tinker"

A VERY interesting talk will be given from 3LO on August 21 by Mr. F. S. Ward, of the Working Men's College. This will appeal greatly to men, especially those who like to "tinker" about the house, for instruction will be given how to deal with simple mechanical contrivances, so those who are keen to discover how to remove a nut from a bolt, or other simple operations, should not fail to take this opportunity of gaining the necessary information.

Perth Radio Exhibition

TO further the growth of radio in West Australia, an exhibition will be held in the King's Hall, Subiaco, Perth, on August 19 and 20, 1929. The Governor of West Australia, who is an enthusiastic listener, will perform the opening ceremony in the presence of the Mayor and councillors. Phillips Radio, through Messrs. Unbehaun and Johnstone, are donating a prize to the value of £5 for the best amateur exhibit, and also a prize valued at £3 for the most novel valve set in working order. Both prizes will consist of Phillips radio apparatus.

THE MANAGEMENT OF MODEL AIRCRAFT CONTESTS

The organisation of the practical side of model flying clubs. Tune in to the club session next Wednesday, at 6.45.

By NORMAN LYONS

THERE are four elements that enter into the proper management of a model aircraft contest. These are the location, the officials, equipment, and methods—each of which will be discussed separately.

LOCATION: In regard to the location for an outdoor contest, it is desirable to have a large ground that is centrally located, but it is often difficult to find such a combination. The committee in charge of a contest should arrange for a field as large as possible, so that the models in flight shall have every chance for success. It is very discouraging to see a fine model start for a long flight, only to run into a tree or other obstruction, ending its flight and, perhaps, breaking the model. If unhampered it might have established a new record. The best site should be chosen, such as a large park, aerodrome, golf course, or racecourse.

Flights should start from the side from which the wind is blowing, as models usually fly with the wind, but as launchings are usually made against the wind, the take-off point should be about 100 feet from the border, in case that border is lined with trees or houses. Models are launched into the wind in order to gain altitude; after this they circle and turn tail. The site should be accessible by road, and should have accommodation for the comfort of contestants and spectators. It should be level, and preferably covered with a medium long grass to cushion the landings.

OFFICIALS.—The officials should be a judge, recorder, timers, and assistants, who might be termed flagmen and scouts. The duties of the judge are to have general oversight of the procedure, announce the contests, the order of flying, and name of each contestant as the model is launched. Other duties should be delegated to associated officials, as it is necessary that the judge be not hampered by details, for many questions will arise to which he must be free to give at-

tention, such as publicity, special announcements, decisions, etc. The recorder is supplied with the name of each contestant on proper tabulating sheets. He enters each flight as it is made, and when the contest is finished he furnishes the judge with the results. The timers are obliged to time or measure each flight and communicate the results to the recorder.

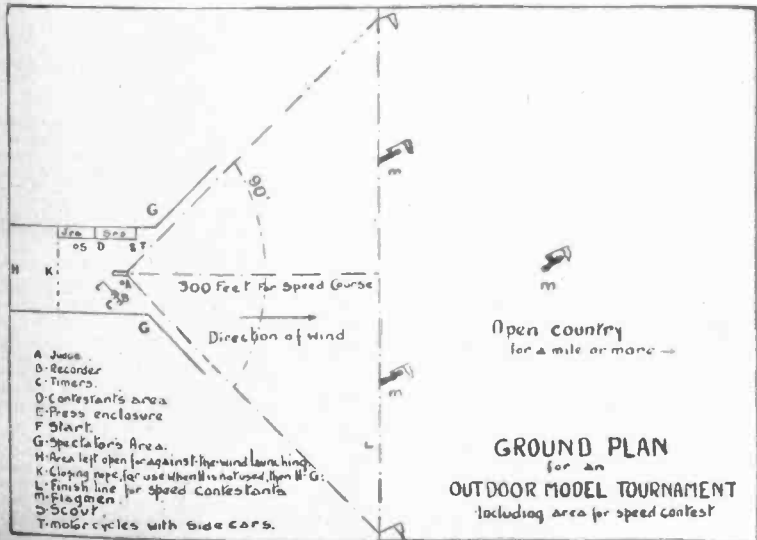
The flagman stations himself some distance down the field and signals to the timers the termination of each flight. He is indispensable when a flight is of such length that the model is difficult to see from the starting line. The duty of the scout is to "police" the crowd, keeping them away from the models and starting area; he obtains from the judge and recorder the order of flying, so that he may circulate among the boys, seeing that they are ready to appear immediately as each name is called. This is necessary, as often a contestant becomes so engrossed in the flight of a rival model or in the preparation of his model that he is surprised rather than ready when his turn comes.

EQUIPMENT.—A few pieces of equipment will be required by the committee. The judge should have a whistle, watch, megaphone, and list of entrants. The recorder should have a list of entrants, pencil, and if possible be provided with table and chairs, as a fixed position enables the timers to know where to locate him. The timer should have a stop-watch, flag, and pad with pencil. The flag should be about one yard square, attached to a staff. For distance flights the timer should have a measuring tape, and if possible binocular field glasses. The flagman should have a flag similar to the timer's. The scout should have a list of entrants. Other ground equipment should consist of the following:—A starting platform; two enclosures for the junior and senior contestants, in which to assemble and repair their models (these enclosures may have tables in them for work-benches); a rope or fence to hold the spectators out of the flying area; and one or two motor cycles with sidecars for the use of contestants in regaining their models. The starting platform is built of boards in the shape of a large, shallow box-lid; for the hydro contests this is inverted, and filled with water.

Figure 1 shows a ground layout for a large tournament. The following directions with this layout will be found useful, but may be modified to suit local conditions. Some features may be eliminated if not deemed necessary. Good contests can be held with scarcely any prepared accommodations, but the more systematic aid that is provided the smoother the contest will run. Frequently contests will be witnessed by spectators who should be kept interested by a snappy programme rather than tired by a series of postponements, delays, and dragging minutes.

In Figure 1 the relative position of the various features are shown. It will be noticed that the timers here are in three groups; for large official contests three timers should time each flight to insure accuracy and prevent mishaps. If the three stop-watches disagree after a flight the middle time is accepted. In case of two timers, the lower time is counted.

Next week instructions will be given how to conduct a model aircraft contest.



Local Programmes, Friday, August 16

2FC

Australian Broadcasting Company Ltd., Market St., Sydney (Wavelength, 442 metres).

EARLY SESSION—7 to 8.15 a.m.

7.0: "Big Ben" and meteorological information for the man on the land.
7.3: This morning's news from the "Sydney Morning Herald."
7.8: Early-rising music.
7.45: Mails and shipping.
7.48: What's on to-day?
7.50: Children's birthday calls.
8.0: Music from the studio.
8.15: Close.

MORNING SESSION—10.30 to 12.30 p.m.

10.30: Announcements.
10.32: To-morrow's sporting events, by Oscar Lind.
10.45: Edgar Stone at the grand organ.
11.0: Household Helps—A talk on cooking by Miss Ruth Furst.
11.10: Cables, A.P.A., and "Sun"—"Herald" news service.
11.15: The 2FC Studio Orchestra.
12.0: "Big Ben," Stock Exchange, and metal quotations.
12.2: What to read for the week-end.
12.20: Midday weather forecast and weather synopsis; special produce market session for the man on the land, supplied by the State Marketing Board.
12.30: Close.

THE LUNCH HOUR—1 to 2.30 p.m.

1.0: Lunch to music with the National Broadcasting Orchestra.
2.0: Stock Exchange, second call.
2.2: A glance at the afternoon papers.
2.7: Popular education.
2.27: Announcements.

THE RADIO MATINEE—2.30 to 4.30 p.m.

2.30: The Radio Matinee Orchestra.
2.42: Alma Berge, soprano.
2.49: Ida Fitzgerald, pianist.
2.59: The Radio Matinee Orchestra.
3.11: Stanley Clarkson, basso.
3.18: Una Black, violinist.
3.25: The Radio Matinee Orchestra.
3.37: Stanley Clarkson, basso.
3.44: Una Black, violinist.
3.51: The Radio Matinee Orchestra.
4.3: Ida Fitzgerald, pianist.
4.13: Alma Berge, soprano.
4.20: The Radio Matinee Orchestra.
4.28: Stock Exchange, third call.
4.30: Close.

EARLY EVENING SESSION—5.45 to 7.55 p.m.

5.45: Kiddies' "Good-night" stories, told by Goodie Reeve and Dorothy Stephen.
6.45: The National Broadcasting Orchestra
7.30: A.B.C. sporting service.
7.37: Special Country Session.
Stock Exchange résumé.
Markets.
Late news service.
7.58: Announcements.

THE EVENING PRESENTATION—8 p.m. to 11.30 p.m.

8.0: The Maheno Trio, instrumentalists.
8.10: Sunny Miller, the Crooning Song Writer.
8.17: David Burt and Ernest Powell, musical entertainers.
8.27: Charles Zoll, comedian.
8.34: Billy O'Hanlon and Zara Clinton, in a modern radio sketch.
8.44: William Everard and Dorothy Manning, popular duettists.
8.54: The Maheno Trio, instrumentalists.
9.4: The Country Man's weather session.
(a) "New South Wales Forecasts."
(b) "Inter-State weather synopsis."
9.5: Mark Ericksen, Irish balladist
9.12: Josef Kaartinen, saxophonist.
9.19: The Australian Broadcasting Dance Orchestra.
9.31: Deraine and Dixie, entertainers.
9.40: The A.B.C. Male Quartette.
9.50: The Australian Broadcasting Dance Orchestra.
10.5: Willie Shine, entertainer.
10.15: Announcements.
Official weather forecast.
10.20: The Australian Broadcasting Dance Orchestra.
11.30: Close. National Anthem.

2BL

Australian Broadcasting Company Ltd., Market St., Sydney (Wavelength, 353 metres).

OPENING SESSION—8.15 to 11 a.m.

8.15: Music for every mood.
8.45: Meteorological data for the country.
8.50: Songs and choruses.
9.30: British official wireless news.
9.35: New music.
10.5: News from the "Sydney Morning Herald."
10.10: The Ladies' Club Hour—The Australian Women's A.B.C. Association, conducted by Miss Gwen Varley.
10.30: The Studio Orchestra.
11.0: Close.

MIDDAY SESSION—12 noon to 2.30 p.m.

12.0: Announcements.
12.2: A.B.C. Lunch Orchestra.
1.0: Afternoon news from the "Evening News."
1.5: Studio music.
1.15: Women's "Interest Talk."
1.30: The Traders' "Selling the Set" Music.
2.0: J. Knight Barnett, at the Wurlitzer organ.
2.12: Studio music.

AFTERNOON ENTERTAINMENT—2.30 to 5.45 p.m.

2.30: Business efficiency talks.
2.45: "The Magic Carpet," a story of travel and adventure.
3.0: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in Dance Music.
3.15: From the Studio—Harry Croot, baritone.
3.22: The Two G's, entertainers.
3.30: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in Dance Music.
3.42: From the Studio—Lotys Lescaut, soprano—
(a) "Cupid" (Sanderson).
(b) "Mendiant d'Amour" (Goublier).
3.49: The latest dance music.
4.0: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in Dance Music.
4.12: From the Studio—Harry Croot, baritone.
4.19: The Two G's, entertainers.
4.27: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in Dance Music.
4.38: From the Studio—Lotys Lescaut, soprano—
(a) "Waking of Spring" (Del Riego).
(b) "I Lovè the Moon" (Rubens).
(c) "Fragile Things" (Phillips).
4.45: "The Trade Hour," demonstration music.
5.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

6.15: The National Broadcasting Orchestra.
6.45: The A.B.C. Younger Set Session—Boy Scouts' Night; the A.B.C. Boy Scouts' Club, conducted by Mr. Norman.
7.5: Studio music.
7.15: The Country Man's Market Session—Wool, wheat, stock, farm produce, fruit, vegetables, and poultry markets.
7.30: The National Broadcasting Orchestra.
7.55: What's on the Air To-night?

TO-NIGHT'S PRESENTATION—8 p.m. to 10.30 p.m.

8.0: The Denning Lee Quartet.
8.10: Lindley Evans, pianist.
8.22: Daisy Mangan, soprano—
(a) "Romance" (Offenbach).
(b) "Butterflies" (Seller).
(c) "The Shepherd" (Worth).
8.29: Studio Quintet—
"Blue Kitten" (Friml).
8.39: George Brown, baritone.
8.46: Lindley Evans, pianist.
8.58: The Denning Lee Quartet.
9.8: Studio Quintet—
(a) "Aubade Mexicaine" (Baron).
(b) "Idilio" (Lack).

9.18: Daisy Mangan, soprano—
(a) "Summer Night" (Goetzl).
(b) "Synnoves Song" (Kjerulf).
(c) "Now is the Month of May" (Hantyl).
9.25: George Brown, baritone.
9.32: Late weather forecast for the man on the land.
9.33: David Burt and Ernest Powell, instrumentalists.
9.43: Sonny Miller, the crooning song writer.
9.50: Charles Zoll, entertainer.
9.57: Josef Kaartinen, saxophonist.
10.4: Billy O'Hanlon and Zara Clinton, sketches.
10.14: De Raine and Dixie, entertainers.
10.25: Official weather forecast, metropolitan and country; late news from the "Evening News" and the "Sun."
10.30: Close. National Anthem.

2GB

Theosophical Broadcasting Station, 29 Bilgh St., Sydney (Wavelength, 316 metres).

1.0: Music. 10.10: Happiness talk by A. E. Bennett. 10.20: Music. 10.30: Women's session by Miss Helen J. Beegling. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service, by Mrs. Dorothy Jordan. 2.50: Movie Know-all. 3.0: Music. 3.30: Close down. 5.30: Children's session by Uncle George. 7.0: Music. 8.0: Miss Kathlene Cracknell, contralto. 8.7: Symphony Orchestra. 8.15: Mr. Cecil Chaseling, baritone. 8.22: Madame Betts-Vincent, in an illustrated talk on music. 8.37: Miss Elsie Brown, soprano. 8.47: Violin solos. 8.52: Miss Kathlene Cracknell, contralto. 9.0: Weather report. 9.3: Address. 9.15: Symphony Orchestra. 9.25: Humorous interval, by Mr. Jack Win and Mr. Heath Burdock. 9.30: Mr. Cecil Chaseling, baritone. 9.40: Violin solos. 9.50: Miss Elsie Brown, soprano. 10.0: Instrumental music. 10.30: Close down.

2UW

Radio Broadcasting, Ltd., Paling's Building, Ash St., Sydney (Wavelength, 267 metres).

MIDDAY SESSION

12.30: Music and request numbers. 1.0: G.P.O. clock and chimes. 1.15: Talk on Homecraft by Pandora. 1.40: Music. 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: Music and request items. 8.0: Band recital. 9.0: Comments on Foreign Affairs, by Mr. J. M. Prentice. 9.10: Request items. 10.30: Close down.

2KY

Trades and Labour Council, Goulburn St., Sydney (Wavelength, 280 metres).

MORNING SESSION

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

CHILDREN'S SESSION

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

EVENING SESSION

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



TWO RATES at the CLICK of a SWITCH

1.3 AMPS (BOOST)
.5 AMPS (TRICKLE)

THIS new Philips Dual-rate charger is the popular "Four-Fifty" in improved form. You can get two rates—1.3 or .5 amps—at a click of the bakelite switch.

Like the "Four-Fifty" it

- is THERMIONIC—there are no acids.
- is Sure, Silent, and Simple
- gives a faint "Blue Glow," showing that all is well.
- cannot be harmed by shorting the output leads, the resistance of the regulating lamp merely rising and limiting the current to normal value.

95/- complete

PHILIPS

1453

[Adv. of Philips Lamps (Australasia) Ltd. (Radio Dept.) Head Office and Showrooms: Corner Clarence and Margaret Streets, Sydney, N.S.W.]

9R56

GIVE "FREE SPEECH" TO YOUR RADIO—WITH A PHILIPS SPEAKER

Interstate Programmes, Friday, August 16

3LO

Australian Broadcasting Co., 126A Russell St., Melbourne (Wavelength, 371 metres).

EARLY MORNING SESSION.

7.0: Time signal from the Melbourne Observatory, weather forecast. 7.5: Early rising music. 7.40: Mails and shipping. 7.43: What's on to-day? 7.45: M.R. reports. 7.55: Breakfast news. 8.0: Melbourne Observatory time signal. 8.1: Birthday greetings. 8.15: Close down.

MORNING SESSION.

9.30: Current events in the racing world, by Eric Welch. 10.40: Reproduced music. 10.50: "The Football Field," by Mel Morris. 11.0: A.B.C. Orchestra, with Freda Northcote, contralto. 12.30: Close down.

MIDDAY SESSION

1.0: Luncheon music, provided by the National Broadcasting Orchestra (under direction of Wm. G. James; conductor, Percy Code).

EDUCATIONAL SESSION.

3.0: "Strange People of Strange Countries," Mr. N. D. Harper, M.A., Dip. Ed. 2.15: Reproduced music. 2.25: "Gems of the English Language," Professor G. H. Cowling, M.A. 2.40: Reproduced music. 2.45: "Romantic Stories of Australia's Early Days," Mr. C. R. Long, M.A.

RADIO MATINEE.

3.0: Ray Ford's "Gloom Chasers." 3.10: Jane Douglas, soprano. 3.17: Ray Ford's "Gloom Chasers." 3.22: E. Maynard, baritone. "Kitty" (Fletcher). "The Green Hills of Somerset" (Coates). "Messmates" (Lohr). 3.32: Ray Ford's "Gloom Chasers." 3.40: Jane Douglas, soprano. 3.47: Ray Ford: "Syncope Melodies." 3.55: Syd Hollister. Half an hour of Chamber Music by the A.B.C. Quartette, assisted by Etta Bernard, contralto. 4.30: Close down.

CHILDREN'S CORNER.

4.45: Billy Bunny will continue his travels in other lands, and Maid Marlon will play some Nursery Jingles. 6.15: A talk of interest to the older boys and girls. 6.30: Market reports.

EVENING SESSION.

7.0: Gardening Hints (under auspices of Royal Horticultural Society of Victoria): North of Divide and Malles, Mr. A. Brown. 7.15: Marriage Customs of Mankind, Mr. J. R. Lyall, B.A. 7.30: What's Wrong With Your Radio?—Mr. H. Kingsley Love. 7.45: Australian Problems in Economics 7. The Glamour of Gold, Mr. T. Maughan.

NIGHT SESSION.

8.0: Collingwood Citizens Band—March, "Ravenswood." Overture, "Pique Dame." 8.10: Alexander Carol, baritone. "Windy Nights" (Villers Stanford). "The Monkey's Ruff" (Villers Stanford). "The White Owl" (Lavater). 8.20: Raymond Lambert, piano—First Movement of the Mendelssohn Concerto, with Orchestral Accompaniment. 8.30: Russell Callow, tenor—Selections from his repertoire. 8.40: Collingwood Citizens Band—Selection "Memories of Donizetti." 8.50: Maynard Dakin, famous English Entertainer (accompanist, Winifred Burgess). 9.0: George Findlay: A Russian programme—Concert Study in C (Rubinstein). Valade in A Major (Levitky). Berceuse (Hirsky). To a Wateau Landscape (Godowski). Humoresque (Rachmaninoff). 9.20: Maynard Dakin: A further ten minutes entertainment. 9.30: Collingwood Citizens Band—Waltz, "Love and Life in Vienna." 9.40: Millicent Osmond, mezzo soprano—"Organ Grinder's Song" (Carey). "April Children" (Besley). "Columbine's Garden" (Besley). 9.50: Winks Shmith, the talented boy xylophonist. 10.0: Billie King's, songs at the piano. 10.20: Collingwood Citizens Band—Selection, "Lilac Time." 10.30: The "Rex" Dance Band. 11.30: God Save the King.

3AR

Australian Broadcasting Co., 126A Russell St., Melbourne (Wavelength, 484 metres).

MORNING SESSION

8.15: Morning music, weather forecast; items of interest. 9.30: British Official Wireless news. 9.40: Reproduced music. 10.30: Arnold Coleman at the Wurlitzer. 11.0: Close down.

MIDDAY SESSION

12.0: Mainly for Women—"Famous Women: The Greek Poetess Sappho," Miss J. W. Webb, M.A. 12.15: News from the Studio. 12.30: National Broadcasting Orchestra (under direction Wm. G. James; conductor, Percy Code), 1.0: Chimes. 1.1: Stock Exchange, weather reports; comments on the day's news. 1.30: Reproduced music.

AFTERNOON SESSION

2.0: National Broadcasting Orchestra—Overture, "Crown Diamonds." "Serenade Syriac" (Elgar). 2.10: Charles Bradley, baritone—"The Old Book-keeper" (Harvey Gaul). "Ma Little Banjo" (W. Dichmont). "Water Boy" (negro convict song) arranged by Amery Robinson. 2.20: Joseph Barille, flautist, selected. 2.30: Rosina Down, soprano—"Mother of Mine" (Tours). "Silva" (Gibbs) "If you have taught to say to me" (Bart). 2.40: National Broadcasting Orchestra—"Ballet Egyptian"

INDEX

To Local Programmes

FRIDAY, AUGUST 16.	2FC, 2BL, 2GB, 2UW, 2KY, 2UE (p.36)	28
SATURDAY, AUGUST 17.	2FC, 2BL, 2GB, 2UW, 2KY, 2UE	32
SUNDAY, AUGUST 18.	2FC, 2BL, 2GB, 2UW, 2UE	36
MONDAY, AUGUST 19.	2FC, 2BL, 2GB, 2UW, 2KY, 2UE	38
TUESDAY, AUGUST 20.	2FC, 2BL, 2GB, 2UW, 2KY, 3UE	42
WEDNESDAY, AUGUST 21.	2FC, 2BL, 2GB, 2UW, 2KY, 2UE	46
THURSDAY, AUGUST 22.	2FC, 2BL, 2GB, 2UW, 2KY, 2UE	50

To Interstate Programmes

FRIDAY, AUGUST 16.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	30
SATURDAY, AUGUST 17.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	34
SUNDAY, AUGUST 18.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	37
MONDAY, AUGUST 19.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	40
TUESDAY, AUGUST 20.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	44
WEDNESDAY, AUGUST 21.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	48
THURSDAY, AUGUST 22.	3LO, 3AR, 3DB, 4QG, 5CL, 6WF, 7ZL	52

(Lughin). 2.50: Doreen Berry, humorous monologue—"Minnie at the Movies." 3.0: Guildford Bishop, violinist—"Second Romance" (Barthold Tours). 3.10: Tom Miller, tenor, selected. 3.20: National Broadcasting Orchestra—Selection from "Hit the Deck." 3.30: Chat by a Prominent Woman. 3.45: Reproduced music. 4.10: What Science is Doing for Women. E. S. Richards, M.Sc. Traders' demonstration session. 4.25: Reproduced music. 6.45: Close down.

EVENING SESSION

6.15: Dinner music by the A.B.C. Studio Orchestra. 7.30: What's on the Air To-night? 7.32: Latest musical releases. 7.45: Market reports.

NIGHT SESSION

8.0: National Broadcasting Orchestra—"Princess Jaune" (Saint-Saens). "March Militaire" (Schubert). 8.10: Claud Carter will entertain. 8.20: J. and G.—Confidential Nothings. 8.35: Spanish Serenades—Dreary Melodies. 8.40: Play—"His Rest Day" (Matthew Bolton), produced by Winifred Moverley. 8.55: National Broadcasting Orchestra—"Atlantis" (Liszt). 9.0: Jean Hambleton, contralto—Negro Spirituals—"Steal Away." "Get on Board, Little Children." "Swing Low." 9.15: Margaret Sutherland, pianist—"Arietta" (Leonardo Leo). Two Waltzes (Brahm). Nos. 3 and 4 Humoreske (Schumann). 9.30: The Original We Four—Quartette, "Volkslied" (Abt). Edwin Hooke, tenor, "Silent Morn" (Vaughan Williams). Quartette, "Neapolitan Nights" (Zemczak). 9.40: Eric Welch will speak on To-morrow's Racing. 9.50: National Broadcasting Orchestra—Valse Suite, "Three Fours" (Coleridge Taylor). 10.0: Madame Elsie Davies, soprano—"Ah Fors e Lui" (Verdi). "Agnus Dei" (Bizet). "The Night Wind" (Farley). 10.10: Mel Morris will speak on to-morrow's Football Matches. 10.20: The Original We Four—Quartette, "Evening Bell" (Abt). Walter D. Bureleigh, bass: "A Dervish Vigil" (Dalmore). Quartette, "Going Home" (Dvorak). 10.30: National Broadcasting Orchestra—Selections from "Wildflower." 10.40: God Save the King.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (255 metres).

MORNING SESSION

11.0: Time signal; some old-time tunes. 11.30: The world's fashions and foibles by "La Vogue." 11.35: Symphony Orchestra and songs. 12.0: Violin and voice. 12.25: News. 12.30: Close down.

AFTERNOON SESSION

2.0: Music of the sea. 2.30: From the operas. 2.55: Atwater Kent hour—sponsored by A. G. Harding, Ltd., and E. T. Muir. 3.55: News. 4.0: Close down.

EARLY EVENING SESSION

5.30: Children's hour. 6.0: A light orchestra concert. 6.30: What's on at the theatres and movies. 6.32: Radio Club. 6.35: Bands and ballads. 7.0: Chamber music. 7.30: Madame Sowerd—"French Without Tears." 7.45: Market reports.

NIGHT SESSION

8.0: Excerpts from "The Last Waltz" (Oscar Strauss). 8.30: Storm and calm in music. 9.0: Chamber music. 9.30: Brass bands and some humor. 10.0: Dance music. 10.30: Slumber music. 10.40: News. 10.45: God Save the King.

4QG

Queensland Government Radio Service, Brisbane (Wavelength, 385 metres).

EARLY MORNING SESSION.

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

MORNING SESSION.

11.0: Music. 11.5: Social news. 11.15: Lecture: 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. 1.30: Lunch-hour music. 2.0: Close down.

AFTERNOON SESSION.

3.0: Royal National Show—Ring events at Royal Show. 4.15: The "Telegraph" news. 4.30: Close down.

THE CHILDREN'S HOUR.

6.30: The bedtime stories will be given at the Boys' Farm Camp, Royal National Show.

NIGHT SESSION.

Programme relayed from the Acacia Garden. 8.0: The Orchestra—March, "Rolling Thunder" (Pillmore). 8.5: 4QG Male Party—Chorus, "Dixie Land" (Emmett). 8.9: Francis Lane, popular vocalist—"Sonny Boy" (Jolson), accompanied by 4QG Male Party. 8.17: The Orchestra—Fox Trot, "Alabama Slide" (Johnson). 8.22: George Williamson, tenor, and J. P. Cornwell, bass—Vocal duet, "Serenade" (Schubert). 8.27: C. Rice, tenor—"The Stars Have Eyes" (Sanderson). 8.32: The 4QG Male Party—Plantation melody, "Kentucky Babe." 8.37: Ernest Harper, baritone—"Why Shouldn't I" (Russell). 8.43: The 4QG Male Party—"John Brown's Body" (in response to numerous requests). 8.53: The Orchestra—One-step, "Love Land" (Cobb). 9.0: Metropolitan weather forecast. Week-end road information for motorists officially supplied by the R.A.C.Q. 9.15: From the Acacia Garden—C. Rice, tenor, and Fred Carter, baritone—Vocal duet, "Genevieve" (accompanied by the 4QG Male Party). 9.22: J. P. Cornwell, bass—"Mountains of Mourne" (French and Collison). 9.27: Peter Valley—Cornet solo, selected. 9.35: Tom Muller—Monologue, "Jim" (accompanied by the 4QG Male Party). 9.40: The Orchestra—Rag, "Wild Party" (Travis). 9.45: The 4QG Male Party—"In Absence" (Buck). 9.50: Francis Lane, popular vocalist—"In An Old Fashioned Town" (Squire). 9.55: The Orchestra—Popular numbers. 10.0: From the Studio—News; weather information. Close down.

5CL

Central Broadcasters, Ltd., 114 Hindmarsh Square, Adelaide (Wavelength, 469 metres).

MORNING SESSION

11.15: Chimes. 11.16: Recordings. 11.46: Kitchen craft and menu talk. 12.1: Recordings. 12.15: General news service; British official wireless news. 12.40: Recordings. 12.52: Railway, Stock Exchange, and meteorological information. 1.1: Community singing from the Adelaide Town Hall. 1.59: Meteorological information. 2.0: Close down.

AFTERNOON SESSION

3.0: Chimes. 3.1: Programme review and announcements. 3.10: The Steiner Trio, "La Sonnambula" (Donizetti). 3.20: Dr. Eleanor A. Allen, B.A., will continue her series of talks on Psychology. 3.35: The Steiner Trio, "Suite of Spring" (Sinding). "Liebestraum" (Liszt). 3.43: Rupert Hazell and Elsie Day. 3.50: Beethoven Piano Recital by Jean Findlay, L.A.E. 4.5: Rupert Hazell and Elsie Day. 4.15: The Steiner Trio, "Norma" (Bellini). 4.25: Stock Exchange information. 4.30: Chimes; close down.

EVENING SESSION

6.0: Chimes. 6.1: Birthday greetings. 6.30: Dinner Session. Rupert Hazell and Elsie Day. 7.0: Senior Birthday League greetings. S.C.L.'s sporting review. "Silvius" gives a special late review of the Grand National Hurdle Race and other events at Victoria Park and Flemington to-morrow, soccer news. 7.20: Rev. E. S. Kiek, M.A., B.D., will speak on "John Stamer's Great Refusal." 7.35: Under the auspices of the Royal Automobile Association of S.A., Mr. R. H. Brinkman, A.M.I.A.E. (Technical

Adviser] will speak on "The Motor Car." 7.45: Dr. W. Jethro Brown will continue his talk on "Strife in Industry—Why?"

NIGHT SESSION

8.0: Chimes.
 8.1: Announcements.
 8.15: A concert (arranged by Mr. Fred Pilgrim).
 Fred. Pilgrim, Organist—
 "Suite Gothique" (Introduction-Menuet-Prere-Toccata) (Boellmann).
 Lewis Dawe, Tenor—
 "Where'er You Walk" (Handel).
 Mrs. Charles Chinner, Violinist—
 "Romance" (Wienlawski).
 Phyllis Webb, Soprano—
 "The Violet" (Mozart).
 "An Attempt from Love's Sickness to Fly" (Purcell).
 Mrs. Fred. Pilgrim and Mrs. Charles Chinner,
 Violin Duettists—
 "Serenade" (Widor).
 Harold Tidemann, Baritone—
 "In Summer-time on Breton" (Peel).
 Meteorological information, including Semaphore
 Lides; oversea grain report; news service.
 Fred. Pilgrim, Organist—
 "Londonderry Air" (Ar. Archer).
 "Impromptu A Minor" (Coleridge-Taylor).
 "Star of Eve" (Wagner).
 Harold Tidemann, Baritone—
 Selected.
 Mrs. Charles Chinner, Violinist—
 "In the Oradie" (Bradley).
 "Canzonetta" (d'Ambrosio).
 Phyllis Webb, Soprano—
 "A Soft Day" (Stanford).
 "A Persian Song of Spring" (M'Burney).
 Mrs. Charles Chinner and Mrs. Fred. Pilgrim,
 Violin Duettists—
 "Salut d'Amour" (Elgar).
 Lewis Dawe, Tenor—
 Selected.
 Fred. Pilgrim, Organist—
 "Funeral March and Hymn of Seraphs" (Guilmont).
 "Prelude from Sonatas" (Borowski).
 10.15: From the Studio—General news service;
 sporting service.
 10.30: Recordings.
 11.0: Chimes; close down.

6WF

Commonwealth Government Broadcasting Station.
 Perth (Wavelength, 100 metres).

10.0: Gramophone records. 11.0: Close down. 12.30:
 Markets, news, etc. 1.0: Time, Weather. 1.3:
 Music. 2.0: Close down. 3.30: Tune in. 3.35: Music.
 4.30: Close down. 6.45: Tune in. 6.48: Bedtime
 stories by Uncle Duffy. 7.5: Light music. 7.30:
 Commercial and general information. 7.45: Racing
 talk. 8.0: Time signal. 8.1: Weather. 8.3: Vocal
 artists. 8.50: Late news. Station announcements.
 Ships within range. Late weather. 8.58: "Garden"
 Commercial and general information. 9.14: Pro-
 gramme continued. 10.30: Close down. 104.5
 Metre Transmission: Simultaneous broadcast on 104.5
 metres of programme given on 1350 metres com-
 mencing at 6.45 p.m.

7ZL

Tasmanian Broadcasters Pty., 95 Elizabeth St.,
 Hobart (Wavelength, 516 metres).

11.30: Record recital. 11.34: Midlands wea-
 ther forecast. 11.35: Recordings. 11.55: Tas-
 manian stations' 9.0 weather report. 12.0: Chimes.
 12.1: Ships within wireless range, mail notices,
 housewives' guide, commercial news. 12.8: Record-
 ings. 12.29: Announcements. 12.33: Recordings.
 12.55: News service. British official wireless news.
 Railway auction produce sales held at railway. 1.10:
 Recordings. 1.30: Close down. 3.0: Chimes. 3.1:
 Recordings. 3.4: Weather information. 3.5: Re-
 cordings. 4.15: "Weekly Courier" readings. 4.30:
 Close down. 6.15: Children's hour with "Uncle
 David" and "The Story Lady." 7.10: News session.
 7.15: Sid Jones will speak on "Football." 7.30:
 Studio concert, interspersed with instrumental
 items. 7.39: Harry Foster, tenor: (a) "The Gun-
 ner" (Wood); (b) "Trees" (Rasbach). 7.54: Grace
 Whitlaw, contralto: (a) "Danny Boy" (Weather-
 ly); (b) "Barbara Allen" (Old English), 8.9: Harry
 Foster, tenor: (c) "An Old English Love Song"
 (Allison); (d) "Salsam" (Lang). 8.25: Grace
 Whitlaw, contralto: (e) "Love's Old Sweet Song"
 (Molloy); (f) "She Wore a Wreath of Flowers"
 (Knight). 8.33: Musical selections. 8.45: J. M.
 Counsel: "The History and Development of Music."
 9.45: News session. 10.0: Close down.

We Make Up And Supply:—

Eliminator and Power Pack Trans-
 formers, Battery-charging Trans-
 formers, Choke Coils of all capacities. Spe-
 cial Chokes for "B" Eliminators—only
 a limited number available, 5/ each.
 Transformers, Cores, and Lamination
 Iron cut to size, 1/6 lb., plus postage.

O'DONNELL, GRIFFIN, & CO., Ltd.,
 53 Druitt Street, Sydney.
 (Phones: M2991 (3 lines).)



BARGAINS AT



*Many Famous Lines Priced Below Actual Cost
 A Rare Opportunity for the Radio Fan*

- 3/6 Kurz Kasch 4in. Dials for 1/6
- 2/6 Kurz Kasch Knobs for 1/6
- 2/6 Cuttler Hammer 30ohm. Rheostats for 9d
- 3/6 Fleron Special Lead-in Tubes for 2/-
- 2/6 Fleron 9in. Insulators for 1/-
- 4/6 Variable Grid Leaks and Condensers for .. 1/6
- 2/6 Rubber Earphone Pads for 1/3
- 21/- Repeater Headphones for 12/-
- 22/6 Manhattan Headphones for 12/-
- £4/10/- Willard 6-volt 50amp. Glass Batteries for £3
- 5/6 Coil Kits, Suitable for Crystal, Reinartz, or
 Standard Circuits for 4/-
- 17/6 Acme .0005 Variable Condensers, with
 Vernier Control and dust-proof cover for ... 10/-
- 5/- Acme Radio Frequency Transformers for ... 1/6
- £6/10/- Balkite 2.5amp. "A" Battery Charger
 for £3/10/-
- 12/6 Southern Cross .00025 Condensers with
 Vernier Dials for 5/-
- 15/- Freshman .001 and .0005 Condensers with
 Vernier Dials for 4/6
- 15/- Southern Cross .0005 Condensers with Vernier
 Dials for 6/-
- £3/15/- Magnavox Cornell Cone Speakers for £2/5/-

*Shop Soiled Dynamic Speakers, old type models, at
 very special prices. At least warranting your
 inspection*

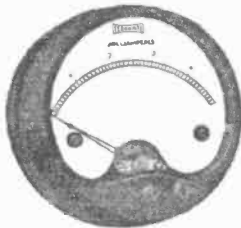
Mick Simmons Ltd
 HEADQUARTERS: HAYMARKET, SYDNEY.

Local Programmes, Saturday, Aug. 17

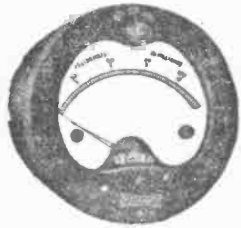
Single Range and
Three Range
Instruments



**RADIO
METERS**



Single Reading, 0-150 m/a, £1/17/3



Three Reading, 10-50 and 250 Volts, 1,000 ohms per volt, £3/10/6.

PANEL TYPE
[Flush and Projecting]
and PORTABLE TYPE

Get your Ferranti Radio Meter now, because Ferranti Radio Meters are necessary to any Valve Receiver if true reproduction of Broadcast and other Radio transmissions is to be obtained.

Obtainable from every Radio Dealer in Australia.

R2.

Write for a copy of the Ferranti Painting Book for Children.

2FC

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 442 metres).

EARLY SESSION—7 to 8.15 a.m.

7.0: "Big Ben" and meteorological information for the man on the land.
7.3: This morning's news from the "Sydney Morning Herald."

7.8: Early-rising music.
7.45: Mails and shipping.
7.48: What's on to-day?
7.50: Children's birthday calls
8.0: Music from the studio.
8.15: Close.

MORNING SESSION—10.30 to 12.30 p.m.

10.30: Announcements.
10.32: A.B.C. Racing Observer
10.45: Edgar Stone at the grand organ.
11.0: Week-end suggestions.
11.10: Cables—A.P.A. and "Sun"—"Herald" news service.

11.15: The 2FC Studio Orchestra.
12.0: "Big Ben," Stock Exchange, and metal quotations.
12.2: Music.
12.10: The Instrumental Trio.
12.20: Midday weather forecast and weather synopsis; special produce market session for the man on the land, supplied by the State Marketing Board.

12.30: The Instrumental Trio.
12.50: From Rosehill—Description of the races in the running.

During the afternoon results of the races at the Victoria Park Cup meeting will be given.

During intervals, from the studio, music by the Instrumental Trio.

EARLY EVENING SESSION—5.45 to 7.55 p.m.

5.45: Kiddies' "Good-night" stories, told by the "Hello Man," assisted by Aunt Willa.

6.45: The National Broadcasting Orchestra.
7.25: A.B.C. sporting service.
7.37: Special Country session—Stock Exchange resume.

Markets.
Late news service.
7.58: Announcements.

THE EVENING PRESENTATION—A Classical Concert—8 p.m. to 11.30 p.m.

8.0: William Murdoch, world-famous pianist, in association with the National Broadcasting Orchestra, conducted by Horace Keats.

Vocal items by leading principals.
10.15: Announcements.
Official weather forecast.

10.20: From the Oriental Cafe—Sydney Simpson's Syncopaters in dance music.
11.30: Close. National Anthem.

2BL

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 353 metres).

OPENING SESSION—8.15 to 11 a.m.

8.15: Music for every mood.
8.45: Meteorological data for the country.
8.50: A musical Pot Pourri.
9.30: British official wireless news.
9.35: New music.

10.5: News from the "Sydney Morning Herald."

10.10: Garden talk.
10.30: The 2BL Studio Orchestra.
11.0: Close.

MIDDAY SESSION—12 noon to 2.30 p.m.

12.0: Announcements.
12.2: The National Broadcasting Orchestra.

1.0: Afternoon news from the "Evening News" and "Sun."
1.5: Studio music.

1.15: Music.
2.0: J. Knight Barnett at the Wurhtzer.
2.12: Studio music.

AFTERNOON ENTERTAINMENT—2.30 to 5.10 p.m.

2.30: The Radio Matinee Orchestra.
2.45: Laurence Macaulay, basso.
2.52: Hugh McLean, violinist.

3.0: The Radio Matinee Orchestra.
3.15: Eva Newbury, contralto.
3.22: Vera Welling, pianist.

3.32: The Radio Matinee Orchestra.
3.45: Laurence Macaulay, basso.

3.52: Hugh McLean, violinist.
4.0: Vera Welling, pianist.

4.10: The Radio Matinee Orchestra.
4.30: Studio music.
5.0: Sporting resume.

5.10: Close.
THE DINNER HOUR—6.15 to 7.55 p.m.
6.15: The National Broadcasting Orchestra.

6.45: The A.B.C. Younger Set Session—The Captain to his Comrades.

7.5: A.B.C. sporting resume.
7.17: Studio items.
7.30: The National Broadcasting Orchestra.

TO-NIGHT'S PRESENTATION—8 p.m. to 12 p.m.
8.0: G.P.O. chimes; Alf Lawrence's Sixty-minute Revue.

9.0: The Australian Broadcasting Dance Orchestra.

9.12: Jack Lumsdaine, the Radio Rascal.
9.19: The Australian Broadcasting Dance Orchestra.

9.30: Late weather forecast for the man on the land.

9.31: Fred Bluett, comedian.
9.40: The Australian Broadcasting Dance Orchestra.

9.52: Malsie Ottey, novelty pianist.
10.0: The Australian Broadcasting Dance Orchestra.

10.15: Jack Lumsdaine, the Radio Rascal.
10.25: Official weather forecast, metropolitan and country; late news from the "Evening News" and the "Sun."

10.30: The Australian Broadcasting Dance Orchestra.
11.30: From the ballroom of the Oriental—Sydney Simpson's Syncopaters.

12.0: Close; National Anthem.

2GB

Theosophical Broadcasting Station, 29 Bligh St., Sydney (Wavelength, 316 metres).

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

2UW

Radio Broadcasting, Ltd., Palling's Building, Ash St., Sydney (Wavelength, 267 metres).

5.30: Children's hour, conducted by Uncle Jack. 6.30: Close down. 7.0: Music and request items. 10.30: Close down.

2KY

Trades and Labour Council, Goulburn St., Sydney (Wavelength, 280 metres).

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

CHILDREN'S SESSION

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

2UE

Broadcasting Station 2UE, Storey Street Maroubra Junction, Sydney (Wavelength, 295 metres).

EARLY MORNING SESSION
7.15: Breakfast-time hour orchestral music.
8.30: Weather forecast. Close down.

EVENING SESSION

7.15: Orchestral dinner music. 7.58: Programme announcements. 8.0: Overture, Selections from "Faust." 8.10: Vocal and instrumental items. 10.15: Announcements. Close down.

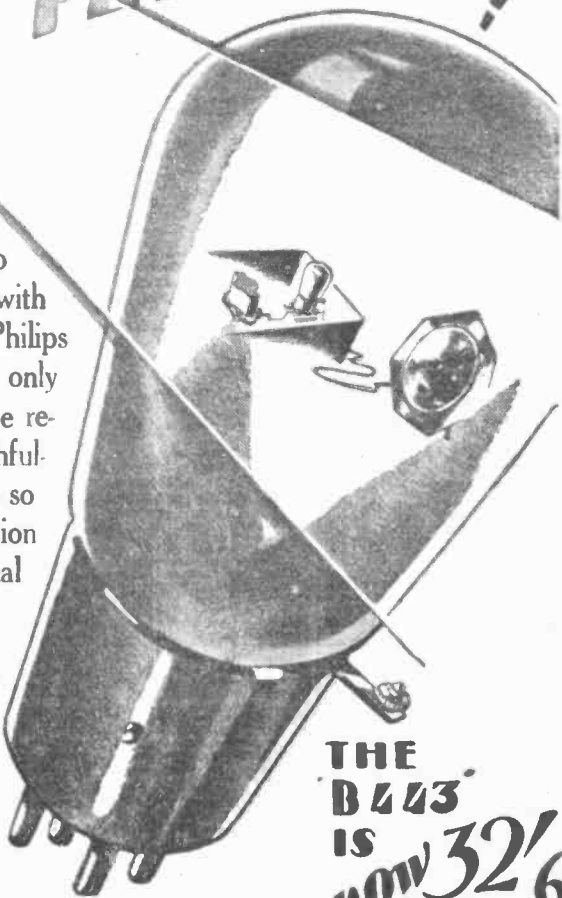
W. FURNESS,

1st Floor, Furness Chambers,
KING'S CROSS, DARLINGHURST.
Shields, Coils, and all Component Parts as used in the Tested 1928 Solodyne. Coils are guaranteed to proper specification.
Shields Assembled if desired.
Terms may be arranged.

TRY ONE STAGE of AUDIO JUST with a PHILIPS PENTHODE!

RESULTS nearly equal to two stages are obtained with a B443 Penthode and a Philips Audio Transformer. And not only does this five-element tube give remarkable volume, but its faithfulness on the higher frequencies so often lost in radio reproduction is a delight to the musical ear.

The Philips Penthode uses a standard socket--no need to re-wire your present set.



THE
"B443"
IS
NOW 32'6

PHILIPS

"MINIWATTS"

Interstate Programmes, Saturday, August 17

3LO

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 371 metres).

EARLY MORNING SESSION.

7.0: Time signal from the Melbourne Observatory. Weather forecast. 7.5: Early rising music. 7.40: Mails and shipping. 7.43: What's on to-day? 7.45: Market reports. 7.55: Breakfast news. 8.0: Melbourne Observatory time signal. 8.1: Birthday greetings. 8.15: Close down.

MORNING SESSION

9.0: Current events in the racing world, by Eric Welch. 10.40: Reproduced music. 10.50: "The Football Field" by Mel. Morris. 11.0: A.B.C. Orchestra with Myrtle Watcok, contralto. 12.30: Close down.

MIDDAY SESSION.

1.0: Luncheon music provided by National Broadcasting Orchestra (under direction of Wm. G. James; conductor, Percy Code).

LECTURETTE SESSION.

2.0: "Sigurd the Volsung." Rev. W. Bottomley. 2.15: Reproduced music. 2.25: "Harvy Morant," Bushman and Buccaneer. Mr. Howlett Rens. 2.40: Reproduced music. 2.45: "Paradise Adventure" while exploring. Lieutennants-Colonel Eldred Pottinger.

RADIO MATINEE.

3.0: Brunswick City Band: "Overturana." 3.10: The Harmonists: "The Long Day Closes" (Sullivan). "Drink to Me Only With Thine Eyes" (own arrangement). 3.20: Leslie Barklam, flautist: Selected. 3.25: James Fraser, baritone: "Five and Twenty Sailor Men" (Coleridge-Taylor). "Where'er You Walk" (Handel). "The Sounding Horn" (Flegler). 3.32: Brunswick City Band: "The Merry Men" (Rimmer); march. "The Little Drummer" (Alford). 3.40: A bright half-hour with The Black Dominoes. 4.10: Frank Lee, Syncopated Pianists. 4.20: The Harmonists: "A Medley from the South" (Pike). "Hard Times Come Again No More." 4.30: Brunswick City Band: Fantasia: "In Sunny Lands" (Leurent). 4.40: Tom Stursaker, tenor. 4.45: Leslie Barklam, flautist: Selected. 4.50: Brunswick City Band: "On the Mississippi" (Rimmer). 5.0: Close down.

CHILDREN'S CORNER

4.45: Little Miss Kookaburra will relate a most exciting story for the elder Kookaburres: "The Black Beacon." Nicholls' Parrot Mack will entertain you with their many quaint instruments. 6.15: A talk of interest for the older boys and girls. 6.30: Market reports.

EVENING SESSION.

7.0: Stories of our mining fields. 1. Broken Hill. 2. Alec. O. Cambell. 7.15: Come with us round the World. 2. A day in the life of an Eskimo, Mr. H. J. G. Esmonde. 7.25: Australian Birds. 2. Flower Peckers. Dr. J. A. Leach. D.Sc.

NIGHT SESSION.

8.0: National Broadcasting Orchestra (under direction of Wm. G. James; conductor, Percy Code).
8.10: Mary Thirlwall, contralto—
"Thou Art Risen, My Beloved" (Coleridge-Taylor).
"Four by the Clock" (Landon Ronald).
"O. Shining Sun" (Schumann).
8.20: David Zissermann, "cello recital.
8.40: Regal Quartette.
"Route Marching" (Stocks).
"The Rosary" (Nevin).
"Women" (Kratz).
9.5: Orchestra.
9.15: A.B.C. Pierrots—"Jazzieristic Jingles."
9.35: Oresti Manzoni, mandoline—"Tarantella." Op. 86 (Papini).
"Barcarolle." "Tales of Hoffman" (Offenbach).
9.45: Billie King: Songs at the Piano.
9.65: Regal Quartette.
"Love's Old Sweet Song" (Molloy).
"In a Gondola."
"At Sweet Sixteen" (Oakley).
10.5: Orchestra.
10.15: British official wireless news.
10.20: Fern Spry's Dance Band.
11.30: Close down.

3AR

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 484 metres).

MORNING SESSION

8.15 to 11.0: See Friday.

MIDDAY SESSION

12.0: Feminine Topics. 12.15: News of the day. 12.30: to 1.0: National Broadcasting Orchestra (under direction of Wm. G. James; conductor, Percy Code). 1.1: Stock Exchange information; weather reports; comments on the day's news. 1.30: Reproduced music.

AFTERNOON SESSION

2.0: National Broadcasting Orchestra, with Leo Fisher, tenor. Sporting descriptions by Eric Welch and Mel. Morris. 5.30: Final scores. 5.35: Close down.

EVENING SESSION

6.15 to 7.30: Dinner music by the Studio Orchestra. 7.30: What's on the Air To-night? 7.32: Latest musical releases. 7.45: Market reports.

NIGHT SESSION

8.0: Newport Workshops Band—
Overture—"La Militaire" (Schubert).
8.10: Elsie Stewart and Victor Drinkwater, ukulele artists.

8.30: Newport Workshops Band—

"Old Rustic Bridge."
8.35: John Hobbs, bass—
"Tavern Song" (Howard Fisher).
"One of the Guards" (Howard Fisher).
"The Adjutant" (Howard Fisher).
8.45: Stadium.
10.15: Newport Workshops Band—
March, "King's Review."
10.20: Rex Dance Band.
12.0: God Save the King.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (325 metres).

MORNING SESSION

10.0 to 12.0: See Friday.

AFTERNOON SESSION

5.30: Children's hour; Bobby Bluegum. 6.0: Tea-time music. 8.30: What's on at the theatres and movies. 6.32: Radio Club. 6.35: Sporting results. 6.50: Wurlitzer organ. 7.0: Cello and tenor. 7.30: Modern melodies.

NIGHT SESSION

8.0: Half an hour with Bach. 8.30: Coleridge Taylors' music. 9.0: Around the shows. 9.30: Military bands and soldier songs. 10.0: Light orchestra and modern songs. 10.30: Slumber music. 10.45: God Save the King.

4QG

Queensland Government Radio Service, Brisbane (Wavelength, 385 metres).

MORNING SESSION.

11.0: Church service, from Seventh Day Adventist Church, Buranda. 12.15: Close down.

NIGHT SESSION.

8.0: The musical comedy "The Country Girl," produced by the Brisbane Comic Opera Company, will be relayed from the Cremorne Theatre.
10.30: From the Studio—News; weather information. Close down.

5CL

Central Broadcasters, Ltd., 114 Hindmarsh Square, Adelaide (Wavelength, 409 metres).

AFTERNOON SESSION

GRAND NATIONAL HURDLE DAY.

12.0: Chimes. 12.1: Special late selections for Flemington races. 12.3: Probable starters and selections for Victoria Park races. 12.15: General news service; British official wireless news; railway and meteorological information. 12.45: Victoria Park—Riders and positions for Steppay Welter. 12.50: Musical interlude, Rupert Hazell and Elsie Day. 1.0: Victoria Park—Running description of Steppay Welter. 1.5: Flemington race result. 1.6: Rupert Hazell and Elsie Day. 1.25: Victoria Park—Riders and positions for Fulham Park Plate. 1.30: Musical interlude. 1.40: Victoria Park—Running description of Fulham Park Plate. 1.45: Flemington race result. 1.46: Musical interlude. 2.0: Chimes. 2.1: Resume of race results. 2.3: Musical interlude. 2.5: Victoria Park—Riders and positions for Grand National Hurdle Race. 2.11: Musical interlude. 2.20: Victoria Park—Running description of Grand National Hurdle Race. 2.25: Flemington race result. 2.26: Musical interlude. 2.45: Victoria Park—Riders and positions for the Adelaide Guineas. 2.50: League football. 3.0: Victoria Park—Running description of Adelaide Guineas. 3.5: Resume of race results. 3.8: League football. 3.17: Flemington race result. 3.18: Musical interlude. 3.25: Victoria Park—Riders and positions for Fullarton Steeplechase. 3.30: League football. 3.40: Victoria Park—Running description of Fullarton Steeplechase. 3.45: Musical interlude. 4.0: Chimes. 4.1: Resume of race results and football scores. 4.3: Musical interlude. 4.6: Victoria Park—Riders and positions for Tennyson Handicap. 4.10: League football. 4.20: Victoria Park—Description of Tennyson Handicap. 4.25: League football. 4.31: Musical interlude. 4.40: League football. 4.45: Victoria Park—Riders and positions for Lightning Handicap. 4.50: League football. 5.0: Victoria Park—Running description of Lightning Handicap. 5.5: League football. 5.8: Resume of race results and dividends of Lightning Handicap; final football scores; close down.

EVENING SESSION

6.0: Chimes; resume of race results. 6.3: Children's Happy Moments. 6.30: Dinner Session from Flinders Street Lutheran Church. Broadcast of the wedding ceremony between George W. Luxon (M.K. 581) and Thelma Iris Job, 8 Brook Street, West Mitcham, Best man, 5BY, groomsmen, 5WR. Officiating minister, Rev. W. Janzow. 7.0: Senior Birthday League greetings; Stock Exchange information; announcement. 7.10: Rev. G. E. Hale, B.A. 7.25: Musical interlude. 7.30: "Items of Interest." 7.40: 5CL's Sporting Service, including Victoria Park and Flemington race results, League football scores, country sporting, soccer (3 grades), lacrosse results, ladies' and gentlemen's hockey, cycling, athletics, and other sporting results.

NIGHT SESSION

8.0: Chimes.
8.1: 90 Years Ago To-day. "Was it yesterday?"
8.10: Hindmarsh Municipal Band.
Conducted by J. Radcliffe.
March, "Under the Banner" (Nowowiecki).
Overture, "Crown Diamonds" (Auber).

8.20: Phyllis Gibbs, Mezzo-Soprano—

"Sapphic Ode" (Brahms).
"Wiegenlied" (Brahms).
8.27: Guido Giacchino, Cellist—
Selected cello solos.
8.34: Don Wildsmith, Baritone—
"Cloze Props" (Charles).
"The Lute Player" (Allitsen).
8.41: Hindmarsh Municipal Band.
Conducted by J. Radcliffe.
Selection, "Alexander's Feast" (Laurent).
8.53: Rupert Hazell and Elsie Day.
9.3: Meteorological information, including Semaphore tides.
9.4: Overseas grain report.
9.5: General news service.
9.10: Hindmarsh Municipal Band.
Conducted by J. Radcliffe.
Idyll, "My Syrian Maid" (Rimmer).
March, "The Commonwealth" (Rimmer).
9.17: Phyllis Gibbs, Mezzo-Soprano—
"Song of Pearls" (Phillips).
"Beloved" (Michael Head).
9.24: Guido Giacchino, Cellist—
"Sonata in D Major" (Beethoven).
9.34: Rupert Hazell and Elsie Day.
9.41: Hindmarsh Municipal Band.
Conducted by J. Radcliffe.
Selection, "Hearts of Oak" (Douglas).
9.49: Don Wildsmith, Baritone—
"Fairings" (Easthope-Martin).
"The Ballad Monger" (Easthope-Martin).
9.56: P. H. Nicholls and Bessie Francis in a Tennyson Interlude—
"Merlin and Vivien."
10.16: Hindmarsh Municipal Band.
Conducted by J. Radcliffe.
Musical Items. 5.30 approx. "The Switch Back" (Sutton).
(10.20: 5CL's Sporting Service.
10.29: Modern Dance Recordings.
11.0: Close down.

6WF

Commonwealth Government Broadcasting Station, Perth (Wavelength, 100 metres.)

10.0: Gramophone records. 11.0: Close down. 12.0: Racing anticipations. 12.7: Pianoforte solos. 12.44: Markets, news, etc. 1.1: Weather bulletin. 1.3: Close down. 3.30: Sporting session. Race results and quarter-time scores of the football matches. Musical Items. 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. Weather. 8.3: Popular programmes from the studio. 8.30: Dance music. 8.50: Late news. Ships within range. Late weather. 9.6: Programme continued. 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

Tasmanian Broadcasters Pty., 95 Elizabeth St., Hobart (Wavelength, 516 metres).

11.30 a.m.: Recordings. 11.34: Midlands weather forecast. 11.35: Recordings. 11.55: Tasmanian stations' 9.0 weather report. 12.0: Chimes. 12.1: Ships within wireless range, news notices, housewives' guide, commercial news. 12.8: Recordings. 12.29: Announcements. 12.33: Recordings. 12.55: News service, British official wireless news, railway auction produce sales held at railway. 1.10: Recordings. 1.30: Close down. During the afternoon running descriptions will be given of the V.R.C. races, held at Flemington racecourse, Vic. 2.45: From the T.O.A. Ground: Football match, Lefroy v. Canonore, described by Sid Jones. 4.50: All sporting results to hand. 5.0: Close down. 6.0: All sporting results. 6.15: Children's hour with "Uncle David." 7.15: News session. 7.30: Roy Johnson will speak on Manual Training. 7.45: J. M. Counsel will speak on "European Affairs." 8.0: Chimes. 8.1: Recordings. 8.6: Request programme of popular records specially arranged by Paton's Music Warehouse. 9.30: News session. 9.45: Request programme (cont.). 10.20: Close down.

ALL RADIAR SETS

Are equipped with Phillips Transformers, Valves, and Speaker, which is the clue to RADIAR success. Five-valve Country Model screen-grid Sets speak for themselves and the price, complete with Speaker, is £39/10-. Our three-valve All-Electric Set has four valves and a Speaker included for £23/10-. A Gramophone attachment is also supplied. Remodelling and Repairs speciality. Your old Set can be traded in for a new model.

The Radiar Wireless Co.,

114 Castlereagh Street, near Market Street, Phone, M2687.

LEVENSON'S RADIO

226 PITT STREET, SYDNEY

Branch, 86A PITT STREET, between Hunter Street and Martin Place.

25/- Value, Now 15/- Upright Type. Heavy Duty "B" Batteries Like a Flash 45 volt

Send 9d Stamps for New Illustrated General Catalog Contains Concession Coupon, Valued 4/-

Stromberg Carlson Loud Speaker,
25/10/-
My Price, £3.
Horn type. Excellent quality reproduction.

Amplion A.R.88, Horn Type Loud Speaker,
90/-
My Price, JUST HALF.
45/-.

Amplion Loud Speaker,
A.R.23. Large Oak Flare, £9/10/-.
My Price, £4.
Wonderful Value.

Gecophone English Loud Speaker,
Bakelite Flare. 28/8/-
My Price, 30/-.
The Talk of the Radio Trade.

All Lines Under 2/6
Remarkable Offers.

Genuine French Cone Type Secretvox Speakers,
£5/5/- Value,
My Price, 50/-.

The Famous Burndept Ethovox Senior Horn Type Speaker,
British Built, 90/-
NOW, 45/-.

ORMONDE 90035 VARIABLE CONDENSERS, 8/6,
with 4in. dial, 10/-

Like a Flash, 200,000 ohm VARIABLE RESISTANCES or VOLUME CONTROLS, 11/6 value 8/6

Rheostats 1/9
3in. Dials 6d
Rheostats Knobs, 6d;
Large, 1/-
Glass Insulators . 1/6
Bakelite Insulators, 3d
Metal Vernier Dials, 2/3

Like a Flash 0005 Ball-bearing VARIABLE CONDENSERS, 10/6 value. 5/9.
1 Hole Mount.

Magnus Professional Head Phones,
35/-
NOW HALF PRICE.
17/6.
4000 Ohms.

Compact VARIABLE CONDENSERS,
00035, Brass Plates, 10/6 value, 4/9.

BAKELITE PANELS.
1/4 Square Inch. Radion Hard Rubber Panels, 24 x 20, 35/-
NOW 15/- Sheet.

Speaker Cords, 5ft., 1/3
De Jur 'Phone Plugs, 1/3

Bakelite Tubing.—1, 1 1/4, 1 1/2, 2, 2 1/4 inch, 3d in. Sin. 4d in.

Table Model Cabinets,
18 x 7 Panel, 22/6.
Floor Model Cabinets, 70/-

De Jur Variable Condensers, brass plates. Best made. 00035, 12/. 00025, 11/6. 00014, 10/6.

De Jur Combination 30 ohm Switch and Rheostat, 3/9.

Alpha 'Phone Plugs, 1/9
Spring UX Panel Mount Sockets, 9d

De Jur Output Filter Transformer, 30/-

Parts and Chart a Child could follow to build a Short Wave Adapter, 45/-

LISSEN R.F. CHOKES, 6/9

BALKITE TRICKLE CHARGERS, 70/-
Now 57/6
Graden Gramophone Pick-ups, with volume control and adapter, 30/-
Now 30/-

5-way Battery Cable, 2/6
7-way Battery Cable, 1/3 yd.

LISSEN New Process "B" Batteries
60 Volt 13/6
100 Volt ... 22/6
ALWAYS FRESH.

VALVES British Cleartron 6-volt Detector and Power,
22/6. NOW 10/-.

LISSEN, 2-MEG. LEAKS, 1/-

Crystal Detectors Semi Fixed Type
Baseboard Mount, 4/8.
Panel Mount, with Vernier, 6/6.
Build Your Own 3-Valve Interstate Radio.
Simple Charts Free with Parts.
Everything excepting Speaker costs only £5/6/3

2in. Dials 1/-
Ground Clamps . 1/-
De Jur UX Sockets, 1/3
Porcelain Valve Sockets, 1/-
Push Pull Switches, 1/-
Vario Coupler Mounts 2/3
Aluminium VT Sockets, 1/-
Glass Enclosed Detectors, 2/3
Sub Panel Brackets, 2/6
20ft. Speaker Cords, 2/3

COILS KITS Reinartz Coils 4/9
Renown Coil Kit, 10/6.
Silver Knight Low-loss Kit 27/6
De Jur Browning Drake Kit . 22/6
De Jur Inter-State 3-coil Tuner 15/6
5-Valve Radio Frequency Coil Kit, 12/6. NOW 37/-

English Base, 4-volt, G.P., 1/6
B.T.H., 2 and 6-volt series, 13/6, 21/-. NOW, 6/6.
Like a Flash, UX201A ... 6/6
Ediswan, 6-volts, G.P. 2/6

LISSEN SUPER AUDIO TRANSFORMERS, 24/-
NOTHING BETTER.
S.C.O. CONTINENTAL AUDIO TRANSFORMERS, 12/6

Build Your Own "B" Battery Eliminator in 30min.
Simple Chart, with Parts. Everything Costs £2 8/6
Thousands Sold. Never a Complaint.

0005 British Built Variable Condensers,
Bakelite Ends, Single Hole Mount.
4/9 and 5/-.

Amsco Twin Condensers,
Original Price. 27/6.
NOW 7/6.
.0005.

New Ready. Levenson's All-Australia Screened Grid 3, Charts, 1/2 Free with Parts.
All Parts cost only £7/9/6

Build Levenson's All-station Crystal Set, A Little Wonder.
Simple Charts, id. Free with Parts. Everything costs only £1/8/6

The Famous K.U.G. Crystal Set, Build It Yourself.
Simple Charts, id. Free with Parts. Everything costs only 24/8.

"TOBE" Block Condensers, 35/-
NOW, 18/6.
Alpha Spring UY Sockets, 1/9.
Harlic Crystal Detectors, 6/9.

Vernier Dials
Midget Dials 3/6
Alpha De Luxe 6/6
De Jur Illuminated . 12/6
Preferred Bakelite ... 3/9

HERE'S A GIFT. Genuine Radiola 2-Valve Sets,
In Next Cabinet.

By-pass Condensers, 1000 Volt Test.
1 MFD 2/9
2 MFD 3/3
4 MFD .. 7/ and 9/6 each

Speaker Units, Lissen Speaker Units, 13/9.
Continental Cone Speaker Units, 13/4.
Amplion Speaker Units or Gramophone Attachments, AR67, 30/. AR35, £3.
HALF PRICE.

Gigantic Purchase. Thousands of Variable Condensers,
001 to 00035. Valued. 21/ to 10/6.
NOW 3/6 each.

JUST LANDED England's Famous Wave-Trap. The Renowned Harlic, 26/-.
Obtainable only at Levenson's.

Needs a little adjustment to make a Modern Set. £10/10/-
NOW £2.

Special Attention to Mail Orders

Please Add Satisfaction Freight. Assured.

You'll Appreciate these BETTER Radio Controls

If you are one who believes that only the best is good enough for your radio, you will follow the example of thousands of engineers and set builders by installing only ELECTRAD Voltage Controls—of proved reliability.



Electrad Rheostat

The resistance element is the finest material known. Its value is guaranteed within 5 per cent. Highest Grade Bakelite insulation. Metallic bearings. Oversize contact arm of best phosphor bronze. Construction provides greatest radiation without loss of mechanical strength.

Royalty Variable High Resistances



The standard high resistance of dependable accuracy. Carefully made with the best insulating material and free from harmful inductance and capacity effects. Entire range of resistance covered with one turn of the knob. A type for every purpose, including potentiometer.

AT ALL RADIO DEALERS.

WRITE FOR PRICE LIST.

AMALGAMATED WIRELESS (A/asia), LTD.,

47 York St., Sydney, N.S.W.

Please post by return mail, your latest A.W.A. Price List of Radiolas and Accessories.

NAME

ADDRESS

W.W./E.I.

175 Varick St., New York, N.Y. **ELECTRAD**

Local Programmes, Sunday, Aug. 18

2FC

Australian Broadcasting Company Ltd., Market St., Sydney (Wavelength, 442 metres).

THE CHURCH PROGRAMME—10 a.m. to 11.30 p.m.

- 10.0: Announcements.
- 10.5: Studio music.
- 10.30: This morning's news
- 10.45: Music.
- 11.0: From St. Mary's Cathedral—High Mass.
- 12.15: Music.
- 12.30: Close.

AFTERNOON CONCERT—3 to 4.30.

3.0: Concert programme arranged by the Manly Band.

4.30: Close.

EVENING PROGRAMME—6 to 10.30.

- 6.0: The 2FC String Quintette.
- 6.12: The Sydney Harmonic Choir—
 - (a) Chorus, "He, Watching Over Israel," from "Elijah" (Mendelssohn).
 - (b) Part Song, "Hymn to Music" (Buck).
- 6.20: The 2FC String Quintette.
- 6.32: The Sydney Harmonic Choir—Ladies' Chorus:
 - (a) "The Lord is My Shepherd" (Schubert).
 - (b) "Night Sinks o'er the Wave" (Smart).
- 6.40: The Right Rev. Dr. Horace Crotty, Bishop of Bathurst, will speak on "The Problem of Modern Youth."
- 7.0: The 2FC String Quintette.
- 7.12: The Sydney Harmonic Choir—Part Songs:
 - (a) "Spring Song" (Pinsuti).
 - (b) "O who will o'er the Downs" (Pearsall).

Solo and Chorus:

(c) "Jerusalem," from "Gallia" (Gounod).

Soloist: Miss Maud Griffin.

7.22: The 2FC String Quintette.

7.32: The Sydney Harmonic Choir—

(a) Chorus, "Be Not Afraid," from "Elijah" (Mendelssohn).

(b) Chorus, "Borne by Memory," from "Nabucco" (Verdi).

(c) Part Song, "Absence" (Hatton).

7.40: The 2FC String Quintette.

7.52: The Sydney Harmonic Choir—Male Chorus:

(a) "Pilegrims' Chorus," from "Tannhauser" (Wagner).

(b) "Evening" (Aht).

Soloist: Mr. L. Bourne.

8.0: From the State Theatre—Will Prior's Musical Ensemble.

Price Dunlavy at the Grand Organ

10.0: From the Studio—Meditation music.

10.30: Close. National Anthem

2BL

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 353 metres).

MIDDAY SESSION—10.55 a.m. to 3 p.m.

- 10.55: Announcements.
- 11.0: From St. Stephen's Presbyterian Church, Phillip Street: The Morning Service, conducted by Rev. Hugh Paton.
- 12.15: From the Studio—Musical items.
- 12.30: News from the "Sunday Sun"
- 12.38: Studio presentation of a specially arranged programme of music.
- 2.15: The "Cheer Up" Society, conducted by Mr. Frank Grose.
- 2.30: Half an hour's music from the Great Masters.
- 3.0: Close.

LATE AFTERNOON SESSION—4.30 p.m. to 6 p.m.

4.30: Recital of Grand Opera.

EVENING SESSION—6 p.m. to 10 p.m.

6.0: For Children in the Hospital, conducted by Uncle Steve.

6.40: Maynard Wilkinson at the Organ.

7.0: From the Lyceum—Central Methodist Mission: The Evening Service, conducted by Rev. H. C. Foreman.

9.30: Relay from 3LO Melbourne—From the State Theatre, Melbourne: The State Theatre Orchestra, conducted by Stan Porter.

10.0: Close. National Anthem.

2GB

Theosophical Broadcasting Station, 29 Bligh St., Sydney (Wavelength, 316 metres).

MORNING SESSION

9.0: Address by Miss Mary Rivett. "Understanding and Knowledge." 9.30: Address by Mr. Victor E. Cromer "Wisdom and Health." 10.0: Music from studio. 10.15: Organ music from St. Alban's Church, Regent Street, Sydney. 10.30: Morning service from St. Alban's Church. 12.0: 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. Music from studio.

NIGHT SESSION

8.15: Sacred concert arranged by courtesy of Suttons, Ltd., from Adyar House. Player piano solo. 8.23: Miss Maesmore Morris (contralto). 8.30: Mr. Gregory Valentine (violinist). 8.38: Mr. Cecil Houghton (tenor). 8.45: Miss Elsie Brown (soprano). 8.52: Player piano solo. 9.0: Weather report. 9.1: Mr. Cecil Houghton. 9.8: Miss Elsie Brown and Miss Maesmore Morris (vocal duets). 9.15: Mr. Gregory Valentine (violinist). 9.23: Miss Elsie Brown (soprano). 9.30: Address by Mr. Victor E. Cromer. "A Sound Mind in a Sound Body." 9.45: Close down.

2UW

Radio Broadcasting, Ltd., Palling's Building, Ash St., Sydney (Wavelength, 267 metres).

10.30: Music and request numbers. 1.0: Close down. 5.30: Children's hour, conducted by Uncle Jack. 6.30: Close down. 7.0: Music and request items. 10.30: Close down.

2UE

Broadcasting Station 2UE, Storey Street, Maroubra Junction, Sydney (Wavelength, 293 metres).

MORNING SESSION

11.0: Mass from St. Mary's Church, Ridge Street, North Sydney. 12.15: Orchestral music from Radio House. 1.0: Announcements. Close down. 6.0: Music from Catholic Studio. 6.5: Session arranged by Rev. Father T. Walsh, S.J. 6.35: Music. 6.40: "Question Box" talks by Dr. L. Rumble, M.S.C. 7.30: Announcements. 7.33: Evening devotions from St. Mary's Church, North Sydney. 8.15: Overture, "Light Cavalry." 8.25: Orchestral and vocal concert. 10.15: Close down.

2UE

Broadcasting Station 2UE, Storey Street, Maroubra Junction, Sydney (Wavelength, 293 metres).

Friday, August 16

EARLY MORNING SESSION

7.15: Breakfast-time hour orchestral selections. 8.30: Weather forecast. Close down.

MIDDAY SESSION

11.30: Session of old-time selections. 12.30: Close down.

AFTERNOON SESSION

1.0: Vocal and orchestral music. 1.45: Organ solos. 2.0: Orchestral and vocal music. 2.30: Close down.

EVENING SESSION

7.15: Orchestral dinner music. 7.58: Programme announcements. 8.0: Overture, "Barber of Seville." 8.10: Orchestral and vocal concert. 10.15: Announcements. Close down.

When Your Set Needs A Doctor

'Phone Pet. 1630. We guarantee all Repairs. Remember—Pet. 1630.

THE RESCO RADIO SUPPLY CO., 235 Livingstone Rd., West Maitlandville.

Interstate Programmes, Sunday, August 18

3LO

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 371 metres).

MORNING SESSION.

10.0: Birthday greetings. 10.15: Reproduced music. 10.45: News of the week-end. 11.0: Morning service from Scots Church, Collins Street, Melbourne; sermon by Rev. Dr. W. Borland. 12.30: Close down.

AFTERNOON SESSION.

3.0: Pleasant Sunday. Afternoon Service from Wesley Church; speaker, Hon. H. I. Cohen, Minister for Education. Subject: "Schools—Ancient and Modern." Vocal numbers by "The Meistersingers" Male Quartette. 4.30: Close down.

THE CHILDREN'S CORNER.

6.0 to 7.0: An hour's happiness with "Billy Bunny" and "Brother Bill."

EVENING SESSION.

7.0: Estella Sheehan's String Quartette: "Suite No. 1" (Playel). "Scenade" (Drigo). "Two Hindoo Pictures, No. 1" (Hansen and Lotter). 7.15: Leo Fisher, tenor: "A Little Wooing" (Eiseld). "I Hear a Thrush at Eve" (Cadman). 7.32: Violin and piano: "A Sonata." 7.37: Leo Fisher (tenor): "Bird Songs at Twilight" (Costal). "Shepherd's Song" (Eigar). 7.44: Estella Sheehan's String Quartette: "Three Movements of Quartette, Opus 1" (Mendelssohn).

NIGHT SESSION.

8.0: The State Theatre's Sunday Night Musical Ensemble. Stan Porter's Symphony Orchestra. Bob M'Question's Band. Frank Lanterman at the Grand Organ. And Company of Broadcasting Vocalists and Instrumentalists.

No. 1: Overture—
"William Tell" (Rossini). Stan Porter and his Orchestra.

No. 2: Tenor solo—
"Vesti la Giubba" from "Pagliacci" (Leoncauallo). Carlo Martini.

No. 3: Cello solo—
Selected. Mr. Don Howley.

No. 4: Melody number—
"Chansonette." Bob M'Question and his Band.

No. 5: String Quartette—
1st Movement of G Minor (Grieg). Messrs. Norit, Briglia, Whittingham, and Howley.

No. 6: Grand Organ—
"Mikado." Selected. Frank Lanterman.

No. 7: Soprano solo—
Selected. Miss Rennie.

No. 8: Orchestral Suite—Scenes from the South (McCoy).

(a) Fairy Tales from La Provence.
(b) Moorish Dance Song.
(c) In the Tavern.

No. 9: Saxophone—
"Baxarella." Charles M'Pee.

No. 10: Tenor solo—
"Blue Night." Charles M'Pee.

No. 11: Melody numbers.
Medley of Irving Berlin's most popular waltzes of 1929.

(a) "Marie."
(b) "Where is the Song of Songs for Me?"
(c) "Coquette."
—Bob M'Question and his Band.

No. 12: Trombone solo—
"Adele" (Beethoven), C. M. Wheatland.

No. 13: Grand Organ—
"Love Songs of Yesterday." Frank Lanterman.

No. 14: Violin solo—
"Swiss Folk Song" (Kreisler), Arved Norit.

No. 15: Orchestral Suite—
"The Blue Danube" (Strauss), Stan Porter and his Orchestra.

No. 16: Melody number—
"Why." Bob M'Question and his Band.

No. 17: Soprano solo—
To be selected. Miss Rennie.

No. 18: Orchestral Suite—
Three dances from Henry VIII. (German).

(a) Morris Dance.
(b) Shepherd's Dance.
(c) Torch Dance.
—Stan Porter and his Orchestra.

3AR

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 484 metres).

MORNING SESSION.

11.0: G.P.O. chimes.
11.10: First Church of Christ Scientist.
12.30: A studio programme of specially selected reproduced music.

3.0: Frank Lanterman at the Wurlitzer. A programme of request numbers.
3.0: Close down.

AFTERNOON SESSION.

4.30: Victorian Railways Military Band (conductor, A. Belcher)—"Two Entacts from Aosemunde" (Schubert).

4.40: Marjory Baird, soprano—"Open Thy Blue Eyes" (Massenet); "The Hindoo Song" (Bemberg).
4.47: Dr. H. Hoffman, piano—"Sonata Opus 28" (Beethoven).

5.2: Royal Male Quartette—"Swedish Folk Songs" (Hugo Jungst); "The Banks of Allan Water" (Old English); "When the Mists have Rolled Away" (Sankey); "Holy Night" (Beethoven).

5.12: Victorian Railways Military Band—"Ballad Music to Faust" (Gounod).

5.22: Marjory Baird, soprano—"My Lovely Celia," "Songs My Mother Taught Me" (Dvorak).

5.27: Agnes Scott, cello, Estelle Sheehan, piano—"Air and Variations" (Haydn), "Largo" (from "Cello Sonata") (Chopin).

5.37: Royal Male Quartette—"Soft as the Voice" (Scott); "German Volkslied Lenore," arr. by Branscombe, "I'll Hear the Trumpet Sound" (Huntly).
"Calm is the Sea" (Pfeil).

5.47: Victorian Railways Military Band—"African Dance—The Call to the Feast" (Ringl); selection, "Gaiety Echoes" (Caryll and Monckton).

5.57: Violet Sempie, contralto—"Oh, Thank me not" (Mallinson); "A Summer Night" (Goring Thomas).

6.4: Arion Trio—"Allegro Moderato," "Allegretto," "Allegro ma non troppo." Opus 63, No. 1 (Sitt).

6.19: Sydney Stubbs, baritone—"The Living God" (O'Hara); "St. Nicholas Day" (Eashope-Martin).

6.26: Mercia Rudd, violin—"Adagio" (Ries).

6.31: Violet Sempie, contralto—"The First Primrose" (Grieg); "With a Water Lily" (Grieg).

6.38: Agnes Scott, cello—"Cantabile" (Caesar Cui); "Because Slave" (F. Neruda).

6.43: Sydney Stubbs, baritone—"Youth" (Alltlen); Selected.

6.50: Arion Trio—"Allegro," "Larghetto," "Allegretto," B. Flat Major (Mozart).

6.57: What's on the air to-night?

NIGHT SESSION.

7.0: Evening service from Collins Street Baptist Church. Sermon: Rev. W. D. Jackson, B.A. "The Famous Fires"—No. 2. "The Unquenchable Fire."

8.0: Transmission from Anzac House. Concert by the R.S.S.I.L.A. Military Band. Programme: March, "Old Berlin" (Von Blom).
Overture, "William Tell" (Rossini).

Waltz, "Danube Waves" (Ivanovic).
Selection, "The Gondoliers" (Sullivan);
Descriptive Galop, "A Hunting Scene" (Bucalossi);
Patrol, "Cook of the North" (Carrie).
Suite de Ballet, "Antony and Cleopatra" (Green-

March, "The Gipsy Caravan" (Oschelt).
Assisting artists: Paul Jenie, musical entertainer; Morgan Banjo Duo; soprano, Miss Lorayne Wright; bandmaster, E. G. Abbott.

10.0: Weather report and close down.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (285 metres).

AFTERNOON SESSION.

3.0: A symphonique concert. 4.30: Close down.

NIGHT SESSION.

6.30: Children's hour. 7.0: An opera. 8.0: Requests. 10.0: God Save the King.

4QG

Queensland Government Radio Service, Brisbane (Wavelength, 385 metres).

EARLY MORNING SESSION.

7.30: Early morning service from St. Barnabas's Church of England. Close down.

MORNING SESSION.

11.0: Complete morning service, from St. Barnabas's Church of England.

AFTERNOON SESSION.

3.0: Service from Albert Street Methodist Church. 4.15: Close down.

CHILDREN'S SESSION.

6.0: Greetings to little listeners, and replies to letters.

NIGHT SESSION.

7.0: The complete children's evening service will be relayed from St. Barnabas's Church of England.

8.30: Band concert, from Wickham Park.
9.30: Close down.

5CL

Central Broadcasters, Ltd., 114 Hindmarsh Square, Adelaide (Wavelength, 409 metres).

MORNING SESSION.

10.46: Carillon of Bells from Adelaide Town Hall. 11.0: Chimes. 11.1: Divine service, from St. Memorial Church. 12.10: From studio—British official wireless news. 12.15: Close down.

AFTERNOON SESSION.

3.0: Chimes. 3.1: Sunday afternoon service, from Naugham Church, Franklin Street; items will be given by Norwood Wesley Choir. 4.0: Close down.

EVENING SESSION.

6.0: Chimes. 6.1: Children's Happy Moments. 6.15: "The Bird Lady" and "The Sunshine Songsters" will entertain the children. 7.0: Chimes. 7.1: Divine service, from Parkside Baptist Church.

NIGHT SESSION.

8.20: Announcements from Studio. Salvation Army Distress Message.
8.30: Sacred concert from Parkside Baptist Church—
Solo, Miss Gladys Moule, selected.
Tenor solo, Mr. G. Foster, "There's a Green Hill" (Gounod).
Soprano solo, Miss Dorothy Scott, A.L.C.M., "Ave Maria" (Schubert).
Baritone solo, Mr. James Barrett, "The Great Awakening" (Cramer).
Anthem, Parkside Baptist Choir, "Hearken Unto Me" (Sullivan).

Contralto solo, Mrs. J. Clark, "He Shall Feed His Flock" (Handel).

Bass solo, Mr. L. Lierich, "God Shall Wipe Away All Tears" (Sullivan).

Soprano solo, Mrs. R. A. Croger, "Thanks Be To God."

Organ solo, Miss G. Coudrey, "Largo in G" (Handel).

Duet, Miss D. Scott and Mr. Lierich, "Twilight" (George Nevin).

Soprano solo, Miss D. Waller, A.T.G., selected. Baritone solo, Mr. J. Clark, "Abide With Me."

9.40: From Studio—Mr. P. E. Nicholls will speak on "Living by Law."

9.52: General news service; British official wireless news; announcements.

10.0: Close down.

6WF

Commonwealth Government Broadcasting Station, Perth (Wavelength, 100 metres).

10.30: Special half-hour for the enthusiastic listener. 11.0: Morning service from St. Andrew's Church, Perth. 12.15: Close down. 3.30: Tune In. 3.35: Musical programme. 4.30: Close down. 6.45: Bedtime stories. 7.30: Evening service from St. George's Cathedral. 8.45: Concert relayed from Queen's Hall, Perth. 10.5: Close down. 10.5 Metre Transmission: Simultaneous broadcast on 104.5 metres of programme given on 1250 metres, commencing at 6.45 p.m.

7ZL

Tasmanian Broadcasters Pty., 53 Elizabeth St., Hobart (Wavelength, 516 metres).

10.45: Bells from Trinity Church, Warwick St., Hobart. 11.0: Morning service from Melville Street Methodist Church, Hobart. 12.15: Close down. 3.30: From the studio: Concert programme arranged by the Pleasant Sunday Afternoon Association. 4.30: Close down. 6.15: Children's Chorus singing, conductor, Trevor M. Morris. 6.45: Bertha Souther Bramhall will tell a fairy parable to the wee folk.

"The Woman Who Ran Away." 7.0: Evening service from Holy Trinity Church, Hobart. 8.30: From the studio: A Sacred and Classical Programme arranged by J. M. Counsel. 9.45: News. 10.0: Close down.

SUNDAY WIRELESS TALKS

In speaking of "spiritual" power, has the religious consciousness of the ages been concerned with a reality capable of being scientifically investigated, or with a mere nebulous nothing which it were folly to attempt to analyse?

If spiritual power be indeed a definite form of energy, then surely must the laws of its operation be capable of exact statement and the conditions able to be determined under which man may become conscious channel for such power.

Should such a line of thought interest you, listen in to WIRELESS TALKS from STATION 2GB on SUNDAY MORNINGS, from 9 to 10 o'clock, and on SUNDAY EVENINGS from 9.30 to 9.45 o'clock.

PUBLIC LECTURES SUNDAY EVENINGS,

The Vestibule, the Sydney Town Hall, commencing at 7 o'clock.

TUESDAY EVENINGS,

The King's Hall, 69 Hunter St., Sydney, commencing at 7.45 o'clock.

Local Programmes, Monday, August 19

2FC

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 442 metres).

EARLY MORNING—7 to 8.15.

7.0: "Big Ben" and meteorological information for the man on the land.

7.3: This morning's news, from the "Sydney Morning Herald."

7.8: Early rising music.

7.45: Mails and shipping.

7.48: What's on to-day?

7.50: Children's birthday calls.

8.0: Music from the Studio.

8.15: Close.

MORNING SESSION—10.30 to 12.30 p.m.

10.30: Announcements.

10.32: A.B.C. Racing Observer.

10.45: Edgar Stone at the Grand Organ.

11.0: Cables, A.P.A. and Sun-Herald news service.

11.15: The Studio Orchestra.

12.0: "Big Ben." Stock Exchange, and metal quotations.

12.2: Fiction talk.

12.20: Midday weather forecast and weather synopsis. Special produce market session for the man on the land, supplied by the State Marketing Board.

12.30: Close.

THE LUNCH HOUR—1 to 2.30 p.m.

1.0: Lunch to music with the National Broadcasting Orchestra.

2.0: Stock Exchange, second call.

2.2: A glance at the afternoon papers

2.7: Popular Education.

2.27: Announcements.

THE RADIO MATINEE—2.30 to 4.30 p.m.

2.30: The Radio Matinee Orchestra.

2.42: Thelma Houston, contralto.

2.49: Dorothy Farmer, pianist.

2.59: The Radio Matinee Orchestra.

3.15: George F. Manuel, tenor.

3.22: Gwladys Rowling, monologues.

3.29: The Radio Matinee Orchestra.

3.45: Thelma Houston, contralto.

3.52: Dorothy Farmer, pianist.

4.2: The Radio Matinee Orchestra.

4.12: George F. Manuel, tenor.

4.19: Gwladys Rowling, monologues.

4.28: Stock Exchange, third call.

4.30: Close.

EARLY EVENING SESSION—5.45 to 7.55

5.45: Kiddies "Good-night" Stories, told by the "Hello Man," assisted by Aunt Willa.

6.45: The National Broadcasting Orchestra

7.30: A.B.C. Sporting Service.

7.37: Special Country Session—Stock Exchange resume; markets; late news service.

7.58: Announcements.

THE EVENING PRESENTATION—8 to 11.30.

8.0: From the Conservatorium of Music—Choral Concert arranged by the Conservatorium Choir.

10.15: Announcements.

Official weather forecast.

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

11.30: Close. National Anthem.

2BL

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 358 metres).

OPENING SESSION—8.15 to 11 a.m.

8.15: Music for every mood.

8.45: Meteorological data for the country

8.50: Music and songs.

9.30: British Official Wireless news.

9.35: New music.

10.5: News from the "Sydney Morning Herald."

10.10: The Ladies' Club Hour—The Australian Women's A.B.C. Association, conducted by Miss Gwen Varley.

10.30: The 2BL Studio Orchestra.

11.0: Close.

MIDDAY SESSION—12 noon to 2.30 p.m.

12.0: Announcements.

12.2: The National Broadcasting Orchestra.

1.0: Afternoon news from the "Evening News" and "Sun."

1.5: The Studio music.

1.15: Women's "Interest Talk."

1.30: The Traders' "Selling the Set" Music.

2.0: Knight Barnett at the Wurlitzer Organ.

2.12: Studio music.

AFTERNOON ENTERTAINMENT—2.30 to 5.45 p.m.

2.30: Pusiness Efficiency Talk.

2.45: "The Magic Carpet"—a story of travel and adventure.

3.0: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in dance music.

3.15: From the Studio—

Laurel Mather, soprano.

3.22: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in dance music.

3.32: From the Studio—

Googs Hanlon, novelty pianist.

3.40: Dorothy Charleston, contralto

3.47: Sydney Simpson, saxophonist.

3.54: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in dance music.

4.6: From the Studio—

Laurel Mather, soprano.

4.13: Googs Hanlon, novelty pianist.

4.20: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in dance music.

4.30: From the Studio—

Dorothy Charleston, contralto.

4.37: From the ballroom of the Oriental—Sydney Simpson's Syncopaters in dance music.

4.45: "The Trade Hour" demonstration music.

5.45: Close.

THE DINNER HOUR—6.15 to 6.45 p.m.

6.15: The National Broadcasting Orchestra

6.45: The A.B.C. Younger Set Session—

Boys' Aero Night: The A.B.C. Boys' Aero Club, conducted by Mr. Norman Lyons

7.5: Studio music.

7.15: The Country Man's Market Session—Wool, wheat, stock, farm produce fruit, vegetables, and poultry markets.

7.30: The National Broadcasting Orchestra

7.55: What's on the air to-night?

TO-NIGHT'S PRESENTATION—8 p.m. to 10.30 p.m.

8 p.m.: The Balalaika Orchestra.

8.15: The Harmony Four Quartet.

8.25: Charles Zoll, comedian.

8.35: The "Frisco Novelty Duo.

8.45: Florence Page, monologues.

8.53: The Balalaika Orchestra.

9.3: G. W. Desmond, comedian.

9.10: William Williams, whistling novelty.

9.17: The Harmony Four Quartet.

9.27: Charles Zoll, comedian.

9.37: The "Frisco Novelty Duo.

9.47: The Balalaika Orchestra.

10.0: Florence Page, monologues.

10.7: G. W. Desmond, comedian.

10.17: The Harmony Four Quartet.

10.25: Official Weather Forecast, metropolitan and country.

Late news from the "Evening News" and the "Sun."

10.30: Close. National Anthem.

2GB

Theosophical Broadcasting Station, 29 Bligh St., Sydney (Wavelength, 316 metres).

MORNING SESSION

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.

AFTERNOON SESSION

2.0: Music. 2.5: Women's radio service, by Mrs. Dorothy Jordan. 2.50: Movie Know All. 3.30: Close down.

EVENING SESSION

5.30: Children's session, by Uncle George. 7.0: Music. 7.45: Feature story.

NIGHT SESSION

8.0: Miss Mary Neal (contralto). 8.7: Symphony orchestra. 8.15: Mr. Edward Barry (baritone). 8.22: Instrumental trio. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Elsie Peerless (soprano). 8.45: Address. 9.0: Weather report. 9.3: Symphony orchestra. 9.13: Miss Mary Neal (contralto). 9.23: Mr. Heath Burdock (Shakespearean recital). 9.33: Instrumental trio. 9.38: Mr. Edward Barry (baritone). 9.48: Symphony orchestra. 9.53: Miss Elsie Peerless (soprano). 10.0: Instrumental trio. 10.30: Close down.

2UW

Radio Broadcasting, Ltd., Felling's Building, Ash St., Sydney (Wavelength, 267 metres).

MIDDAY SESSION

12.30: Music and request numbers. 1.0: G.P.O. clock and chimes. 1.15: Talk on

Homecraft by Pandora. 1.40: Music. 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: Music and request items. 7.45: Radio talk, by Mr. E. Homfray. 8.0: Violin and cello recital. 9.0: Comments on Foreign Affairs, by Mr. J. M. Prentice. 9.10: Request items. 10.30: Close down.

2KY

Trades and Labour Council, Goulburn St., Sydney (Wavelength, 280 metres).

MORNING SESSION

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

CHILDREN'S SESSION

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

EVENING SESSION

7.0: Musical interlude. 7.15: Dance music. 7.45: Militant Women's Group. 8.0: Over-tune. 8.8: Tenor solos, Mr. A. Hillman. 8.15: Dance music. 8.30: Request numbers. 8.45: Miss Wright, soprano solos. 9.0: Novelty interlude. 9.10: Request numbers. 9.30: Selection of latest records. 10.0: Closing announcements.

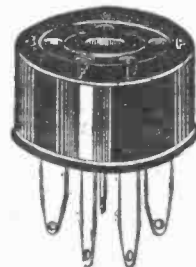
2UE

Broadcasting Station 2UE, Storey Street, Maroubra Junction, Sydney (Wavelength, 293 metres).

EARLY MORNING SESSION

7.15: Breakfast-time hour orchestral music. 8.30: Weather forecast. Close down.

STROMBERG-CARLSON ANNOUNCES



PRICE
1/3

Type UY Five Prong Bakelite Socket

This Stromberg-Carlson Socket was designed to take all makes of five prong separate heater type valves. Supplied as shown, with mounting screw and nut.

Also made in UX Type at same price.

MADE IN AUSTRALIA

Obtainable at all dealers, or direct from

STROMBERG-CARLSON,
76 William St., Sydney

RAISE THE STANDARD OF RECEPTION



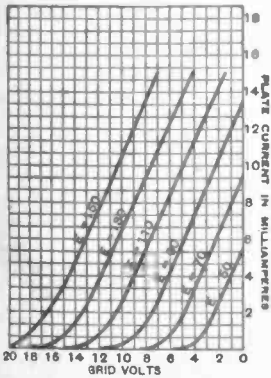
Fit a

D.E.P.

410

Osram Valve

A Power Valve which Increases Tonal Purity



Filament Volts	vs	SW	4.0 max.
" Current	..	PA	0.1 amp.
Plate Volts	..	PA	150 max.
Amplification Factor	..	RA	7.5
Impedance	..	PA	5,000 ohms.
Normal Factor	..	PA	1.5 ma./volt

This valve in the power socket of your set gives increased tonal purity of reproduction.

Osram D.E.P. 410 is a highly efficient 4-volt power valve which will handle volume without distortion.

For better results change to Osram, and fit this power valve.

Ask for It by Number—and Say OSRAM

Made in England

Your "B" Batteries last longer when used with "Osram Valves."

Ask your dealer for the Osram Valve Guide, free on request.

Advertisement of the British General Electric Co., Ltd., Magnet House, 104-114 Clarence Street, Sydney. Branches at Melbourne, Newcastle, Adelaide, Perth, and N.Z. Cities. Sole agents at Brisbane and Hobart.

Interstate Programmes, Monday, August 19

3LO

Australian Broadcasting Co., 129A Russell St., Melbourne (Wavelength, 371 metres).

EARLY MORNING SESSION.

7.0 to 8.15: See Friday.

MORNING SESSION.

10.30: A message for the day. 10.45: A.B.O. Studio Orchestra, with Marjory Jacoby, soprano. 12.0: Melbourne Observatory time signal. 12.1: Orchestra continued. 12.16: News service; British official wireless; corn exchange report; Newmarket stock sales; Associated Stock and Station Agents' official report. 12.30: Close down.

MIDDAY SESSION.

1.0: Time signal from Melbourne Observatory; Stock Exchange information; meteorological data; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; forecast. 1.30: Relay from Constitutional Club luncheon. Speaker, Mr. E. J. Mulvaney, Development and Migration Commissioner.

THE EDUCATIONAL SESSION.

2.0: "Boys and Girls' Other Days," Mr. N. D. Harper, M. A., Dip.Ed. 2.15: Reproduced music. 2.25: Forecasting the weather. Mr. H. Barkley. 2.40: Reproduced music. 2.45: "Our Australian Writers." (3) Henry Lawson, Mr. Percival Selie.

THE RADIO MATINEE.

3.0: National Broadcasting Orchestra (under direction of Wm. G. James; conductor, Percy Code): Overture, "The Magic Flute" (Mozart), Intermezzo from the Piano Concerto (Schumann). 3.10: Ivy Davis, soprano: Selections from her repertoire. 3.20: Agnes St. Clair, mezzo (soprano), The Quartet Scene from "The School for Scandal." 3.30: A Violin Recital—Marjorie Prockter: "Slavonic Dance, E Minor" (Dvorak-Kriessler), "Spanish Serenade" (Chaminade-Kriessler), "Guitarre" (Moszkowski-Sarasate). 3.40: Frank Service (tenor), The Quartet Scene from "The School for Scandal." 3.50: A Violin Recital—Marjorie Prockter: "Slavonic Dance, E Minor" (Dvorak-Kriessler), "Spanish Serenade" (Chaminade-Kriessler), "Guitarre" (Moszkowski-Sarasate). 4.0: Fred Champion, entertainer: To-day's Funny Stories. 4.10: Frank Service, piano: Syncopated Jazz. 4.15: Jessie Clark: Songs at the Piano. 4.25: Orchestra: Duet for flute and clarinet: "Silver Tones" (Spencer). 4.30: Close down.

CHILDREN'S CORNER.

5.45: "Billy Bunny". More adventures on the Magic Carpet, and the Mouth Organ Man will entertain.

LECTURETTE SESSION.

6.15: Reproduced music. 6.20: A talk of interest to the older boys and girls. 6.35: Reproduced music. 6.40: Public School activities. Mr Percival Taylor. 6.55: Reproduced music.

EVENING SESSION.

7.0: Stock Exchange information; corn exchange, wool exchange, and Associated Stock and Station Agents' official reports; mines and metals; fish and rabbit prices; farm and dairy produce report supplied by the Inter-State Dairy Produce Committee; wholesale fruit prices by Wholesale Fruit Merchants' Association; retail prices supplied by the Victorian Fruit Growers' Association; citrus fruit prices supplied by Victorian Central Citrus Association; weather synopsis; river reports; rainfall data. 7.25: Recent Discoveries and Inventions: 2—Vertical Rising Aeroplanes. Mr. W. E. Bassett. M.Mech.E., B.E.C. M.I.E.E.A. 7.40: News. 7.45: Recent books of note. Mr. A. A. Phillips, B.A.

NIGHT SESSION.

8.0 to 11.0: A.B.C. Old-time Night. Dancing 8.0 to 11.0, with assisting artists. Bendall and Aumont's Old-time Dance Orchestra.

PROGRAMME—DANCE ENGAGEMENTS.

1. Waltz—"Druid's Prayer."
 2. Barn Dance—"Alabama Coon."
 3. Quadrilles—"Tip an Winkle."
 4. Valetta—"Nights of Gladness."
 5. Waltz—"Blue Danube."
 6. Lancers—"Midnight Lancers."
 7. Schottische—"Stay in Your Own Back Yard."
 8. Polka—"So Early in the Morning."
 9. Alberts—"Old Favorites."
 10. Waltz—"Pink Lady."
 11. Highland Schottische—"The Keel Row."
 12. Royal Irish—Irish Airs.
- The British Olympic Association's "Herald" news service from Rugby; meteorological information. 11.0: The "Rex" Dance Band. 11.30: Close down.

3AR

Australian Broadcasting Co., 129A Russell St., Melbourne (Wavelength, 484 metres).

MORNING SESSION.

8.15 to 11.0: See Friday.

MIDDAY SESSION.

Mainly for Women.

12.0: Food and cookery. Roasting of meat. Miss R. Christoph, B.A. (Melbourne), M.A. (Toronto). 12.15: Fifteen minutes' synopsis. 12.30: Luncheon music supplied by the National Broadcasting Orchestra (under direction of Wm. G. James). (conductor, Percy Code).

AFTERNOON SESSION.

2.0: "Cremona Trio—No. 15 B Flat Op. 19, "Allegro Vivace," "Menuetto," "Adagio Assai." 2.10: Gertrude Hutton, contralto—"Queen Mary Song" (Elgar); "Rondel" (Elgar). 2.17: Estelle Sheehan, piano—"Fantasie Impromptu" (Chopin); "Nocturne" (Chopin); "Black Keys Study" (Chopin). 2.27: Mona Nugent, soprano—"A Lovely Evening in Summer 'Twas" (Grieg); "My Mother Bids Me Bind My Hair" (Haydn). 2.34: Cremona Trio—First movement of Quartette, Op. 18 No. 16, B Flat (Beethoven).

2.40: Gertrude Hutton, contralto—"Caro Mio Ben"; "Wayfarer's Night Song" (Mardin). 2.47: Cecil Parkes, violin—"Cantzonetta from Concerto" (Tschakowsky); "Zephyrus" (Hubay). 2.54: Mona Nugent—"Evensong" (Kjerulm); "The Secret" (Schuberl). 3.0: J. and G. Confidential Two—"Eleanore"; "You Were Meant for Me"; piano novelty, "Lady Fingers," "Sonny Boy"; "To-morrow." 3.15: The Moths, fitting round with frolicsome fancies. Mainly for women. 3.30: Your clothes. How to make pleats, Miss Ruth Bunting. 3.45: Musical interlude. 3.50: Your garden. Herbs for use or profit, Mr. A. W. Jessep. 4.5: Musical interlude. 4.10: Travelling abroad, through feminine eyes, Mrs Maurice Posner.

TRADERS' DEMONSTRATION SESSION.

4.30: Reproduced music. 5.45: Close down. 6.5 to 9.30: Dinner music supplied by the A.B.O. Studio Orchestra.

EVENING SESSION.

7.30: What's on the air to-night? 7.32: Latest musical releases.

NIGHT SESSION.

An Hour of Variety. 8.0: Malvern Tramways Band—"Don Quixote" (Rimmer). 8.10: Norman Lee, entertainer—"Just Around the Corner"; "Bless Her Little Heart"; "A Cottage Small." 8.20: Thelma Ready, banjo—Selected. 8.28: One-act play—"The Jest of Hahalaba," by Lord Dunsany. Produced by Terence Crisp. Characters—Arthur Strangways, Terence Crisp. Snaggs, his butler, Rex Sinclair; An Alchemist, W. H. Chandler; Hahalaba, the Spirit of Laughter, Chas. Row; Scene: Smoking room, Sir Arthur Strangway's house in London. Time: Last moment of 1928.

Note: To obtain the proper atmosphere for this play, listeners are requested to turn off their lights.

8.43: Malvern Tramways Band—"Prelude and Intermezzo" from "Merchant of Venice" (Rosse). 8.53: Bob Molyneux, popular songs—"Wedding of the Painted Doll" (Brown); "Just a Night for Meditation" (Young and Lewis). 9.0: The World's Kaleidoscope, by Prof. H. K. Bailey, B.A., LL.B.

9.15: Peerless Trio—"Ave Maria" (Schubert). Selected. 9.30: Grace Jackson, mezzo contralto—"The Moorish Maid" (Parker). 9.33: Malvern Tramways Band—"Unter Dem Siegesbanner" (Von Blom); "Egyptian Intermezzo" (Paul Lucke).

9.36: Catherine Neill, recital—"Paquita," 9.48: Donald McBeath, violin—"Minuet" (Mozart). 9.56: Grace Jackson, mezzo contralto—"Prelude to the Cycle of Life" (Landon Ronald); "The Winds are Calling" (Harold Simpson).

10.3: Malvern Tramways Band—"Belle of Brittany" (Talbot). 10.13: Yvonne and Yvette and a piano. 10.25: Malvern Tramways Band—Waltz Intermezzo, "Thoughts" (Alford). 10.30: God Save the King.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (255 metres).

MORNING SESSION.

11.0: Time signal. 11.30: "La Vogue,"—"The World's Fashions and Fables." 11.35: Orchestra B.B.O.—Sophie Brudenell, Norman Allen. 12.0: Popular classics. 12.25: Close down.

AFTERNOON SESSION.

2.0: Orchestra, organ, and ladies' choir. 2.30: Selections from "This Year of Grace." 2.55: Atwater Kent Radio Hour—sponsored by A. G. Healing, Ltd., and E. T. Muir. 3.55: News. 4.0: Close down.

EVENING SESSION
5.30: Billy Bunny's children's hour. 6.0: Latest and best recordings. 6.15: Stories by the Queen of Hearts. 6.30: What's on at the theatres and movies; Radio Movie Club. 6.35: Symphony Orchestra—Lottie Lehmann, Robert Watson. 7.0: Solos, instrumental and vocal. 7.30: Dance music. 7.45: Market reports.

NIGHT SESSION

8.0: The Aeolian programme. 8.30: Musical comedy hits. 9.0: The Herald's hour. 10.0: Famous singers and players. 10.30: A few minutes dancing. 10.45: God Save the King.

4QG

Queensland Government Radio Service, Brisbane (Wavelength, 385 metres).

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.

EARLY EVENING SESSION.

7.45: Lecturette.

NIGHT SESSION.

8.0: Studio Orchestra—Overture, "Zampa" (Herald). 8.7: Kennedy Allen—The eighth of a series of Shakespearean Reviews, "A Study in Misanthropy."

8.17: Fred Todd, pianiste—"Marche Militaire" (Schubert-Tausig). 8.21: Nell Mackay, baritone—"Hats Off to the Stoker" (Slater). 8.26: Studio Orchestra—March, "The Flash of Steel" (Colin). 8.30: A choral recital, by the Brisbane Eisteddfod Choir, from the School of Arts—Part song, "My Love Dwelt in a Northern Land" (Elgar).

"Spinning Chorus" (Wagner). "Soldiers' Chorus" (Faust). Glee, "Bells of St. Michael's Tower" (Stewart). 9.0: Metropolitan weather forecast. 9.1: Studio Orchestra—Valse, "Such is Pleasure" (Sudds).

9.2: Mary L. Spanjer, contralto—"Bantry Bay" (Molloy). 9.14: Claude Walker—Ten minutes with Henry Lawson. 9.24: Studio Orchestra—Valse ballet, "In the Starlight" (Hueter). 9.30: Programme by the Brisbane Excelsior Band. Between band items Mrs. R. G. Allen, soprano, will sing—

"Over the Steppes" (Gretchanoff). "My Curly Headed Baby" (Clutsum). 10.0: News; weather information. Close down.

5CL

Central Broadcasters, Ltd., 114 Hindmarsh Square, Adelaide (Wavelength, 409 metres).

MORNING SESSION.

11.15 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 4.30: See Friday.

EVENING SESSION.

6.0: Chimes. 6.1: Children's Happy Moments. 6.30: Dinner session. 7.0: Chimes. 7.1: Birthday greetings; sporting service, including billiard and cycling notes; results of open amateur golf championship of Australia; general market reports. 7.20: Mr. D. F. Laurie (Government Poultry Expert) will speak on "Summer Hatching—Points About Eggs." 7.35: 5CL Twinkler Boys' Club; entertainment by "The Twinkler," Mr. F. J. Mills.

NIGHT SESSION.

8.0: Chimes. 8.10: Walter Barratt and his Maison Masters of Melody—

For the best radio reception.

Mullard

THE MASTER VALVE

A British valve with a first-class reputation.

FOR THE BEST RADIO RECEPTION



- "The T. Smaker's Dream" (Golden).
- "Chilly Pom-Pom-Pee" (Bryan).
- "Love's Dream" (Akt).
- 8.20: Rupert Hazell and Elsie Day.
- 8.28: Walter Barratt and Co.—
- "I'm Bringing a Red Rose" (Donaldson).
- "Makin' Whoopee" (Kahn).
- 8.34: Phyllis Tier, elocutionist—
- "A Hay Dream."
- 8.38: Walter Barratt and Co.—
- "Don't Keep Me in the Dark, Bright Eyes" (Wendley).
- "The Wedding of the Painted Doll" (Brown).
- "Promise Me" (Van Cooth).
- 8.48: M. Dayne Roland, Whispering Baritone.
- 8.52: Walter Barratt and Co.—
- "The Savoy Scotch Medley" (Somers).
- "Gladi Rag Doll" (Ager).
- 9.0: Chimes.
- 9.1: Meteorological information, including Semaphore tides.
- 9.2: Overseas grain report; general news service.
- 9.10: Rupert Hazell and Elsie Day.
- 9.18: Walter Barratt and Co.—
- Ron Le Cornue, xylophonist—Selected.
- "Lucky In Love" (De Sylva).
- "If You Want the Rainbow" (Rose).
- 9.28: Phyllis Tier, elocutionist—
- "Scandal."
- 9.32: Walter Barratt and Co.—
- "I Can't Give You Anything But Love" (Fields).
- "I'm on Top of the World Alone" (Whiting).
- "Louise" (Whiting).
- 9.42: M. Dayne Roland, Whispering Baritone—
- Popular numbers.
- 9.46: Walter Barratt and Co.
- 9.56: Phyllis Tier, elocutionist—
- "Family Songs."
- 10.0: Chimes.
- 10.1: Walter Barratt and Co.—
- "Let's Make Believe" (Harris).
- "High Up On a Hilltop" (Baer).
- "I Don't Care" (Dowell).
- 10.11: M. Dayne Roland, Whispering Baritone—
- Popular numbers.
- 10.15: General news service; British official wireless and meteorological information; results of open amateur golf championship of Australia.
- 10.30: Walter Barratt and Co.—
- "I Knew It Was You" (Murray)
- "In the Woodshed She Said She Would" (Johnson).
- "Sonny Boy" (Jolson).
- "Was It a Dream" (Coslow).
- "Rungaria" (Black).
- "My Mother's Eyes" (Baer).
- "Just Like a Melody Out of the Sky" (Donaldson).
- Request numbers.
- 11.0: Close down.

6WF

Commonwealth Government Broadcasting Station, Perth (Wavelength, 100 metres).

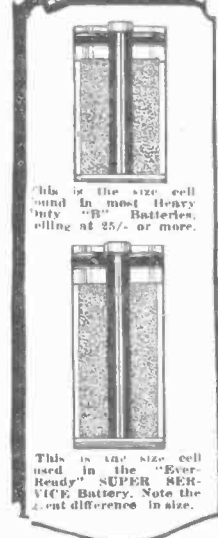
- 10.0: Gramophone records. 11.0: Close down. 12.30: Markets, news, etc. Weather. 1.3: Music. 1.30: Close down. 3.30: Afternoon sea music. 4.0: "Sealing Wax Craft," by Miss B. Hoyle. 4.30: Close down. 6.45: Bedtime stories by Umele Duffy. 7.5: Light music. 7.55: Commercial and general information. 7.45: Popular science talk. 8.0: Time signal. 8.1: Weather. 8.3: Children's Orchestra. 8.50: Late news. Ships within range. Late weather. 9.5: Programme continued. 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

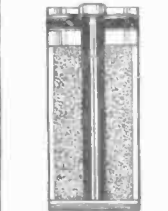
Tasmanian Broadcasters Pty., 95 Elizabeth St., Hobart (Wavelength, 516 metres).

- 11.30: Selections by the Melody Masters. 11.34: Midlands Weather Forecast. 11.35: Selections by the Melody Masters. 11.55: Tasmanian Stations' 8.0 weather report. 12.0: Chimes. 12.1: Shipping information, ships within wireless range, mail notices, housewives' guide, commercial news. 12.8: Selections by the Melody Masters. 12.29: Announcements. 12.33: Selections by the Melody Masters. 12.55: "Mercury" news service, British official wireless news, railway auction produce sales held at railway. 1.10: Under the auspices of the "Come to Tasmania" organisation, a Norman will speak on "How to Spend a Holiday in Tasmania." 1.20: Selections by the Melody Masters. 1.30: Close down. 3.0: Chimes. 3.1: Selections by the Melody Masters. 3.4: Weather information. 3.5: Selections by the Melody Masters. 4.15: "Aunt Edna" will speak on "Season's Forecast." 4.30: Close down. 5.15: Children's hour with the "uncle David." 7.15: News session. 8.0: Under the auspices of the Tasmanian University, H. T. Parker, M.A., will speak on "Reasons and Excuses," a talk on "Psychology." 7.45: Geo. Collis will speak on "Physical Culture." 8.0: Chimes. 8.1: Selections by the Melody Masters. 8.6: From the studio; A concert arranged by Madame Helen George. 9.30: News session. 9.45: Selections by the Melody Masters. 10.0: G.P.O. chimes the hour. 10.1: Close down.

25% GREATER OUTPUT AT LESS COST!



This is the size cell found in most Heavy Duty "B" Batteries, filling at 25% or more.



This is the size cell used in the "Ever-Ready" SUPER SERVICE Battery. Note the great difference in size.



See that this Trade-mark is on each Battery. It guarantees the Genuine British Article.

"THIS IS WHAT 'SUPER-SERVICE' MEANS TO YOU"

EVER seen the inside of an "Ever-Ready" SUPER SERVICE "B" Battery? Ever noticed the construction of the 30 powerful cells inside the case—the heavy-gauge zinc containers—the high quality of all materials used in its manufacture?

If you haven't then you've missed finding out why this Battery is so popular. It's in the cells! The illustration on the left shows you graphically how much larger a SUPER SERVICE cell is than the average Heavy Duty cell. By using an "Ever-Ready" SUPER SERVICE "B" Battery for your radio you can obtain 25 per cent. greater output, longer life, greater reliability, and unexcelled economy—all this at a price actually lower than many of the small-cell Heavy Duty "B" Batteries on the market.

Enjoy to-night's radio programme to the full. Get your SUPER SERVICE to-day from any good radio dealer.

Wholesale Distributors:

THE EVER-READY CO.

(GT. BRITAIN), LTD.

163 PITT STREET, SYDNEY.



W.E.S

Local Programmes, Tuesday, August 20

2FC

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 442 metres).

EARLY SESSION—7 to 8.15 a.m.
7.0: "Big Ben" and meteorological information for the man on the land.
7.3: This morning's news from the "Sydney Morning Herald."
7.8: Early rising music.
7.45: Mail and shipping.
7.48: What's on to-day?
7.50: Children's birthday calls.
8.0: Music from the Studio
9.15: Close.

MORNING SESSION—10.30 to 12.30 p.m.
10.30: Announcements.
10.32: A.B.C. Racing Observer.
10.45: Edgar Stone at the Grand Organ.
11.0: Household Helps: "Hints to Housewives."
11.10: Cables, A.P.A. and Sun-Herald news service.
11.15: The Studio Orchestra.
12.0: "Big Ben" Stock Exchange and metal quotations.
12.2: Literary talk.
12.20: Midday weather forecast and weather synopsis. Special produce market session for the man on the land, supplied by the State Marketing Board.
12.30: Close.

THE LUNCH HOUR—1 to 2.30 p.m.

1.0: Lunch to music with the National Broadcasting Orchestra.
2.0: Stock Exchange, second call.
2.2: A glance at the afternoon paper.
2.7: Popular Education.
2.27: Announcements.

THE RADIO MATINEE—2.30 to 4.30 p.m.

2.30: The Radio Matinee Orchestra.
2.45: Roy Scrivener, baritone.
2.52: Carlton Fay, pianist.
3.2: The Radio Matinee Orchestra.
3.14: Hilda Nelson, soprano.
3.21: Kathleen Logue, violinist.
3.28: The Radio Matinee Orchestra.
3.43: Roy Scrivener, baritone.
3.50: Carlton Fay, pianist.
4.0: Kathleen Logue, violinist.
4.7: Hilda Nelson, soprano.
4.14: The Radio Matinee Orchestra.
4.28: Stock Exchange, third call.
4.30: Close.

Note: Race results from Menangle will be transmitted as received.

EARLY EVENING SESSION—5.45 to 7.55

5.45: Kiddies' "Good-night" Stories, told by Aunt Eily, assisted by Aunt Willa and Marjory.
6.45: The National Broadcasting Orchestra.
7.0: A.B.C. Sporting Service.
7.37: Special Country Session—Stock Exchange resume; markets; late news service
7.58: Announcements.

THE EVENING PRESENTATION—8 to 11.30.

8.0: Fun from Fullers'.
8.15: The Australian Broadcasting Dance Orchestra.
8.27: Compton Coult, comedian.
8.34: The Australian Broadcasting Dance Orchestra.
8.46: Victor Evans, baritone.
9.3: The Country Man's Weather Session—
(a) New South Wales Forecasts.
(b) Inter-State Weather Synopsis.
9.4: The Australian Broadcasting Dance Orchestra.
9.16: Rene Rich, violinist.
9.23: The Australian Broadcasting Dance Orchestra.
9.35: Len Mauric and Wit, popular vocalists.
9.42: The Australian Broadcasting Dance Orchestra.
9.54: Wendling and Molloy, instrumentalists.
10.6: Rae Foster, popular vocalist.
10.15: Announcements.
Official weather forecast.
10.20: Rules of Rhythm by Radio—
Carlo Thomas will discuss the latest dance steps.
10.30: The Australian Broadcasting Dance Orchestra.
11.30: Close. National Anthem.

2BL

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 353 metres).

OPENING SESSION—8.15 to 11 a.m.
8.15: Music for every mood.
8.45: Meteorological data for the country.
8.50: A bunch of Balads.
9.30: British Official Wireless news.
9.35: New music.
10.5: News from "Sydney Morning Herald."
10.10: The Ladies' Club Hour—The Australian Women's A.B.C. Association, conducted by Miss Gwen Varley.
10.30: The Studio 2BL Orchestra.
11.0: Close.

MIDDAY SESSION—12 noon to 2.30 p.m.
12.0: Announcements.
12.2: The National Broadcasting Orchestra.
1.0: Afternoon news from the "Evening News" and "Sun."
1.5: Studio music.
1.15: Women's "Interest Talk."
1.30: The Traders' "Selling the Set."
2.0: J. Knight Barnett at the Wurlitzer Organ.
2.12: Studio music.

AFTERNOON ENTERTAINMENT—2.30 to 5.45.

2.30: Business Efficiency Talk.
2.45: "The Magic Carpet"—a story of travel and adventure.
3.0: Romano's Dance Orchestra, conducted by Bennie Abrahams.
3.12: From the Studio—
Mab Bowyer, contralto.
3.19: Romano's Dance Orchestra, conducted by Bennie Abrahams.
3.29: From the Studio—
Reg Harrison, entertainer.
3.38: Romano's Dance Orchestra, conducted by Bennie Abrahams.
3.46: From the Studio—
Will Cotterill, tenor.
3.53: Romano's Dance Orchestra, conducted by Bennie Abrahams.
4.3: From the Studio—
Mab Bowyer, contralto.
4.10: Reg. Harrison, entertainer.
4.17: Popular Dance Music.
4.25: Romano's Dance Orchestra, conducted by Bennie Abrahams.
4.35: From the Studio—
Will Cotterill, tenor.
4.42: The latest dance.
4.45: The Trade Hour demonstration music.
5.45: Close.

THE DINNER HOUR—6.15 p.m. to 7.55 p.m.

6.15: The National Broadcasting Orchestra.
6.45: The A.B.C. Younger Set Session—Girl Guides' Night: The A.B.C. Girl Guides' Club, conducted by Miss Gwen Varley.
7.5: Studio music.
7.15: The Country Man's Market Session—
Wool, wheat, stock, farm produce, fruit, vegetables, and poultry markets.
7.30: The National Broadcasting Orchestra
7.55: What's on the air to-night?

TO-NIGHT'S PRESENTATION—8 to 10.30.

A classic programme under the direction of Mr. G. Vern Barnett.
8.0: G.P.O. chimes.
Instrumental Trio—
G. Vern Barnett, piano
Moore M'Mahon, violin
Athos Martelli, 'cello.
8.15: Raymond Beatty, basso.
8.22: Moore M'Mahon, violinist.
8.29: Molly Mackay, soprano—
(a) "A Birthday" (Woodman).
(b) "The Synnove's Song" (Kjerulf)
8.36: Instrumental Trio.
8.51: Molly Mackay, Soprano—
(a) "Boat Song" (Ware).
(b) "Lullaby" (Cyril Scott).
8.58: Athos Martelli, 'cellist.
9.5: Instrumental Trio.
9.20: Raymond Beatty, basso.
9.27: Late weather forecast for the man on the land.
9.28: G. Vern Barnett, pianist.
9.38: In Lighter Vein—
The Charles Lawrence Revue Company in an Hour of Frivolity.
10.25: Official weather forecast—
Metropolitan and country.
Late news from "Evening News" and "Sun."
10.30: Close.
National Anthem.

2GB

Throphical Broadcasting Station, 29 Bligh St., Sydney (Wavelength, 316 metres).

MORNING SESSION

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.

AFTERNOON SESSION

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.

EVENING SESSION

5.30: Children's session, by Uncle George. 7.0: Music. 7.30: Talk from Sutton's 2GB radio service dept., by Mr. Stan Crittenden. 7.45: Feature story.

NIGHT SESSION

8.0: Miss Thelma Lansdowne (contralto). 8.7: Violin solos. 8.15: Mr. William Green (tenor). 8.22: Symphony orchestra, 8.30: Humorous interlude, by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Marjorie Cole (soprano). 8.45: Miss Ada Brook (pianiste). 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 Marjorie Cole (soprano). 10.0: Instrumental music. 10.30: Close down.

2UW

Radio Broadcasting, Ltd., Palling's Building, Ash St., Sydney (Wavelength, 267 metres).

MIDDAY SESSION

12.30: Music and request numbers. 1.0: G.P.O. clock and chimes. 1.15: Talk on Homecraft, by Pandora. 1.40: Music. 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: Music and request items. 8.0: Piano recital. 9.0: Comments on Foreign Affairs by Mr. J. M. Prentice. 9.10: Request items. 10.30: Close down.

2KY

Trades and Labour Council, Goulburn St., Sydney (Wavelength, 280 metres).

MORNING SESSION

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

CHILDREN'S SESSION

6.0: Birthday calls. Request numbers and kiddies' entertainment. Aunt Jemima and Uncle Bert.

EVENING SESSION

7.0: Musical interlude. 7.15: Sporting feature. Turf topics. How they should run tomorrow. Mr. Geo. A. Davis. 7.45: Request numbers. 8.0: Miss Billie Underwood, novelty numbers. 8.10: Soprano solos. 8.18: Mr. Higgins, baritone solos. 8.26: Mr. Hancock pianoforte solos. 8.30: Music and request numbers from the studio. 9.0: Sporting feature. Presented by Tooth and Co. Ltd., Kent Brewery. From the ringside of M'Hugh's Leichhardt Stadium. Results of early events and full description of main 15-rounds event. 9.40: Dance music from studio. 10.0: Closing announcements.

2UE

Broadcasting Station 2UE, Storey Street, Maroubra Junction, Sydney (Wavelength, 293 metres).

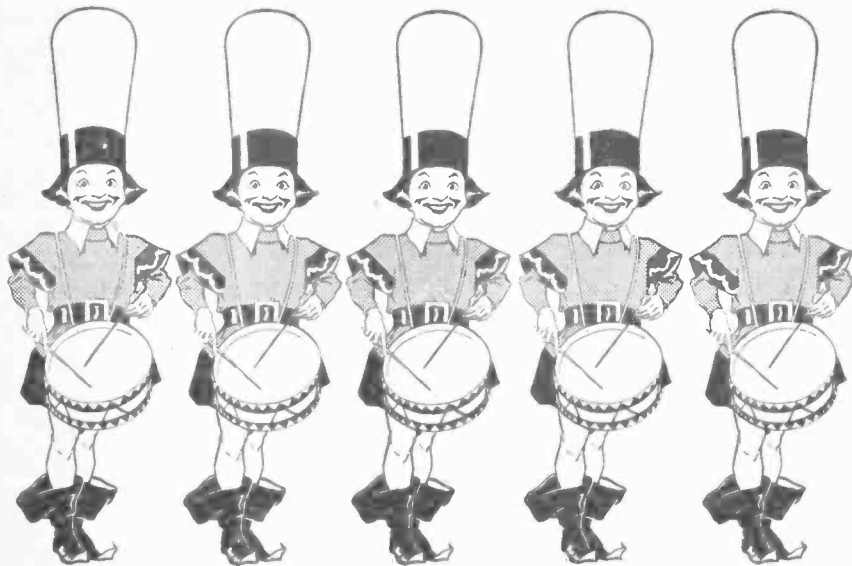
AFTERNOON SESSION

1.0: Orchestral and vocal items. 1.45: Organ recitals. 2.0: Music. 2.30: Announcements. Close down.

EVENING SESSION

7.15: Orchestral and vocal dinner music. 7.58: Programme announcements. 8.0: Overture, "Maritana." 8.10: Orchestral and vocal selections. 10.15: Close down.

Uniform Volume



LET your next valve be a Radiotron—it will give you greater volume without distortion and, still more important, as long as you replace a Radiotron with a Radiotron you will retain the same clear volume and all round perfect reception.

Radiotrons are closely matched by 41 different inspections and tests. No other valves have the same uniformity of characteristics.

—Look for Uniformity in Valves

**AUSTRALIAN
GENERAL ELECTRIC**
Australian General Electric Company, Ltd.

93-95 Clarence Street, Sydney.

53 King St.,
NEWCASTLE.

Olvic Centre,
CANBERRA.

621 Dean St.,
ALBURY.

Keen Street,
LISMORE.

RADIOTRON UX-171-A is a power Amplifier Valve, designed to supply large, undistorted volume. It is intended for use in the last stage of audio frequency amplification.

OTHER A.C. RADIOTRONS
UX 260, UX 227, UX 226,
Full Wave Rectifier, General Purpose Valve,
A.C. Filament.

From all Good Radio Dealers

RCA Radiotron

Interstate Programmes, Tuesday, August 20

3LO

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 371 metres).

EARLY MORNING SESSION.

7.0 to 8.15: See Friday.

MORNING SESSION.

10.30: Current happenings in sport, by Mel. Morris. 10.45: A.B.C. Studio Orchestra, with Oliver Peacock, baritone. 12.0: Time signal (from Melbourne Observatory); A.B.C. Studio Orchestra (continued). 12.15: "Sun Pictorial" news service; British official wireless; corn exchange report; Newmarket stock sales; Associated Stock and Station Agents' official report. 12.30: Close down.

MIDDAY SESSION.

1.0: Time signal from Melbourne Observatory. 1.1: Stock Exchange information; meteorological data; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports; rainfall; comments on the day's news. 1.30: Reproduced music.

EDUCATIONAL SESSION.

2.0: "Stories from the Operas," Miss A. Babington. 2.15: "The Evening Life," Mr. Loftus Hills, D.Sc. 2.40: "A Talk in French," Mons. H. Rouel, B.A. An hour with British Composers. 3.0: National Broadcasting Orchestra: "Suite Romantique" (Belyay). 3.10: Vida Lugg, mezzo soprano: "Ships That Pass a Night" (Bal Philip); "Granny's House" (Bal Philip); "Beware" (Bal Philip). 3.17: Victor Stephenson, piano: "Scherzo in C Minor" (Schumann); "Andante in C Major" (Schumann). "Hark, Hark, the Lark" (Schubert-Liszt); "Marche Militaire" (Schubert-Fausly); 3.32: J. Howard King, baritone: "Silent Moon" (Vaughan Williams); "Now Sleeps the Crimson Petal" (Roger Quilter). 3.39: A.B.C. Studio Quartette: Ten minutes Chamber Music. 3.50: Vida Lugg, mezzo soprano: "Arise, O Sun" (Carmen); "A Birthday" (Cowen). 3.57: Musical Comedy selections. National Broadcasting Orchestra: Selections. "Lilacette" (Clutsam). 4.7: John Stewart: "Musical Comedy Excerpts" 4.17: Charles Stephens, piano. 4.24: National Broadcasting Orchestra: Selections. "Maytime" (Romberg). 4.30: Close down.

THE CHILDREN'S CORNER

5.45: "Bobbie Bluegun": Further adventures with "Ector and Orace." 6.5: Clever Clarice; "Selections from her repertoire."

EVENING SESSION.

6.15: Reproduced music. 6.20: A talk of interest to the older boys and girls. 6.35: Reproduced music.

LECTURETTE SESSION.

6.40: Mr. J. M' Rae, M.A.: "Temperament and Choice of Vocation," part 2. 6.55: Reproduced music. 7.0: Stock Exchange information; corn exchange, wool exchange, and Associated Stock and Station Agents' official reports; mines and metals; fish and rabbit prices; farm and dairy produce report by the Inter-State Dairy Produce Committee; wholesale fruit prices by the Wholesale Fruit Merchants' Association; retail prices supplied by the Victorian Fruitgrowers' Association; citrus fruit prices supplied by Victorian Centre Citrus Association; weather synopsis; river reports; rainfall data. 7.25: For the man on the land: Mr. W. C. Rugg. "Chickens—Their Care and Management." 7.40: "Herald" news. 7.45: "The things we drink, Mr. H. Kelly, "Fresh Fruit Drinks."

NIGHT SESSION.

AN HOUR OF POPULAR CLASSICS.

8.0: National Broadcasting Orchestra—"Two Favorite Classics" (Schubert). 8.10: Norman McKenzie (baritone)—"The Floral Dance" (Gies). "Down by the Sally Gardens" (Curwen). "An Epitaph" (Curwen). 8.20: Louis Hattenbach, cello—"Cantilena" (Daidorf). "Menuetto" (Grieg). "Sercenade" (Bitt). "Gavotte No. 2" ("Pepper"). 8.35: May Daley, soprano—"Fair Dafoodis" (Frank Bridge). "To a Messenger" (Frank La Forge). "Magdalen at Michael's Gate" (Lisa Lehmann). 8.45: A.B.C. Quartette—"Quartette No. 5, Op. 76" (Haydn). "Quartette, Op. 84 (Haydn). 9.55: University Extension Series: Prof. S. H. Cowling, M.A.—"The King's English." "The Music of Merry-making—From Olden Times. 9.10: Geo. Findlay, piano—"Sarabande in D Flat" (Bach). "Bourree" (Bach). 9.20: Marjorie Hatchard, mezzo soprano—"Green Broom" (Old English). "I Will Give My Love an Apple" (Old English). 9.28: National Broadcasting Orchestra—"Three Dances from Nell Gwynne." 9.33: Marjorie Hatchard, mezzo soprano—"Green Broom" (Old English). "Mowing the Barley" (Old English). 9.40: Geo. Findlay, piano—"Minuet" (Beethoven). "Gavotte" (Rameau). 9.50: National Broadcasting Orchestra—"Old English Songs of Shakespeare's Time." 10.0: The Merry Mascote—a merry mixture of music and mirth. 10.35: The "Rex" Dance Band. 11.30: God Save the King.

3AR

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 481 metres).

EARLY MORNING SESSION.

8.15 to 11.0: See Friday.

MIDDAY SESSION.

12.0: Beautifying the Home: Furniture—Its Characteristics and Development. P. M. Carew-Smythe, A.R.C.A. (London). 12.15: Fifteen minutes synopsis. 12.30: Luncheon Music, supplied by the National Broadcasting Orchestra.

AFTERNOON SESSION.

2.0: Regal Band: March, "With Banners Flying"; overture, "Les Filandres," 2.10: Violet Jackson, soprano: An Eric Kay Love Lilt (Kennedy Fraser); "April Goes A'walking" (Dickson). 2.17: Joseph Barille: "Valse Pathetique" (De Lorenzo). 2.22: J. Howard King, baritone: "Tally-Ho" (Leon); "The Curlew" (Gould). 2.29: Regal Band: Classic Gems. 2.39: Keith Desmond, recital: "The Whitest Man I Know." 2.49: W. Simmonds, cornet solo: "Your Eyes Have Told Me So." 2.54: Violet Jackson, soprano: "Obstination" (Pontenailles); "The First of June" (Herbert Oliver); 3.0: Stewart and Lorraine: Humorous Instrumentalists. 3.15: Charles Stephens, tenor: "Serenade" (Pagliacci); "You're Just a Flower From an Old Bouquet." 3.22: Regal Band: Two popular requests: Waltz, "Carolina Moon" (Stewart); "Mystery of Life" 3.30: The Baby—Bathing the Baby, Sister Anne Purcell. 3.45: Musical Interlude. 3.50: Useful Crafts at Home: (1) Stringy Bark Work, Miss Henriette Walker. 4.5: Musical Interlude. 4.10: The Latest Fashions, Madame La Mode. 4.15: Reproduced music. 5.45: Close down.

EVENING SESSION.

6.15: Dinner Music, supplied by the A.B.C. Studio Orchestra. 7.30: What's on the air to-night? 7.32: Latest Musical Releases.

NIGHT SESSION.

8.0: National Broadcasting Orchestra: Under direction, Wm. G. James, conductor, Percy Code—"Overture, "William Tell" (Rossini). "A Fantasy from Bohemian Woods" (Priml). 8.10: Marjory Baines, soprano—"Non Son Plus" (Mozart). "On Wings of Song" (Mendelssohn). "The Wren" (Lehman). 8.20: Edouard Lambert, violin—"Aria" (Goldmark). "Mazurka" (Zarady). 8.30: Joseph Foster, baritone—"Sea Fever" (Ireland). "Love Me or Not" (Secchi). Selected. 8.40: The Studio Merry-makers—"Twenty-five Minutes of Music and Merriment." 9.5: Louie Dunn, recital—"The Highwayman" (Noyes). 9.15: Orchestra—"Musical Gems from Tschakovsky." 9.20: The Metro. Male Quartette—"The Song of the Jolly Roger" (Chudleigh Candler). "Doan Ye Cry My Honey" (Albert Noll). 9.27: St. Paul's Cathedral Hand-Bell Ringers. 9.37: Bob Molyneux—"Deep Nights" (Yealand). "Coquette" (Berlin). 9.44: Gus Quilley, the Radio Magician—"Ether Magic"—Have your pack of cards, pencil, and paper in readiness. 10.0: St. Paul's Cathedral Hand-Bell Ringers. 10.10: The Metro. Male Quartette—"A Catastrophe" (Grieg). "Mosquitos" (Paul Bliss). 10.17: Orchestra—"Moondish Serenade" (Chappi). "Andalusian" (Pessard). 10.22: News service; weather forecast. 10.30: God Save the King.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (255 metres).

MORNING SESSION.

11.0: Time signal. Symphony Orchestras and vocal duets. 11.30: Paul Whitman's Orchestra and Vaughan de Leath. 12.0: Chamber music and songs. 12.25: News. 12.30: Close down.

AFTERNOON SESSION.

2.0: Novelty Instruments and songs. 2.30: Peter Dawson and an orchestra. 2.55: Atwater Kent Radio Hour—sponsored by A. G. Healing, Ltd., and E. T. Muir. 3.55: News. 4.0: Close down.

EVENING SESSION.

5.30: Billy Bunny's children's hour. 6.0: Organ and choral music. 6.30: What's on at the theatres and movies. 6.32: Radio Movie Club. 6.35: Symphony Orchestra and baritone songs. 7.0: Light orchestral and vocal quartettes. 7.30: Dance music. 7.45: Market reports.

NIGHT SESSION.

8.0: Orchestral—Alfred O'Shea, Maria Kurenko. 8.30: Organ music and choral items. 9.0: Bands and ballads. 9.30: Grand orchestral and vocal quartettes. 10.0: In lighter vein. 10.30: Slumber music. 10.40: News. 10.45: God Save the King.

4QG

Queensland Government Radio Service, Brisbane (Wavelength, 385 metres).

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.

EVENING SESSION.

6.5: An astronomy talk—"Two Worlds in the Evening Sky," by Mr. A. K. Chapman. 7.45: Lecturette on "Photography," by Mr. F. L. South (manager, Kodak Ltd.).

NIGHT SESSION.

8.0: 4QG Symphony Orchestra—Overture from "Magic Flute" (Mozart). 8.7: May Jordan, soprano—"Caro Nome" (Verdi). 8.12: Symphony Orchestra—First Movement of "Fifth Symphony" (Tschakovsky). 8.25: Rex Harrison, baritone—Selected. 8.30: Symphony Orchestra—Second Movement of "Fifth Symphony" (Tschakovsky). 8.38: Ella Howie, contralto—"Che Faro" from "Orfeo" (Gluck). 8.43: Symphony Orchestra—"Intermezzo," from "Cavalleria Rusticana" (Mascagni). "Menuet" (Boccherini). 8.50: W. W. Crisp, tenor—"Pleading" (Elgar). 8.54: Symphony Orchestra—"War March of the Priests," from "Alecister" (Mendelssohn). 9.0: Metropolitan weather forecast. 9.1: May Jordan, soprano—"Ombra Letichera" (Meyerbeer). 9.8: Symphony Orchestra—"Norwegian Rhapsody" (Svendsen). 9.17: Rex Harrison, baritone—Selected. 9.22: Symphony Orchestra—"Egyptian Idyll" (Julia Nixon). "Fifth Hungarian Dance" (Brahms). 9.30: Ella Howie, contralto—"Golden Days" (Sullivan). 9.35: Symphony Orchestra—"Three Dances from Henry VIII" (Ed. German). "Morris Dance." "Torch Dance." "Shepherd's Dance." 9.43: W. W. Crisp, tenor—"Eleanor" (Coleridge-Taylor). 9.50: Symphony Orchestra—"Blue Danube Waltz" (Strauss). 10.0: News and weather information; "Queenslander" news for distant listeners. Close down.

5CL

Central Broadcasters, Ltd., 14 Hindmarsh Square, Adelaide (Wavelength, 409 metres).

MORNING SESSION.

11.15 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 4.30: See Friday.

EVENING SESSION.

5.45: Adelaide Racing Club acceptances. 6.0 Chimes. 6.1: Children's Happy Moments. 6.30 Dinner session—Rupert Hazell and Elsie Day. 7.0 Chimes. 7.1: Birthday League greetings; sporting service; market reports. 7.20: Under the auspices of the Workers' Educational Assn., Mr. A. E. M. Kirwood, M.A., will give a further talk on "Words." 7.35: Mr. R. C. Bald, Ph.D. (Assoc. Lecturer in English at the Adelaide University), will continue his series of talks. 7.45: Dr. Herbert Bawdler, M.P., an interesting Australian talk.

NIGHT SESSION.

8.0: Chimes. 8.1: Fifty Years Ago To-day! "Was it as long ago as that?" 8.10: A request presentation of the opera "Paus"—Characters: Marquise Marcelle Berand; Faust Dino Peard; Valentin Bert Woolle; Mefistofeles Ramon Ruman; Siebel Ann Young; Wagner Malcolm Jones. Explanatory remarks by Horace Perkins, Mus. Bac., A.M.U.A., and Bessie Franca. Music by Operatic Orchestra. 10.25: General news service; British official wireless news and meteorological information; announcements; sporting service. 10.35: Under the auspices of the Legacy Club of Adelaide, Legatee Dalziel will speak. 10.45: Modern dance recordings. 11.0: Close down.

6WF

Commonwealth Government Broadcasting Station, Perth (Wavelength, 100 metres).

10.0: Gramophone records. 11.0: Close down. 12.30: Markets, news, etc. 1.0: Weather. 1.2: Luncheon

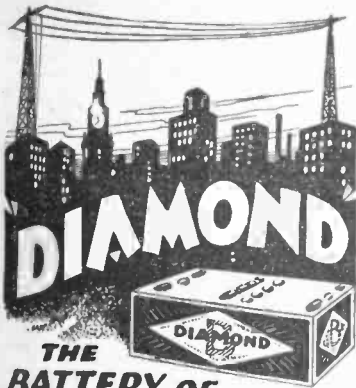
music. 1.4: Talk. 1.19: Music. 2.0: Close down 3.30: Tune in. 3.35: Pianoforte solos. 4.30: Close down. 6.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music. 7.30: Commercial and general information. 7.45: Talk. 8.0: Time signal. 8.1: Weather. 8.3: Variety programme. 8.50: Late news items. Late weather. 9.5: Programme continued. 10.30: Close down. 10.5: Metre Transmission: Simultaneous broadcast on 104.5 metres of programme given on 1250 metres commencing at 6.45 p.m.

7ZL

Tasmanian Broadcasters Pty., 93 Elizabeth St., Hobart (Wavelength, 516 metres).
 11.30: Musical selection. 11.34: Midlands weather forecast. 11.55: Musical Selections. 11.56: Tasmanian stations' 9.0 weather report. 12.0: Chimes. 12.1: Shipping information, ships within wireless range, mail notices, housewives' guide, commercial news. 12.8: Musical selections. 12.29: Announcements. 12.33: Musical selections. 12.55: "Mercury" news service, British official wireless news, railway auction produce sales held at railway. 1.10: Musical selections. 1.30: Close down. 3.0: Chimes. 3.15: Musical selections. 3.4: Weather information. 3.5: Musical selections. 3.45: Miss Joyce Walker will speak on "Homecraft." 4.0: Musical selections. 4.15: An educational talk on "Butter—Imports to Netherland East Indies." 4.30: Close down. 6.15: Children's hour with "Uncle David" and "The Story Lady." 6.30: Eileen Carter will play the piano for the little ones. 6.45: Children's hour (continued). 7.15: News session. 7.30: Geo. Lewis, of the Hobart Savings Bank, will speak on "Saving Made Easy for the Young." 7.45: W. E. Fuller will speak on "Literary Lapses and Library Lists." 8.0: G.P.O. clock chimes the hour. 8.1: Musical selections. 8.15: Dance Ensemble. 8.27: Vernon Dalhart. "Just a Melody." 8.30: Dance numbers. 8.42: Jack Smith. "Me and My Shadow." 8.45: Dance numbers. 8.57: Billy Murray. "D'Ye Love Me?" 9.0: Dance numbers. 9.12: Len White. "Roses of Yesterday." 9.15: Dance Numbers. 9.27: William Kent. "Lady Be Good." 9.30: News session. 9.40: Dance numbers. 9.52: Slumber music. 10.0: Chimes. Close down.

The Firewalkers of Fiji

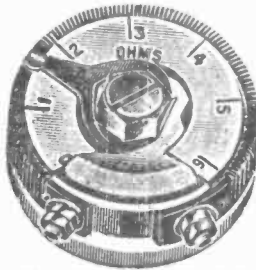
THE "Come with Us Round the World" series from 3LO is proving increasingly popular, and creating a great deal of interest among listeners, who are keen to know a little about customs and countries abroad. Continuing the series on July 24 the Rev. A. W. Amos will speak on "The Firewalkers of Fiji," when graphic word pictures will be drawn of the strange religious customs practised by some of the native tribes.



DIAMOND
 THE BATTERY OF SILENT POWER
 45V SUPER CAPACITY 20-
REG. ROSE & CO
 AGENTS:
 MADE IN ENGLAND
 KEMBLA BLDG
 MARGARET ST. SYDNEY.
 Phone B-3872



Whether for Amateur or Professional use, the famous British IGRANIC Devices—a few of which are briefly specified here—will be found the best for reliable and consistent service. Insist that your Dealer gives you IGRANIC, then you will be satisfied.



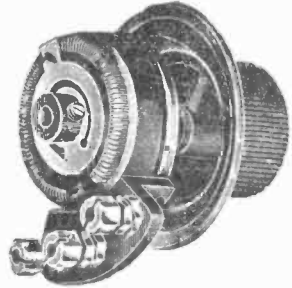
IGRANIC "MEGOSTAT" VARIABLE HIGH RESISTANCE

This new type of variable high resistance possesses definite advantages over any other previous types. The special method of making contact between the moving contact arm and the resistance track is an outstanding feature and prevents wear on the track—thus ensuring constancy of resistance value.

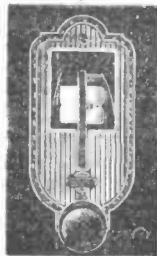
An attractive two-inch combined knob and dial is provided. Obtainable in the following 4 values—
 500,000 Ohms
 1 Megohm
 50,000 Ohms
 5 Megohms
PRICE 7/6 each.

IGRANIC-PACENT "PRE-SET" RESISTORS

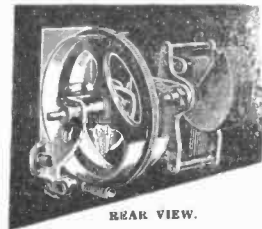
To simplify the operation of wireless Receivers, especially those containing several valves, it has become common habit to use "Resistors" instead of separate Rheostats for each valve. The IGRANIC-Pacient "Pre-Set" Resistor can be screwed to baseboard or panel in a convenient position, and the contact finger can be adjusted to give any desired resistance within its range. These Resistors are supplied with maximum resistances of 2, 6, 10, 20, 30, or 50 Ohms, and will be found variable over whole range. **PRICE** 2/6 each.



IGRANIC VERNIER DRUM CONTROL



Panel View.



REAR VIEW.

showing "Lokvane" condenser, coupled to an Igranic Vernier Drum Control.

Fishing for Stations is almost eliminated when the Vernier Drum Control is fitted to your set, and it is possible to make rapid search for a desired station by means of the coarse drive and then to adjust the transmission at full strength by a slight adjustment of the Vernier Control. Obtainable complete, with beautiful escutcheon plate that will tone with the most tastefully furnished room. **PRICE** 27/6 each.

Write for our New 64 Page fully illustrated Radio Catalogue, sent free on request, containing full illustrations, particulars, and prices of the latest British, American, and Australian Radio Products.

NOYES BROS

(SYDNEY), LIMITED. (MELBOURNE) PTY., LIMITED
 Sydney, 115, Clarence Street
 Newcastle, 11, Watt Street
 Brisbane, Perry House
 Perth, J.R.W.Gardam & Co.
 Melbourne, 495, Bourke Street
 Adelaide, 119, Pirie Street
 Hobart, 36, Argyle Street
 Launceston, 59 George Street

Local Programmes, Wednesday, August 21

2FC

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 442 metres).

EARLY SESSION—7 to 8.15 a.m.

7.0: "Big Ben" and meteorological information for the man on the land.
7.3: This morning's news from the "Sydney Morning Herald."
7.8: Early rising music.
7.45: Mails and shipping.
7.48: What's on to-day?
7.50: Children's birthday calls.
8.10: Music from the Studio.
8.15: Close.

MORNING SESSION—10.30 to 12.30 p.m.

10.30: Announcements.
10.32: General sporting talk, by Oscar Lind.
10.45: Edgar Stone at the Grand Organ.
11.0: Household Helps—A talk on Domestic Notes.
11.10: Cables, A.P.A. and "Sun"—"Herald" news service.
11.15: The 2FC Studio Orchestra.
12.0: "Big Ben"; Stock Exchange, second call.
12.2: With the poets.
12.20: Midday weather forecast and weather synopsis; special produce market session for the man on the land, supplied by the State Marketing Board.
12.30: Close.

THE LUNCH HOUR—1 to 2.30 p.m.

1.0: Lunch to music with the National Broadcasting Company.
2.0: Stock Exchange, second call.
2.2: A glance at the afternoon papers.
2.7: Popular education.
2.27: Announcements.

THE RADIO MATINEE—2.30 to 4.30 p.m.

Note.—Results from Rosebery will be transmitted as received.
2.30: Len Maurice, popular vocalist.
2.37: Googs Hanlon, novelty pianist.
2.47: Anne Luciano, soprano.
2.54: The latest dance music.
3.0: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
3.12: From the Studio—Len Maurice, popular vocalist.
3.19: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
3.29: From the Studio—Googs Hanlon, novelty pianist.
3.39: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
3.49: From the Studio—Anne Luciano, soprano.
3.56: The latest dance numbers.
4.0: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
4.12: From the Studio—Popular music.
4.22: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
4.28: From the Studio—Stock Exchange, third call.
4.30: Popular music.
4.45: Close.

EARLY EVENING SESSION—5.45 to 7.55

5.45: Kiddies' "Goodnight" stories, told by the "Hello Man," assisted by the Farmyard Five.
6.45: The National Broadcasting Orchestra.
7.30: A.B.C. Sporting Service.
7.37: Special country session; Stock Exchange resume; markets; late news service.
7.58: Announcements.

THE EVENING PRESENTATION—8 to 11.30

8.0: The Radio presentation, from the State Theatre—
Conductor: Will Prior.
Price Dunlavy at the Grand Organ
Clive Hood: Producer.
9.0: The Country Man's Weather Session—
(a) New South Wales forecasts.
(b) Inter-State weather synopsis.
9.1: Miss Le Brun Brown, soprano.
9.11: Lindley Evans, pianist.
9.22: Peter Sutherland, basso.
9.30: Leslie M'Caullum, flautist.
9.37: Sydney University Players, in a play specially adapted for broadcasting.
9.57: Signor and Signora Molinari, operatic duets.
10.7: Moore M'Mahon, violinist.
10.15: Announcements; official weather forecast.

10.20: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
11.30: Close. National Anthem.

2BL

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 353 metres).

OPENING SESSION—8.15 to 11 a.m.

8.15: Music for every mood.
8.45: Meteorological data for the country.
8.50: An old folks' programme.
9.30: British official wireless news.
9.35: News; music.
10.5: News from the "Sydney Morning Herald."
10.10: The Ladies "Club" Hour—The Australian Women's A.B.C. Association, conducted by Miss Gwen Varley.
10.30: The 2BL Studio Orchestra.
11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

12.0: Announcements.
12.2: The National Broadcasting Orchestra.
1.0: Afternoon news from the "Evening News" and "Sun."
1.5: Studio music.
1.15: Women's "Interest Talk."
1.30: The Traders' "Selling the Set" music
2.0: J. Knight Barnett at the Wurllitzer.
2.12: Studio music.
2.30: Business efficiency talk.
2.45: "The Magic Carpet"—a story of travel and adventure.
3.0: The Radio Matinee Orchestra.
3.15: Linda Hartege, contralto.
3.22: Keith Kennedy, violinist.
3.30: The Radio Matinee Orchestra.
3.45: H. W. Varna and partner, in a modern radio play.
3.55: Enid Hynes, pianist.
4.5: Linda Hartege, contralto.
4.12: Keith Kennedy, violinist.
4.19: H. W. Varna, and partner, in a modern radio play.
4.29: Enid Hynes, pianist.
4.39: The Radio Matinee Orchestra.
4.45: "The Trade Hour" demonstration music.
5.45: Close.

THE DINNER HOUR—6.15 to 7.55 p.m.

6.15: The National Broadcasting Orchestra
6.45: The A.B.C. Younger Set session—Boys' Night.
The A.B.C. Boys' Radio Club, conducted by Mr. Norman Lyons.
7.5: Studio music.

7.15: The Country Man's Market Session—

Wool, wheat, stock, farm produce, fruit vegetables, and poultry markets.
7.30: The National Broadcasting Orchestra
7.55: What's on the air to-night.

TO-NIGHT'S PRESENTATION—8 p.m. to 10.30 p.m.

8.0: G.P.O. chimes.
The Metropolitan Band.
8.15: The Wireless Singers.
8.25: Mabel Bachelor, soprano.
8.32: The Metropolitan Band.
8.47: The Wireless Singers.
8.57: Lionel Lunt, baritone.
9.4: The Metropolitan Band.
9.19: Miss Le Brun Brown, soprano.
9.26: Mr. Lindley Evans, pianist.
9.36: Late weather forecast for the man on the land.
9.38: Peter Sutherland, basso.
9.45: The Sydney University Players in a modern radio play.
10.0: Moore M'Mahon, violinist.
10.7: Leslie M'Caullum, flautist.
10.14: Signor and Signora Molinari, operatic duets.
10.25: Official weather forecast. Metropolitan and country.
Late news from the "Evening News" and "The Sun."
10.30: Close. National Anthem.

2GB

Theosophical Broadcasting Station, 29 Bligh St., Sydney (Wavelength, 316 metres).

MORNING SESSION

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.

AFTERNOON SESSION

2.0: Music. 2.5: Women's session, by Miss Helen J. Beegling. 2.50: Movie Know All. 3.0: Music. 3.30: Close down.

EVENING SESSION

5.30: Children's session, by Uncle George.
7.0: Music. 7.45: Feature story.

NIGHT SESSION

8.0: Miss Heather Kinnaird (contralto).
8.7: Symphony orchestra. 8.15: Mr. Leslie Herford (baritone). 8.22: Concerto for piano and orchestra. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Gwen Selva (soprano). 8.45: Instrumental trio. 8.50: Miss Heather Kinnaird (contralto). 9.0: Weather report. 9.3: Address. 9.15: Symphony orchestra. 9.25: Mr. Leslie Herford (baritone). 9.35: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.40: Instrumental trio. 9.50: Miss Gwen Selva. 10.0: Instrumental music. 10.30: Close down.

2UW

Radio Broadcasting, Ltd., Palling's Building, Ash St., Sydney (Wavelength, 297 metres).

MIDDAY SESSION

12.30: Music and request numbers. 1.0: G.P.O. clock and chimes. 1.15: Talk on Homecraft, by Pandora. 1.40: Music. 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: Music and request items. 8.0: Ballad concert. 9.0: Comments on Foreign Affairs by Mr. J. M. Prentice. 9.10: Request items. 10.30: Close down.

2KY

Trades and Labour Council, Goulburn St., Sydney (Wavelength, 280 metres).

MORNING SESSION

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

CHILDREN'S SESSION

6.0: Birthday calls. Request numbers and kiddies' entertainment. Aunt Jemima and Uncle Bert.

EVENING SESSION

7.0: Musical interlude. 7.15: Sporting feature. Complete review of to-day's racing. Mr. Geo. A. Davis. 7.40: Health feature. 8.0: Hawaiian steel guitar selections. 8.15: Mr. Chas. E. Macdonald, tenor solos. 8.30: Master Harry Weir, banjo solos. 8.36: A. Rosenberg at the piano. 9.10: Sporting feature. Presented by Tooth and Co., Ltd., Kent Brewery. From Sydney Stadium, full description of main 15-rounds event. 9.50: Music from the studio. 10.0: Closing announcements.

2UE

Broadcasting Station 2UE, Storey Street, Maroubra Junction, Sydney (Wavelength, 293 metres).

EARLY MORNING SESSION

7.15: Breakfast-time hour orchestral music. 8.30: Weather forecast. Close down.

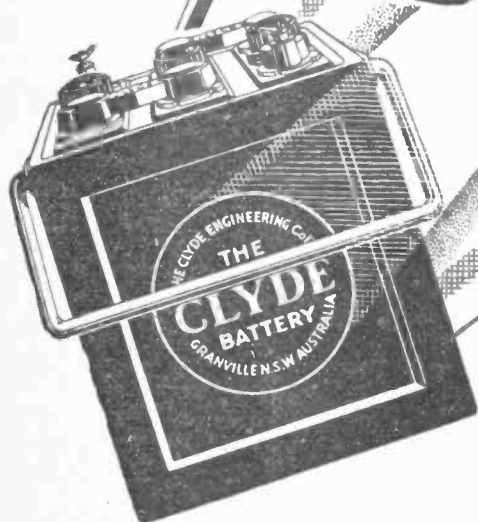
EVENING SESSION

7.15: Orchestral dinner music. 7.58: Programme announcements. 8.0: Overture, "Morning, Noon, and Night." 8.10: Orchestral and vocal music. 10.15: Announcements. Close down.

Portable Wireless Cases

WE MAKE TO ANY DESIGN AND SIZE. Sturdily made and handsomely finished. Also, Fibre Cases made to any size, for carrying Table Wireless Models. Write or Phone MW1251 for particulars. **SALISBURY TRAVEL GOODS CO.** 73-75 Booth St., Annandale.

CLYDE FOR GOOD RADIO



Upon the battery depends the quality of your radio reception. The sturdy strength of the Clyde gives it long life—the purity of materials used ensures a steady stream of non-fluctuating power into the filament of your radio valves.

**MORE POWER TO
YOU WITH A CLYDE**

CLYDE

FOR CARS RADIO & HOME LIGHTING

Clyde Batteries for Cars, Radio and Home-lighting are made by THE CLYDE ENGINEERING CO. LTD., GRANVILLE, N.S.W., largest makers of storage batteries in Australia.

Interstate Programmes, Wednesday, August 21

3LO

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 374 metres).

EARLY MORNING SESSION.

7.0: Time signal from Melbourne Observatory; weather forecast, mails, and shipping. 7.5: Physical exercises set to music. 7.20: Reproduced music. 7.45: What's on to-day. 7.45: Market reports. 7.55: Courtney's news service. 8.0: Time signal from Melbourne Observatory. 8.1: Arrival of express trains. 8.2: Birthday greetings.

MORNING SESSION.

10.30: A sporting talk. 10.45: A.B.C. Studio Orchestra, assisted by Charles Bradley, baritone. 12.0: Time signal from Melbourne Observatory. 12.1: Orchestra continued. 12.15: News service; British official wireless; sports and news; Newmarket stock sales; Associated Stock and Station Agents' official report. 12.30: Close down.

MIDDAY SESSION.

1.0: Time signal from Melbourne Observatory; Stock Exchange information; meteorological data; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports; rainfall; comments on the day's news. 1.30: Transmission from the Rotary Club luncheon. Speaker, Sir Robert Gibson: "Relations Between Employer and Employee and What Might be Done to Improve Them."

THE EDUCATIONAL SESSION.

2.0: "Ancient Civilisations," Dr. E. Sweetman, M.A., Litt.D.; "The Drama Fairy," 2.25; "The Night in the Bush," Mr. Charles Daley. 2.40: Reproduced music. 2.45: "What is Happening in the World," Dr. Loftus Hills, D.Sc.

THE RADIO MATINEE.

3.0: The National Broadcasting Orchestra (under direction of Wm. G. James; conductor, Percy Code): "A May Day" (Haydn Wood), "At the Brook" (Boisdeffre), 3.10; Dolly Burdett, contralto: "Lullaby" (Cyril Scott), "Lie There, My Love" (Hamish Maccunn), "Still as the Night" (Bohm) 3.20; Helen Hamerton, violin, 3.30; Miss Eileen O'Meara. 3.40: Frederick Martin, tenor: "Mellisa in the Woods" (Goetz), "Trees" (Raschback), 3.47; "Diverging Dialogue and Musical Mixture," Orchestra: Suite, "Rustic Revels" (Kietner), 3.57; Courtney Ford will entertain you. 4.7: W. Smith, trumpet solo. 4.12: Frederick Martin, tenor: "Daffodil Gull" (Hodgson), "A Little Irish Girl" (Lohr), 4.18; Courtney Ford, talks for more hilarious moments. 4.24: Orchestra: Selection, "Sally" (Kern), 4.30: Close down.

CHILDREN'S CORNER.

5.45: Little Miss Kookaburra has a story to tell you about Fairy and the Mouth of the Mouth Organ Man will delight you with some Fairy Music.

LECTURETTE SESSION.

6.15: Reproduced music. 6.20: A talk of interest to the older boys and girls. 6.25: Reproduced music. 6.40: "Romance of History," "Final Episodes in the Conquest of Peru," Captain Donald Maclean. 6.55: Reproduced music.

EVENING SESSION.

7.0: Stock Exchange information; corn exchange; weather forecast; Associated Stock and Station Agents' official reports; mines and metals; fish and rabbit prices; farm and dairy produce report supplied by the Inter-State Dairy Produce Committee; wholesale fruit prices by Wholesale Fruit Merchants' Association; retail fruit prices supplied by the Victorian Fruitgrowers' Association; citrus fruit prices supplied by Victorian Central Citrus Association; weather synopsis; river reports; rainfall data. 7.25: Technical talks for mechanics; Simple Mechanical Operations, Mr. E. Ward. 7.40: News. 7.45: "How to Attain and Retain Good Health."

NIGHT SESSION.

8.0: Organ recital from St. Paul's Cathedral by Dr. A. E. Flot. 8.1: "Why We Behave as Human Beings"—2. Do Our Feelings Betray Us?—Professor J. A. Gunn, M.A., B.Sc., Ph.D. 8.4: "Dancing Dancers and Happy Days." 8.30: Leon Garnier and his Melody Masters. 8.39: J. Alexander Browne, baritone—"Fill a Glass with Golden Wine" (Quilter). "Fair House of Joy" (Quilter). 8.42: Leon Garnier and his Melody Masters. 8.51: Gwen Hart, soprano—"Dawn, Gentle Flower" (Sterndale Bennett). "The Wild Rose" (Schubert). 8.53: Leon Garnier and his Melody Masters. 9.3: Victor Baxter, tenor—"Lackaday" (Crompton). "It is Only a Tiny Garden." 9.6: Leon Garnier and his Melody Masters. 9.15: Hector Lightfoot: Gems from the Southern Seas. 9.20: Leon Garnier and his Melody Masters. 9.29: Victor Baxter, tenor—"Margolds" (Llang). "The Dream" (Rinshstein). 9.32: Leon Garnier and his Melody Masters. 9.41: Gwen Hart, soprano—"Four Songs" (Edward MacDowell). 9.44: Leon Garnier and his Melody Masters. 9.51: J. Alexander Browne, baritone—"Olive a Man a Horse He Can Ride" (Geoffrey O'Hara). 9.54: Leon Garnier and his Melody Masters. 10.3: British official wireless news from Rugby; news service; meteorological information. 10.15: Hector Lightfoot Trio: Musical Medley. 10.18: Leon Garnier and his Melody Masters. 10.27: J. Alexander Browne, baritone—"Fair House of Joy" (Quilter). 10.30: Leon Garnier and his Melody Masters. 11.30: God Save the King.

3AR

Australian Broadcasting Co., 120A Russell St., Melbourne (Wavelength, 481 metres).

EARLY MORNING SESSION.

8.15 to 11.0: See Friday. MIDDAY SESSION. Mainly for Women. 12.0: Foods and Cookery; (2) Inexpensive and nutritious dishes for winter meals. Miss Avis MacLachlan. 12.15: Reproduced music. 12.30: Luncheon Music, supplied by the National Broadcasting Orchestra: Under direction, Wm. G. James; conductor, Percy Code.

AFTERNOON SESSION.

During the afternoon Eric Welch will describe the racing at Moonee Valley. 2.0: Ray Ford's "Gloom Chasers." 2.10: Madoline Knight, contralto: "Sink Red Sun" (Tere del Rio), "Betty's Garden" (Sanderson). 2.17: Rita Fleming, monologues: "The Things of Wonder" (Newman), "Banana Peel" (Rossler). 2.24: Ray Ford's "Gloom Chasers." 2.34: Edna Gerald, soprano: "Thou'rt Like a Lovely Flower" (Schumann), "A Brown Bird Singing" (Haydn Wood). 2.41: Guildford Bishop, violin: "Dance Hongroise" (Papini). 2.51: Rita Fleming, monologues: "Little Wise Son" (Faber), "I Want to Go With Daddy" (Ward). 2.58: Ray Ford's "Gloom Chasers." 3.5: Madoline Knight, contralto: "The First of June" (Oliver), "When My Ship Comes Sailing Home" (Francis Dorel), 3.12: Saxophone, 3.17: Edna Gerald, soprano: "You in a Gondola" (Coningsby Clarke), "Daddy Day" (Weatherly). 3.24: Ray Ford's "Gloom Chasers." Mainly for Women—3.30: The Pre-school Child: (2) What is a Nursery School, Miss M. Lush, 3.45: Musical Interlude. 3.50: The Wrong and Right Thing to Say, Miss Sadie Reva. 4.5: Musical Interlude. 4.10: Home Life in Other Countries—Japan, Mrs. H. Woodruff, Traders' Demonstration Session—4.15: Reproduced Music. 4.45: Close down.

EVENING SESSION.

6.15: Dinner Music, supplied by the A.B.C. Studio Orchestra. 7.30: What's on the air to-night? 7.32: Latest Musical Releases.

NIGHT SESSION.

8.0: National Broadcasting Orchestra (under direction, Wm. G. James; conductor, Percy Code)—Overture, "Ruy Blas" (Mendelssohn). "Chansonnets" (Baron). 8.10: Tom McPherson, baritone—"Onaway, Awake, Beloved" (Cowen), "The Windmill". 8.17: Alfred Ackland, violin—Concerto in A minor (Bach). 8.24: Allan Mitchell, tenor—"The Hawk" (Coningsby Clarke), "Invictus" (Huhn). 8.31: Orchestra: "The World's Fashion and Politeness" (Nicode). 8.41: Fifteen minutes with the Gay Serenaders. 8.56: Jane Douglas, soprano. 9.3: Alfred Ackland, violin—"Air for the Evening" (Bach), "Gavotte in E Major" (Bach-Kriesler). 9.10: Allan Mitchell and Tom McPherson, duet—"The Ballad Singer" (Wilson). "In This Solemn Hour" (Verdi). 9.17: Orchestra—"In a Persian Garden" (Ketybel). 9.23: Jane Douglas, soprano. 9.30: From the Bilou Theatre. 10.30: God Save the King.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (255 metres).

MORNING SESSION.

11.0: Time signals; with British composers. 11.30: "La Vogue"—The World's Fashion and Politeness. 11.35: Symphony Orchestra and tenor. 12.0: Paul Whiteman, Ted Lewis, The Happiness Boys. 12.25: News. 12.30: Close down.

AFTERNOON SESSION.

2.0: Chamber music and songs. 2.30: Mrs. Dorothy Silk—"Homcrafts." 2.45: Wurflitzer organ. 2.55: Atwater Kent Radio Hour—sponsored by A. O. Healing, Ltd., and E. T. Muir. 3.55: News. 4.0: Close down.

EVENING SESSION.

4.45: Choral evensong from St. Paul's Cathedral. 5.30: Billy Bunny's children's hour. 6.0: Dorsey Bros. and George Borile and requests. 6.30: What's on at the theatres and movies. 6.32: Radio Movie Club. 6.35: Regimental marches and bass solos. 7.0: Old-time songs and music. 7.30: Mr. Harman, of Burns, Philp, and Co., in a travel talk. 7.45: Market reports.

NIGHT SESSION.

8.0: Half an hour with Coleridge-Taylor. 8.30: Rhodes Motors' sponsored programme. 9.0: Orchestra, piano, and tenor. 9.30: Cello, baritone, violin solos. 10.0: Merry moments. 10.30: Slumber music. 10.40: News. 10.45: God Save the King.

4QG

Queensland Government Radio Service, Brisbane (Wavelength, 385 metres).

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: Musical programme by Carlton Hotel Orchestra. Between orchestral items the following

vocal numbers will be broadcast:—May Jordan, soprano, "June is Calling" (Sanderson), "Love Will Find a Way" (Sunson); Arthur Aldridge, tenor, selected. 4.45: The "Telegraph" news, from 12 Studio. Close down.

EVENING SESSION.

7.45: Lecturette. NIGHT SESSION. 8.0: Alf Featherstone and his Orchestra—Fox trots, "Deep Night" (Henderson), "Stay at Home Girl" (O'Hagan). 8.10: Beatrice Fugh, soprano—"The Wood Pigeon" (Lehmann), "Dawn, Gentle Flower" (Bennett). 8.20: Alf Featherstone and his Orchestra—Fox trots, "Babbling You" (Kaimar), "You Give Me All Your Sunshine" (Wood). 8.30: The Aloha Trio—Hawaiian music. 8.40: Alf Featherstone and his Orchestra—Jazz waltz, "Lovely Nights in Hawaii" (Seaman). 8.45: The Albert Trio—Melody and Mirth. 9.0: Metropolitan weather forecast; movements of lighthouse steamers. 9.5: Alf Featherstone and his Orchestra—Fox trots, "When I Was Hikin' With You" (Johnson), "Don't Think You'll Be Missed" (Harrison). 9.15: The Aloha Trio—Hawaiian music. 9.25: Alf Featherstone and his Orchestra—One-steps, "When It's Moonlight On the Alamo" (Fischer), "Everybody Loves My Girl" (Ayer Goodwin). 9.35: Arthur Aldridge, tenor—Popular numbers. 9.45: Alf Featherstone and his Orchestra—Fox trots, "Happy Humming Bird" (Dixon), "When Summer is Gone" (White). 9.55: Monument and Harrow—An argument. 10.10: News and weather information. 10.15: Alf Featherstone and his Orchestra—A quarter of an hour's Dance Music. 10.30: "The Hoot Owls." 11.0: Close down.

5CL

Central Broadcasters, Ltd., 114 Hindmarsh Square, Adelaide (Wavelength, 409 metres).

MORNING SESSION.

11.15 to 2.0: See Friday.

AFTERNOON SESSION.

3 to 4.30: See Friday.

EVENING SESSION.

6.0: Snowtown and Oakland race results. 6.1: Children's Happy Moments. 6.30: Dinner Session. 7.0: Chimes and Birthday League greetings; sporting service; railway and Stock Exchange information; results of open amateur golf championship of Australia; market reports. 7.20: Rev. E. S. Klek, M.A., B.D., will speak on "How Scotland saved England from arbitrary government." 7.35: An address to boy scouts. 7.45: Bluebird Girls' Club entertainment by "The Bird Lady."

NIGHT SESSION.

8.0: Chimes. 8.1: 50 Years ago To-day. "Was it as long ago as that?" Programme review. 8.10: Another Fireside Concert. A Golden Wedding.

Characters: Grandmother: Bessie Francis. Grandfather: Tom O'Dea. Granddaughter: Jean Finlay. Grandson: Jack Burgess. Friends: Rupert Hazell and Elsie Day. The Madrigal Singers. (Under conductorship of Horace Perkins.) Light Patriotic (290 Harmonics). Angelo Demena. M. Dwayne Roland. 9.0: Chimes. 9.1: Meteorological information; overseas grain report; general news service. 9.2: Fireside Concert (continued). 9.15: General news service; British official wireless news, and meteorological information; sporting service.

10.2: Modern dance recordings. 11.0: Close down.

6WF

Commonwealth Government Broadcasting Station, Perth (Wavelength, 100 metres).

10.0: Gramophone records. 11.0: Close down. 12.30: Markets, news, etc. 1.0: Time. Weather. 1.3: Pastore Hour. 2.0: Close down. 3.30: Musical programme. 4.30: Close down. 6.45: Bedtime stories by Uncle Duffy. 7.5: Light music. 7.30: Commercial and general information. 7.45: Talk by Lieutenant the Soeuf, Director, Zoological Gardens, South Perth. 8.0: Time signal. 8.1: Weather. 8.3: Concert. 8.5: Talk. 8.50: Late news. Ships with condition. Late weather. 9.5: Programme continued. 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.

DETERIORATION LOSSES ARE
ELIMINATED IN THE



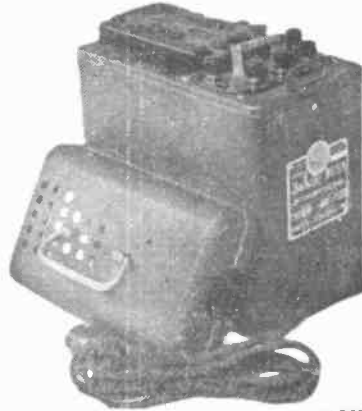
LONG LIFE BATTERY
THE "PERTRIX"

Patent Dry Battery is made according to a new process, and does not employ sal-ammoniac as an electrolyte. It does not deteriorate in stock. It gives 60 per cent. more capacity for a given size of cell. It is silent to the end of the discharge.

4½ Volt, 1/-; 9 Volt, 4/-; 45 Volt, 12/-;
60 Volt, 16/-.

RIGHT OUT ON ITS OWN
THE WORLD FAMOUS
BALKITE "B" ELIMINATOR

Announcing the New
BALKITE "B," the noiseless, tubeless, permanent,
light socket "B" power supply.



The noiseless, tubeless, permanent light socket "B" power supply.
MODEL B10, for sets with 5 valves (201A type), or less. £8/19/6 (old price).

MODEL B133, for sets with 8 valves, and up to 135 volts. £13/10/- (old price).

NOW
£7/17/6
NOW
£10/10/-

THE
WORLD'S GREATEST
CRYSTAL



Complete

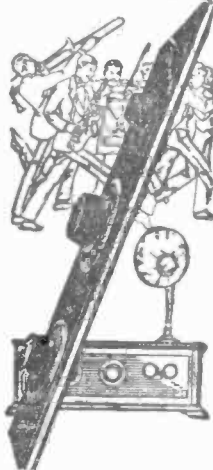
1'3 With Silver
Cat's Whisker

*Concert Tested and
Guaranteed*

DILECTO BAKELITE

The ORIGINAL Genuine
Bakelite Panel Material

LOOK ^{HERE}
for the RED STRIPE



PANELS
ANY SIZE
CUT TO
ORDER.
EDGES
SMOOTH
AND
SQUARE.

Sole Agent: O. H. O'BRIEN (Sydney)

37-39 Pitt Street, Sydney. 654 Bourke Street, Melbourne. W. E. Peterman, 160 Edward Street, Brisbane.

Local Programmes, Thursday, August 22

2FC

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 442 metres).

EARLY SESSION—7 to 8.15 a.m.

- 7.0: "Big Ben" and meteorological information for the man on the land.
- 7.3: This morning's news, from the "Sydney Morning Herald."
- 7.8: Early rising music.
- 7.45: Mails and shipping.
- 7.48: What's on to-day?
- 7.50: Children's birthday calls.
- 8.0: Music from the Studio.
- 8.15: Close.

MORNING SESSION—10.30 to 12.30 p.m.

- 10.30: Announcements.
- 10.32: A.B.C. Racing Observer.
- 10.45: Edgar Stone at the Grand Organ.
- 11.0: Household Helps—Domestic Notes.
- 11.10: Cables, A.P.A. and "Sun"—"Herald" news service.

- 11.15: The 2FC Studio Orchestra.
- 12.0: "Big Ben"; Stock Exchange and metal quotations.

- 12.2: With the poets.
- 12.20: Midday weather forecast and weather synopsis; special produce market session for the man on the land, supplied by the State Marketing Board.
- 12.30: Close.

THE LUNCH HOUR—1 to 2.30 p.m.

- 1.0: Lunch to music with the National Broadcasting Orchestra.
- 2.0: Stock Exchange, second call.
- 2.2: A glance at the afternoon papers.
- 2.7: To-day's acceptances, by the Racing Observer.
- 2.17: Popular education.
- 2.27: Announcements.

THE RADIO MATINEE—2.30 to 4.30 p.m.

- 2.30: The Radio Matinee Orchestra.
- 2.42: Anne Mills, mezzo.
- 2.49: Rene Burkitt, violinist.
- 2.56: The Radio Matinee Orchestra.
- 3.11: Roger Jones, baritone.
- 3.18: Dorothy Nall, monologues.
- 3.25: The Radio Matinee Orchestra.
- 3.38: Anne Mills, mezzo.
- 3.45: Rene Burkitt, violinist.
- 3.52: The Radio Matinee Orchestra.
- 4.2: Roger Jones, baritone.
- 4.9: Dorothy Nall, monologues.
- 4.16: The Radio Matinee Orchestra.
- 4.28: Stock Exchange, third call.
- 4.30: Close.

EARLY EVENING SESSION—5.45 to 7.55.

- 5.45: Kiddies' "Goodnight" stories, told by Aunt Willa, assisted by Cousin Marjory and Cousin Gwen.
- 6.45: The National Broadcasting Orchestra.

- 7.30: A.B.C. Sporting Service.
- 7.37: Special country session; Stock Exchange resume; Markets; late news service.
- 7.58: Announcements.

THE EVENING PRESENTATION—8 to 11.30.

- 8.0: The Conservatorium Choir.
- 8.16: Sonja Michell, pianoforte recital.
- 8.28: Dulcie Starkey, soprano.
- 8.35: Athos Martelli, 'cello.
- 8.45: The Conservatorium Choir.
- 8.55: The 2FC Quintet.
- 9.5: The Country Man's weather session—(a) New South Wales forecasts. (b) Inter-State weather synopsis.
- 9.6: Scott Alexander, in a modern radio play.
- 9.26: Maurice Ballance, basso.
- 9.33: Simon Philipoff, Russian Balalaika.
- 9.40: The Peerless Four Vocal Quartette.
- 9.50: The 2FC Quintet.
- 10.0: From the Hotel Australia—Cec. Morrison's Dance Band.
- 10.15: Announcements.
- Official weather forecast.
- 10.20: From the Hotel Australia—Cec. Morrison's Dance Band.
- 11.30: Close. National Anthem.

2BL

Australian Broadcasting Company, Ltd., Market St., Sydney (Wavelength, 355 metres).

OPENING SESSION—8.15 to 11 a.m.

- 8.15: Music for every mood.
- 8.45: Meteorological data for the country.
- 8.50: A melange of mirth and melody.

9.30: British official wireless news.

9.35: New music.

10.5: News from the "Sydney Morning Herald."

10.10: The Ladies' Club Hour—The Australian Women's A.B.C. Association, conducted by Miss Gwen Varley.

10.30: The 2BL Studio Orchestra.

11.0: Close.

MIDDAY SESSION—12 Noon to 2.30 p.m.

12.0: Announcements.

12.2: The National Broadcasting Orchestra.

1.0: Afternoon news from "The Evening News and "The Sun."

1.5: Studio music.

1.15: Women's "Interest Talk."

1.30: The Traders' "Selling the Set" music

2.0: J. Knight Barnett at the Wurlitzer organ.

2.12: Studio music.

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

2.30: Business efficiency talk.

2.45: "The Magic Carpet"—a story of travel and adventure.

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

3.12: From the studio—Marjorie Pritchard, popular vocalist.

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

3.29: From the studio—The Two G's, entertainers.

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

3.47: From the studio—Cliff Hanney, violinist.

3.54: Marjorie Pritchard, popular vocalist.

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

4.15: The Two G's, entertainers.

4.22: Cliff Hanney, violinist.

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

4.39: From the studio—The latest dance.

4.45: "The Trade Hour" demonstration music.

5.45: Close.

THE DINNER HOUR—6.15 p.m. to 7.55 p.m.

6.15: The National Broadcasting Orchestra.

6.45: The A.B.C. Younger Set Session—Girls' Radio Night—

The A.B.C. Girls' Radio Club, conducted by Miss Gwen Varley.

7.5: Studio music.

7.15: The Country Man's Market Session—Wool, wheat, stock, farm produce, fruit, vegetables, and poultry markets.

7.30: The National Broadcasting Orchestra

7.55: What's on the air to-night?

TO-NIGHT'S PRESENTATION—8 p.m. to 10.30 p.m.

8.0: G.P.O. chimes. From the Capital Theatre—

Radio presentation—Ted Henkel and the Capitol Orchestra; Fred Scholl at the Wurlitzer.

9.0: From the studio—Mark Erickson, popular ballads.

9.7: The Two Fosters, musical entertainers

9.24: Leonard Nelson, comedian—

(a) "Wait Till You Get Them Up in the Air" (Von Tilzer).

(b) Recitation, "Goodo" (Nugent).

9.34: Mark Erickson, popular ballads.

9.41: Leonard Nelson, comedian—

"I'm an Aussie Thru and Thru" (O'Hagan).

9.51: The Two Fosters, musical entertainers.

10.0: Simon Philipoff, Balalaika solos.

10.7: Dulcie Starkey, soprano.

10.14: Athos Martelli, 'cellist.

10.25: Official weather forecast.

Metropolitan and country.

Late news from the "Evening News" and "The Sun."

10.30: Close. National Anthem.

2GB

Theosophical Broadcasting Station, 29 Bligh St., Sydney (Wavelength, 316 metres).

MORNING SESSION

- 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.

AFTERNOON SESSION

- 2.0: Music. 2.5: Women's radio service by Mrs. Dorothy Jordan. 2.50: Movie Kroy All. 3.0: Demonstration from Buckinghamham Ltd. 4.0: Close down.

EVENING SESSION

- 5.30: Children's session, by Uncle George. 7.0: Music. 7.45: Feature story.

NIGHT SESSION

- 8.0: Miss Marjorie Allomes (contralto). 8.1: Instrumental quartette. 8.15: Mr. John M'Caffrey (baritone). 8.22: Mr. Jack Win and Miss Nora Windle in a humorous sketch. 8.32: Symphony orchestra. 8.40: Miss Gladys Verona (soprano). 8.50: 'Cello solos. 9.0: Weather report. 9.3: Address. 9.15: Miss Marjorie Allomes (contralto). 9.25: Instrumental quartette. 9.35: Mr. Jack Win and Miss Nora Windle in a humorous sketch. 9.45: Mr. John M'Caffrey (baritone). 9.55: Miss Gladys Verona. 10.5: Instrumental music. 10.30: Close down.

2UW

Radio Broadcasting, Ltd., Palling's Building, Ash St., Sydney (Wavelength, 267 metres).

MIDDAY SESSION

- 12.30: Music and request numbers. 1.0: G.P.O. clock and chimes. 1.15: Talk of Homecraft, by Pandora. 1.40: Music. 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: Music and request items. 7.45: Garden talk, by M. S. H. Hunt. 8.0: Wagnerian recital. 9.0: Comments on Foreign Affairs by Mr. J. M. Prentice. 9.10: Request items. 10.30: Close down.

2KY

Trades and Labor Council, Goulburn St., Sydney (Wavelength, 280 metres).

MORNING SESSION

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

CHILDREN'S SESSION

- 6.0: Birthday calls. Request numbers and kiddies' entertainment. Aunt Jemima and Uncle Bert.

EVENING SESSION

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

2UE

Broadcasting Station 2UE, Storey Street, Maroubra Junction, Sydney (Wavelength, 293 metres).

EARLY MORNING SESSION

- 7.15: Breakfast-time hour orchestral music.

8.30: Weather forecast. Close down.

MIDDAY SESSION

- 11.30: Orchestral and vocal music. 12.30: Close down.

AFTERNOON SESSION

- 1.0: Orchestral music. 1.45: Organ recital.

2.0: Orchestral music. 2.30: Close down.

EVENING SESSION

- 7.15: Orchestral dinner music. 8.0: Overture, "Semiramide." 8.10: Orchestral and vocal music. 10.15: Announcements. Close down.

Modern Developments!

Constant Research Work Means Accurate Data on all Latest Circuits and Power Supply Units

We'll be Glad to Help You With That Problem

ITEMS OF INTEREST

REINARTZ COIL KITS. 3/6. REINARTZ R.F. CHOKES. 2/6.	VITREOUS ENAMEL WIRE-WOUND RESISTORS. 13,000 ohms, Tapped for B Eliminators 14/6.	ELIMINATOR CHOKES, 100 Mils.. Air Gap. 10/6 Each.	ELIMINATOR TRANSFORMERS. High Voltage. Made to Your Own Specifications. FROM 25/-	Knife-Edge Tuning With "QUAKER" CONDENSER. .00025 7/- .00035 7/3 .0005 7/6 Fully Guaranteed.
--	--	---	--	---

Don't be disappointed! SECURE YOUR COPY TO-DAY—"ELECTRIFIED RADIO."
HOW TO ELECTRIFY YOUR SET. Price 1/-; Posted 1/3.
EXIDE 20 AMP., 4-VOLT ACCUMULATORS, 15/6. 45 AMP., 29/6
Everything for Radio

Same day service for
Country Clients

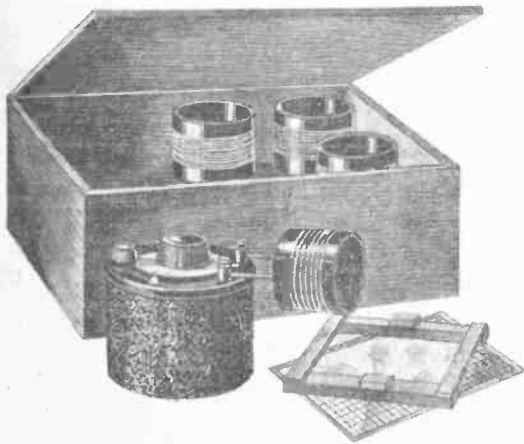
"The Wireless Shop"

Miss F. V. Wallace, 6 Royal Arcade, Sydney,
THE OLDEST RADIO FIRM IN TOWN.

Money Back
Guarantee

Established 8 Years.

Phone, MA5543. — Two Doors from George Street, opp. Q.V. Markets.



G.R. WAVEMETER

TYPE 358

Price £5

With four coils and a graph covering a wave length of from 14 to 240 meters.

G.R. Wavemeter is an invaluable and absolutely accurately made instrument (inductance type) for both short wave Fans and transmitters.

Calibrating or regulating wave lengths becomes a very simple matter when using one of these precision wavemeters. Type 358 at David Jones'. Price .. £5.

Radio Department, Lower Ground Floor, New Store.
Radio Studio on the Fourth Floor.

DAVID JONES⁹

Interstate Programmes, Thursday, August 22

3LO

Australian Broadcasting Co. 120A Russell St., Melbourne (Wavelength, 371 metres).

EARLY MORNING SESSION.

7.0 to 8.15: See Friday.

MORNING SESSION.

10.45: Current happenings in sport by Eric Welch
10.45: A.B.C. Orchestra, with Frederick Martin,
tenor. 12.0: Melbourne Observatory time signal.
12.15: A.B.C. Orchestra (continued). 12.15: News
service; British official wireless; corn exchange
report; Newmarket stock sales; Associated Stock and
Station Agents' official report. 12.30: Close down.

MIDDAY SESSION.

1.0: Time signal from Melbourne Observatory;
Stock Exchange information; meteorological data;
weather forecast for Victoria, New South Wales,
South Australia, and Tasmania; ocean forecast; river
reports; rainfall; comments on the day's news. 1.20
Community Singing from the Town Hall.

THE EDUCATIONAL SESSION.

2.0: Mr. Loftus Hills, D.Sc.—Great Australians No.
3: "Sir Edgeworth David." 2.15: Reproduced music.
2.25: Music explained and illustrated. 2.40: Repro-
duced music. 2.45: Mr. G. E. Green, M.A., Dip. Ed.,
"A Talk in German."

THE RADIO MATINEE

3.0: National Broadcasting Orchestra: Selections,
"Iolanthe" (Sullivan). 3.10: "The Merry Mumpers"
in Music, Mirth, and Melody. 3.35: Hector Light-
foot Trio: Haunting Melodies of Honolulu. 3.45:
Madge Gunner: Child Studies—"When I Go Up to
Heaven."

LIGHTER CLASSICS.

3.52: National Broadcasting Orchestra: Petite
Suite de Concert (Coleridge Taylor). 4.2: Nina
Beek: "At Dawning" (Oadman), "The Silver King"
(Chaminade). 4.9: Colin Binks, dramatic recital:
"Les Miserables" (Poe); Hugo) 4.17: National
Broadcasting Orchestra: Overture, "Euryanthe"
(Weber). "Russian Dance" (Friml). 4.30: Close
down.

CHILDREN'S CORNER.

4.45: Bobby Bluegum in Song and Story, with
Clever Clarks at the Piano. 6.15: Reproduced
music. 6.20: A talk of interest to the older boys
and girls. 6.35: Reproduced music.

LECTURETTE SESSION.

6.40: Let's talk about our animals: Mr. J. L.
Moore: "The Sheep Dog," Part 3. 6.55: Reproduced
music. 7.0: Stock Exchange information; corn ex-
change report; Associated Stock and Station Agents'
official reports; wool exchange report; mines and
metals; fish and rabbit prices; farm and dairy
produce report supplied by the Inter-State Dairy Pro-
duce Committee; wholesale fruit prices by the Whole-
sale Fruit Merchants' Association; retail fruit prices
supplied by the Victorian Fruitgrowers' Association;
citrus fruit prices supplied by the Victorian Cen-
tral Citrus Association; weather synopsis; river re-
ports; rainfall data. 7.25: For the man on the
land: Mr. A. J. Gill: "Fodder Conservation on Dairy
Farms." 7.40: News. 7.45: Novels and Authors of
To-day: Mr. A. E. M'Micken

NIGHT SESSION.

9.0: National Broadcasting Orchestra (under di-
rection of Wm. G. James; conductor, Percy Code)—
Overture, "Saul" (Bazzini).

8.10: Leslie Beardsall, tenor—
"I Dream of a Garden of Sunshine" (Tesche-
macher).
8.17: Harold Elvins, piano—
Children's Corner Suite (Debussy).

8.32: Muriel Simpson, soprano.
8.42: National Broadcasting Orchestra—
Suite, "Summer Days" (Coates).

9.4: Leslie Beardsall, tenor—
"Where the Alabama Flows" (Finden).
"Beloved, in Your Absence" (Finden).

9.11: Plantation Melodies—Negro Camp Meeting
by the A.B.C. Glee Singers.
The items will include the following—
"Deep River."
"We Got a Robe."
"Steal Away to Jesus."
"Nobody Knows the Trouble."
"Oh, Dem Golden Slippers."

Banjo Solo.
"Mighty Like a Rose."
"Shoo Fly—Don't Bother Me."
"Mamma's Curly-headed Coon."
"Shine, Shine, Moon."

Banjo Solo.
"Playing on de Old Banjo."
Good-night.

A VARIATION.

9.51: National Broadcasting Orchestra—
Selection, "The Desert Song" (Romberg).

10.0: "The Optimists" in Fifteen Minutes of Musi-
cal Comedy.

10.7: Charles M'Phee, saxophone.
10.14: More Optimism.
10.20: British official wireless news from Rugby;
meteorological information.

10.30: The "Reel" Dance Band.
11.30: God Save the King.

3AR

Australian Broadcasting Co. 120A Russell St., Melbourne (Wavelength, 381 metres).

EARLY MORNING SESSION.

8.15 to 11.0: See Friday.

MIDDAY SESSION.

12.0: Community Singing from the Town Hall;
Conductor, Frank Rathelbe. 1.1: Luncheon Music,
supplied by the National Broadcasting Orchestra
(under direction, Wm. G. James; conductor, Percy
Code).

AFTERNOON SESSION.

A Band Matinee. 2.0: Victory Band: March, "Dun-
kirk"; overture, "Silver Star." 2.10: Leonard Thom-
son, tenor: Selected. 2.17: Mariana Trio: Planta-
tion Melody, "Maramba" (John Crook)—Banjo, Xylo-
phone, and Piano Numbers: "A Privious Pierrot"
(J. Dallas); "Lancashire Clogs" (Grinshaw). 2.24:
Collin Binks, humorous recital: "Dad Decides for
Parliament." 2.31: Victory Band: Gems of Italian op-
era. 2.41: Leonard Thornton, character sketch: "Mari-
Madge Gunner, humorous character sketch: "Mari-
etta at the Telephone." 2.55: Victory Band: Eu-
phonium solo, "Old Man River"; Intermezzo, "Under
the Palms." 3.5: John Berkeley, baritone: "Trade
Winds" (Keel). "Sea Fever" (Ireland). 3.12: A one-
act play: "A Bird of Paradise," produced by Winif-
red Moverley (Harry Paul). 3.24: Victory Band:
Waltz, "Carolina Moon." Mainly for Women—
3.30: You Be a Beauty: Appearance: Face Creams
Ann. 3.45: A Musical Interlude. 3.50: Seasonable
Walks for Women, R. D. Croll. 4.5: A Musical
Interlude. 4.10: Food and Cookery: Economy in
Electric Cooking, Miss B. Osborne. Traders' De-
monstration Session—4.15: Reproduced Music. 4.45:
Evansong transmitted from St. Paul's Cathedral
5.45: Close down.

EVENING SESSION.

6.15: Dinner Music, supplied by the A.B.C. Stu-
dio Orchestra. 7.30: What's on the air to-night
7.32: Latest Musical Releases.

NIGHT SESSION.

8.0: Ern Spry and His Syncopters.
8.1: Fox Trot, "Top of the World."
Waltz, "Angeline."
Fox Trot, "Sally of My Dreams."
Fox Trot, "Oh, Ya, Ya."

8.10: "The Crimson Ramblers"—
Glimbing Along a Wave of Merriment.

8.50: Ern Spry and His Syncopters.
8.51: Fox Trot, "The Top of the World."
Fox Trot, "She's Funny That Way."
Fox Trot, "Steam Boat."
Fox Trot, "Sonny Boy."

9.0: Edward Beachcroft, tenor—
"Elegie" (Massenet).
"Swing Low, Sweet Chariot" (Barleigh).

9.7: A. Rogerson and his One-string Fiddle.
9.14: Charles O'Mara, entertainer—
Fifteen Minutes Irish Humor, Song, and Story

9.29: Ern Spry and his Syncopters—
Fox Trot, "Mother, I Still Have You."
Fox Trot, "Sweethearts on Parade."
Waltz, "Honey-moon Waltz."
Fox Trot, "Painted Doll."

9.59: Edward Beachcroft, tenor—
"The Birth of Morn" (Leon).
"The Lilac Tree" (Garland).
"I Be Hopin' You Remember" (Coningsby Clarke).

9.46: Morit String Quartette—
Selected.

9.56: Gaby du Valle, soprano—
"Visti Dante," from "Tosca" (Puccini).
"Toselli's Serenade."
"Cherrie Je Taine (Goodman).

10.3: Tom O'Dey, entertainer—
In a Musical Muddle.

10.13: Ern Spry and his Syncopters—
Fox Trot, "Old-fashioned Locket."
Fox Trot, "Should I Be Sorry."
Fox Trot, "Young Man, Be Wise."
Fox Trot, "Clad Rag Doll."

10.20: Gaby du Valle, soprano—
Selected.
"Daddy Sweetheart" (Lehman).

10.25: Ern Spry and his Syncopters—
Fox Trot, "Precious Little Thing Called Love."
Fox Trot, "Broadway Melody."
Fox Trot, "Young Man, Be Wise."
Fox Trot, "Promise Me."

10.30: God Save the King.

3DB

The "Herald" Broadcasting Station, Flinders Street, Melbourne (255 metres).

MORNING SESSION

11.0: Time signal; latest recordings. 11.30:
Famous singers and players. 12.0: Bands and
ballads. 12.25: News. 12.30: Close down.

AFTERNOON SESSION

2.0: Light orchestral and classical songs. 2.30:
A medley of the best in music. 2.55: Atwater
Kent Radio Hour—sponsored by A. G. Healing, I/d.,
and E. T. Muir. 3.55: News. 4.0: Close down.

EVENING SESSION

5.30: Billy Bunny's children's hour. 6.0: Requests.
6.30: What's on at the theatres and movies. 6.32:
Radio Movie Club. 6.35: Musical comedy memories.
7.0: Symphony Orchestra and singers. 7.30:
Oratorio. 7.45: Market reports.

NIGHT SESSION.

8.0: Chamber music. 8.30: In lighter vein. 9.0:
W. H. Squibb, Eisdelt, Rudy Dierdt. 9.50:
Symphony Orchestra and soprano songs. 10.0:
Modern melodies. 10.30: Slumber music. 10.40:
News. 10.45: God Save the King.

4QG

Queensland Government Radio Service, Brisbane
(Wavelength, 385 metres).

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.

EARLY EVENING SESSION

7.45: Lecturette.

NIGHT SESSION.

8.0: Mrs. Matthews Cadenza Plectral Club—
Selection, "The Mikado" (Gilbert and Sullivan).

8.10: Elsieph Capper, soprano—
"Blackbird's Song" (Orrill Scott).

8.18: Claire Matthews, violinist—
"Humoreske" (Dvorak).
8.20: The Anglo Male Quartette—
"The Soldiers' Farewell" (Kinkel).

8.25: Mrs. Phil Stewart, soprano—
"The Birth of Morn."
8.30: Sid Smith, with Mrs. Matthews' Banjo
Band—

Popular numbers.
8.38: The Cadenza Quartette—
"Serenade" (Schubert).

8.43: C. R. Kolb and Dick Pike—
Vocal duet, "Two Beggars" (Mayne).

8.48: Mrs. Phil Stewart, soprano—
"The Island of Dreams."
8.53: Mrs. Matthews' Banjo Band—
"Atta Boy" (Weidt).

9.0: Metropolitan weather forecast.
9.1: Movements of the Travelling Dental Clinic
9.5: The Anglo Male Quartette—
"Away to Rio" (Bartholomew).

9.10: Elsieph Capper, soprano—
"June" (Roger Quilter).
9.15: Mrs. Matthews' Club—
"Punto e Virgola" (Becucci).

9.21: Stewart Mackay in Plantation Melodies
with old-style banjo accompaniment.

9.30: The Anglo Male Quartette—
"Stars of the Summer Night" (Parks).

9.34: Claire Matthews, violinist—
"Schen Rosmarin" (Kreisler).
9.40: Leo Crump, with Mrs. Matthews' Banjo
Band—

Popular numbers.
9.48: The Anglo Male Quartette—
"Lili Boy" (Parks).

9.50: Mrs. Matthews' Club—
"Flickinny Lullaby" (Macy).
9.56: Mrs. Matthews' Club—
March, "The No. 4" (Bigelow).

10.0: News and weather information. Close down.

5CL

Central Broadcasters, Ltd., 114 Hindmarsh Square,
Adelaide (Wavelength, 409 metres).

MORNING SESSION

11.15 to 2.0: See Friday.

AFTERNOON SESSION

3.0 to 4.30: See Friday.

EVENING SESSION

6.0: Chimes. 6.1: Children's Happy Moments. 6.30:
Dinner Session. 7.0: Birthday League Greetings
sporting service; Stock Exchange information; gene-
ral market reports. 7.20: Dr. G. H. Wright, M.A.
will continue his series of literature talks. 7.35:
Mr. H. Rule (manager of the South Australian Lac-
rosse team) will speak on "Lacrosse Activities."
7.45: Mr. A. M. Wittenbury: Hints to poultry
breeders.

NIGHT SESSION

8.0: Chimes.
8.1: 50 Years ago To-day. "How the years roll
by." Programme review and announcements.

8.10: "The News" Symphony Orchestra.
(Conducted by Lionel Baird).
Overture, "Morning, Noon, and Night" (Suppe).

8.20: Malcolm Wilson, Bass—
"My Captain" (Scott).
"Gentlemen, the King" (Gleason).

8.27: Richard Smith, Xylophonist—
"Light Cavalry" (Suppe).
"Lay My Head Beneath a Rose" (Four Hammet).

8.34: Phyllis Everett, Contralto—
"Irish Folk Song" (Foot).
Overture, "Morning, Noon, and Night" (Suppe).

8.41: "News" Symphony Orchestra—
"Lightning Switch" (Alford).
8.52: Rupert Hazell and Elsie Day.
8.0: Chimes.

9.1: Meteorological information: overseas grain re-
port; general news service.

9.8: "The News" Symphony Orchestra—
Overture, "William Tell" (Rossini).

9.18: Malcolm Wilson, Bass—
"To-morrow" (Keel).
"My Country" (J. Broeck).

9.25: D. Bulik, Violinist—
Selected.
9.32: Richard Smith, Xylophonist—
"Going Some" (March).
"Love Dreams" (Mendoza).

9.39: Phyllis Everett, Contralto—
"Tommy" (Margerson).
"Come to the Fair" (Easthope-Martin).

9.46: "The News" Symphony Orchestra—
"Oarmen" (Blzet).

9.55: Rupert Hazell and Elsie Day.
 10.4: Messrs. C. J. Emery and E. Graham. Instru-
 mental Duettists—
 Selected.
 10.7: "The News" Symphony Orchestra—
 Quickstep, "The Four Horseman" (Paull).
 10.15: General news service; British official wire-
 less news, and meteorological information; results of
 open amateur golf championship of Australia.
 10.30: Modern dance recordings.
 11.0: Close down.

6WF

Commonwealth Government Broadcasting Station,
 Perth (Wavelength, 160 metres.)

10.0: Gramophone records. 11.0: Close down. 12.30:
 Markets, news, etc. 1.0: Time signal. Weather. 1.3:
 Organ recital. 1.20: Community singing. 1.50: Pro-
 gramme continued. 2.0: Close down. 6.45: Bed-
 time stories by Uncle Duffy. 7.5: Light music. 7.30:
 Commercial and general information. 7.45: Talk.
 8.0: Time signal. Weather. 8.3: Musical programme.
 9.0: Late news. Ships within range. Late weather.
 9.8: Programme. 9.45: "Health" talk. 10.30: Close
 down. 104.5 Metre Transmission: Simultaneous broad-
 cast on 104.3 metres of programme given on 1250
 metres, commencing at 6.45 p.m.

7ZL

Tasmanian Broadcasters Pty., 95 Elizabeth St.,
 Hobart (Wavelength, 316 metres.)

11.30: Monsieur Sonora: Musical selections 11.34:
 Midlands weather forecast. 11.35: Adeline Eager
 will speak on "Household Hints". 11.55: Tasmanian
 stations' 9.0 weather report. 12.0: Chimes
 12.1: Shipping information, ships within wireless
 range. mail notices, housewives' guide, commercial
 news. 12.3: Monsieur Sonora: Musical selections.
 12.29: Announcements. 12.33: Monsieur Sonora:
 Musical selections. 12.55: "Mercury" news service.
 British official wireless news, railway auction pro-
 ceedings held at railway. 1.10: Monsieur Sonora:
 Musical selections. 1.30: Close down. 3.0: Chimes.
 3.1: Monsieur Sonora: Musical selections. 3.4:
 Weather information. 3.5: Monsieur Sonora Musi-
 cal selections. 4.15: Child Welfare: The representa-
 tive of the Child Welfare Association will speak.
 4.30: Close down. 6.15: Children's hour, with
 "Uncle David" and "The Story Lady". 7.15: News
 session. 7.30: Under the auspices of the "Come to
 Tasmania" Organisation: P. D. O'Reilly will speak
 on "The Derwent Rowing Club". 7.45: W. H.
 Cumme will speak on "Soccer". 8.0: Chimes. 8.1:
 Monsieur Sonora: Selections. 8.15: Transmission
 from the Theatre: Boxing championships described.
 9.30: News session. 9.40: Transmission from the
 Theatre: Boxing Championships (continued). 10.0:
 Chimes. Close down.

7ZL

Wednesday, August 21

Tasmanian Broadcasters Pty., 95 Elizabeth St.,
 Hobart (Wavelength, 316 metres.)

11.30: Record recital. 11.34: Midlands weather
 forecast. 11.35: Record recital. 11.55: Tasmanian
 stations' 9.0 weather report. 12.0: Chimes. 12.1:
 Shipping information, ships within wireless range.
 mail notices, housewives' guide, commercial news.
 12.3: Record recital. 12.29: Announcements. 12.33:
 Record recital. 12.55: "Mercury" news service.
 British official wireless news, railway auction pro-
 ceedings held at railway. 1.10: Record recital.
 1.30: Transmission from Imperial Hotel, Collins St.,
 Hobart: Speeches at the Rotary Club luncheon. 2.0:
 Close down. 3.0: Chimes. 3.1: Record recital. 3.4:
 Weather information. 3.5: Record recital and Player
 selections. 4.15: Readings from the "Illustrated Tas-
 manian Mail". 4.30: Close down. 6.15: Transmis-
 sion from the Beaumaris Zoo, Hobart: A. R.
 de la Roche will speak to listeners-in on "Birds". 7.15:
 News session. 7.30: Under the auspices of the
 Society for Prevention of Cruelty to Animals: Olive
 Lord, F.L.S., will speak on "Tasmanian Fauna".
 7.45: Richard Olds will speak on "Skins and Furs".
 8.0: Chimes. 8.1: Record recital. 8.15: A Columbia
 Recital, including latest releases specially arranged
 by Pindley's Music Warehouse. 9.30: News session.
 9.45: Columbia Recital (continued). 10.0: Chimes.
 Close down.

Screen Grid Three

For Battery Operation

COUNTRY CLIENTS NOTE.—Postage paid on Orders over 10/-,
 with the exception of Sets, Loud Speakers, Batteries, Aerial Wires, and
 Value Payable Parcels. All goods sold with a Money Back Guarantee;
 if not satisfied and returned within ten days, money will be refunded.

BELOW IS A LIST OF PARTS FOR BUILDING THE BEGINNER'S SCREEN GRID THREE.

	£	s	d
One Oram D.E.L. 610 Valve	12	6	
One Osram D.E.P. 610 Valve	12	6	
One Osram S625 Valve, with Holder	1	15	0
Two T.C.C. 1 mfd. Fixed Condensers	9	6	
One Sangamo. 00015	2	3	
One Sangamo. .001	2	9	
One Two Megohm Electrad Grid Leak	1	6	
Two Pilot Art Vernier Dials	13	6	
"Advance" .0005 Variable Condensers	11	6	
One Philips Audio Transformer	1	7	6
One Pilot Volumgrad, 50,000 ohm.	10	6	
One Electrad Royalty Resistor, 500,000 ohm.	11	0	
One Electrad Filament Switch	2	0	
One Strip 14-gauge Aluminium, 8in. x 6in.	2	3	
One Bakelite Panel, 8in. x 15in. x 3/16in.	7	6	
Six yards Flex	1	0	
Two Radiokes Coils (Special)	1	10	0
One Amperite to carry .45 amps. at 6 volts	6	0	
Wood Thread Screws, per doz.	4		
Metal Thread Screws with Nuts, N.P., per doz.	1	0	

DO YOU WANT GOOD RECEPTION?

Ninety per cent. of bad reception is due to faulty Batteries or Speaker.
 Eliminate these defects and enjoy good reproduction always. Below are
 a few Parts that will overcome your trouble.

	Cash Price.			Terms Price.		
	£	s	d	£	s	d
Philips Eliminator, B and C, 3003	10	15	0	1	7	0
Philips Eliminator, 3002	9	15	0	1	4	6
Emmco Eliminator	8	15	0	1	2	6
R.C.A. Model 100A Speaker	8	10	0	1	1	3
Magnavox D80 Belvedere A.C.	11	10	0	1	10	0
Magnavox Belvedere, D.C.	10	0	0	1	5	0
Magnavox D80 Unit	7	15	0	0	15	6
Magnavox Nos. 6, 7, and 8 Units	6	5	0	0	12	6
Philips Trickle Charger	3	10	0	0	7	0
Emmco Trickle Charger	3	10	0	0	7	0
Rectox Trickle Charger	4	10	0	0	9	0
Colmox A B Charger	6	10	0	0	13	0
Colmox A Charger	5	10	0	0	11	0

COUNTRY.—Dep. 25 per cent. of Cash price, and balance in 5 monthly
 payments.

The above and any other parts may be purchased on easy terms

COLVILLE MOORE WIRELESS SUPPLIES LIMITED

10 ROWE ST. (Next Hotel Australia), SYDNEY

'Phone, B2261.

'Phone, B2261.

*Well-known Wireless Distributor to
 Tour World*

MR. J. LEVENSON is leaving on a world
 tour for new radio agencies, on August
 17. After visiting U.S.A. he will visit the
 Continent, returning home via the U.S.A. In
 each big centre he has buyers and shippers,
 and will appoint permanent agents for Lev-
 enson's Radio. Television and picture trans-
 mission will play a big part in the travel, and
 he intends to build and operate a radio wire-
 less station for picture transmission.

A COMPETITION !!

You are invited to enter a competition that will occupy an hour of your spare time!!!

Construct a Radio Crossword Puzzle incorporating not less than 50% Radio terms, and the name

"PRICES"

1st:—Open Order on Price's for £3/3/-.

2nd:—Open Order on Price's for £1/1/-.

The winner's effort will be published in WIRELESS WEEKLY'S issue of 30th August. Entries close 20th August.

Address efforts to
"COMPETITION," Box 3326PP, G.P.O., Sydney.

C
O
M
P
E
T
I
O
N

NO COMPETITION !!

No One Can Compete With Us
On These Lines:—

1000v. 4mf. Condensers	8 d
500v. 2mf. Condensers	7 6
Silvertone Cone Speakers	4 6
Six Sixty Cone Units	32 6
Six Sixty Cone Paper	12 6
30in. Celatsite Wire, per length	2 9
Hoosic 30ohm. Rheostats	1/9 and 2
.0005 Low Loss SLF Condensers	2 0
.00035 Low Loss SLF Condensers	6 9
Diora 4in. Bakelite Vernier Dials	6 9
Diora 3in. Bakelite Vernier Dials	3 6
3 Stage Resistance Coupled Units	5 9
Resistograds	10 0
Lewcos Frame Aerial Wire, 100ft.	3 6
Beebe 0-50 Volt Meters	3 6
Beebe Accumulator Test Meters	-3 6
	3 0

PRICE'S RADIO SERVICE,
Angel Place, Sydney. B4146.

GENUINE FORMO PRODUCTS



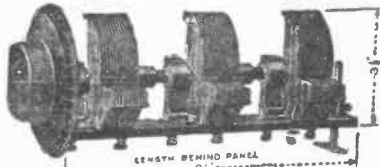
COMBINATION L.F. UNITS

- "TRUE SCALE" 45/-
(Dual Impedance).
- "TWO STAGE" 52/8
(Resistance-Transformer).
- "TRANSFORMER
Output Filter CHOKE" 45/-

DISTRIBUTORS
for New South Wales:
O. H. O'BRIEN,
37-39 Pitt Street;
MURDOCH'S, LTD.,
Park Street;
**ELECTRIC UTILITY
SUPPLY CO.,**
617 George Street.

Every Formo NON-MECHANICAL UNIT (Choke, L.F. Transformer, Combination Unit) is GUARANTEED 12 MONTHS. Each box contains its guarantee ticket—see that your dealer completes it at time of purchase. A small charge of 1/6 is made to cover cost of handling on each replacement. Please include this amount when claiming.

The Famous "1928" Log Model



TWIN Priced and Sold TRIPLE
£1/7/6 Without Dial £2



"1928" LOG CONDENSER

The SMALLEST, LIGHT-EST, and most EFFICIENT obtainable. .0005, 9/6; .00035, 8/6; .00025, 8/.

Also "DE LUXE" Model
.0005, 11/; .00035, 10/6; .00025, 10/6; 00015 10/-



SHROUDED L.F. TRANSFORMER

The First Completely Shrouded Transformer on the English Market.

Ratios: 3-1 and 5-1, 16/6
Other Formo Products.
L.F. CHOKES, A or B 18/6
Short Wave Outfit 18/-



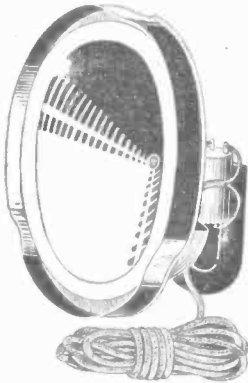
FORMO-DENSOR

(Variable-Fixed Condenser)

Ref.	Max.	to Min.	Price
F	.0001	.0000075	4/6
J	.0003	.000025	4/6
G	.001	.002	4/6
H	.002	.001	8/6

CATALOGUE—ASK YOUR DEALER—CATALOGUE

Factory Representative: WHITELAW & WOOD PTY., LTD.,
CATHCART HOUSE, 11C CASTLEREAGH ST., SYDNEY;
312 FLINDERS ST., MELBOURNE.

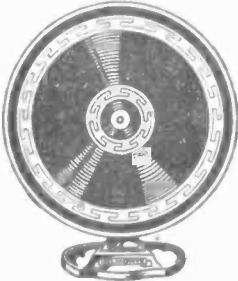


**TIMMONS
MAGNETIC SPEAKER**

Absolutely the latest development,
all the Tone of the DYNAMIC
without the use
of current

£5/5/0

Chassis Only 2/3/..



**THE FAMOUS
DELMONTE SPEAKER**

Beautiful Appearance
Magnificent Tone **38/6**



**Western
Electric
and
Para
Head
Phone**

You can't go
wrong with
either

WESTERN ELECTRIC 19/6 PARA. 10/6



32 Clarence St., Sydney

'PHONE, B2002.

H.R.F.C. (Newcastle).—An article has already been published dealing with adding a stage of S.G. R.F. to the Browning Drake.

F.C. (Parkdale).—Circuit and instructions for building a wavetrapp appeared in WIRELESS WEEKLY a few months ago, and since then in queries (several times).

R.C. (Greenwich).—Circuit O.K. Switch arrangement satisfactory. Valves used will depend on voltage of accumulator to be used.

T.J.B. (Adelaide).—Copy has been forwarded as requested. The two sets are of entirely different construction. The first-mentioned is mainly a local receiver, which gives good volume, as it has a detector and two audio stages. The other receiver mentioned uses an S.G. R.F. amplifier, followed by a detector, and one stage of audio frequency amplification, and it is therefore efficient for use with phones on inter-State stations, and fair speaker volume on local stations.

H.E.M. (Wentworth Falls).—Sorry, cannot supply. Suggest you write to Colville Moore, Economic Radio, P. V. Wallace, Swain's, Levenson's, or Price's for blue print.

GENERAL: Can any reader please supply Mr. F. Dowling, 24 Cairo Street, North Sydney, with a copy of WIRELESS WEEKLY dated March 22, 1929?

R.F.C. (Carlisleford). Circuit of a simple yet efficient crystal receiver was published in queries column February 22, 1929.

C.M.W. (Arncliffe). A short-wave adaptor can be plugged into the detector socket of your Marco Four. Remove the R.F. valve. Circuit diagram of a short-wave adaptor appeared in these columns on January 4, 1929. Coils as per Go-Getter article, May 11, 1928. A 415 valve can be used in adaptor. Quite O.K. for last valve to get warm. It has a heavy plate voltage.

MAX (Sydney): "A couple of days ago I forwarded a query. It was only this morning I realised I had committed the unardonable sin, I forgot to enclose coupon. Here it is. Many thanks for not informing the police immediately."

GENERAL: The following letter received from G.E., of Raymond Terrace, Newcastle, follows on recent remarks in these columns regarding the well known fact that Newcastle is a bad district for clear reception; the letter has been prefixed: Re your remarks. My brother and I encountered this trouble some time ago, and straightway blamed the set we were using. However, after building and testing other sets with no better results, we cut our double wire T aerial and made a single wire L with the lead in from the south end. Here our troubles ended. Since then we have built and tested dozens of sets on this aerial with hardly a trace of blurring, either on speech or music. We en-

countered the same trouble in Maitland with an aerial, and found by shifting the posts to make the aerial run north and south reception improve greatly, although there were periods of a few minutes at a time when it was hard to understand what was being said. Hope this information will prove useful to other people who are in trouble."

Answer: Thanks for the information. We have received a lot of letters on this subject, but none so helpful. Your remarks rather bear out our own theories as stated in queries a few weeks back.

GENERAL: Can any reader please supply Mr. R. Horn, St. James, 33 Ocean Avenue, Double Bay Sydney, with a copy of WIRELESS WEEKLY containing the Go-Getter S.W. receiver?

K.M.C. (Young): "Please give me instructions for making a simple Leyden jar."

Answer: Procure a glass tumbler, and clean well inside and out, then dry in an oven. While still hot apply several coats of shellac varnish (shellac flakes dissolved in methylated spirit), and while the last coat is still tacky (shellac inside and out) apply sheet of smooth linoleum inside and one outside the tumbler. Make sure there are no air bubbles and see that the inside foil does not make contact with the outside foil. Two discs of tinfoil should then be cut, and one placed on the bottom inside, and one on the bottom outside of the tumbler. Fit a shellac-coated cork to the mouth of the tumbler, and drill a 1-8 inch hole through it. Solder one end of a piece of brass chain about 3 inches long to one end of brass rod of the same length, and push the latter through the disc, with the chain inside the tumbler. The jar should be charged with a static machine such as a Wimhurst or Electrophorus.

THE TYRO (Bega): A Radiokes Choke. Usual about 30 Henrys. First stage A415. Second and third A425. Fourth, B409.

H.E.R. (Sydney): Connect an S.G. jack to the primary of the first input stage. Will publish your request below. Re insensitivity. You will find that you will get better results on the broadcast band by cutting out the first R.F. If necessary use a wavetrapp. Particulars of construction of a suitable wavetrapp appeared in these columns February 19, 1929.

H.A. (Ballina): Back of panel wiring diagram of short-wave adaptor appeared in queries column April 19.

GENERAL: Mr. H. E. Ryves, "Ranston" 9 Evelyn Street, Coober Pedy, writes "Can you put me in touch with anyone in my district who has constructed the 'Air King' short-wave receiver, with a view to comparing notes relative to reception and adjustment, etc.?"

Answer: No doubt a reader in your district will see this.

Miss Mabel Batchelor

"IN Australia public interest in music is very keen," said Miss Batchelor. "The average man or woman shows an intelligent appreciation of good work." Her varied experience touring with concert parties through New Zealand and the Commonwealth should render her a competent judge. Mabel Batchelor has played with a number of operatic societies, but her lyric soprano is heard to best advantage in concert work. "Some of the orchestras, especially in the country towns," she said, "were vile beyond belief. I sometimes used to wonder if I were singing in a different key. We used to fight it out to a finish, and the only time we were really the same was on the last note. We always finished together, anyway." Miss Batchelor is well known over the air, for she has been broadcasting for four years from all the A Class stations in the Commonwealth. She will be next heard from 2FC on Wednesday, August 21.

Well-known Contralto at 3AR

GERTRUDE HUTTON will be on the air from 3AR on August 19, in some special request numbers. Miss Hutton has sung in conjunction with the principal Victorian musical organisations, including the Melbourne Philharmonic, and at many municipal concerts. She has given successful recitals, and has appeared in oratorio with leading visiting artists.

Popular Tasmanian Tenor

LEO FISHER, who is well known throughout Tasmania, will be heard from 3LO on August 19. He is also popular with Sydney audiences, and was chosen to sing the leading tenor role at the New South Wales Schubert Centenary Celebrations, where he sang to the accompaniment of an orchestra of 100. He has played with success in Fritz Hart's production of "A Daughter of the Regiment."

Mark Erickson

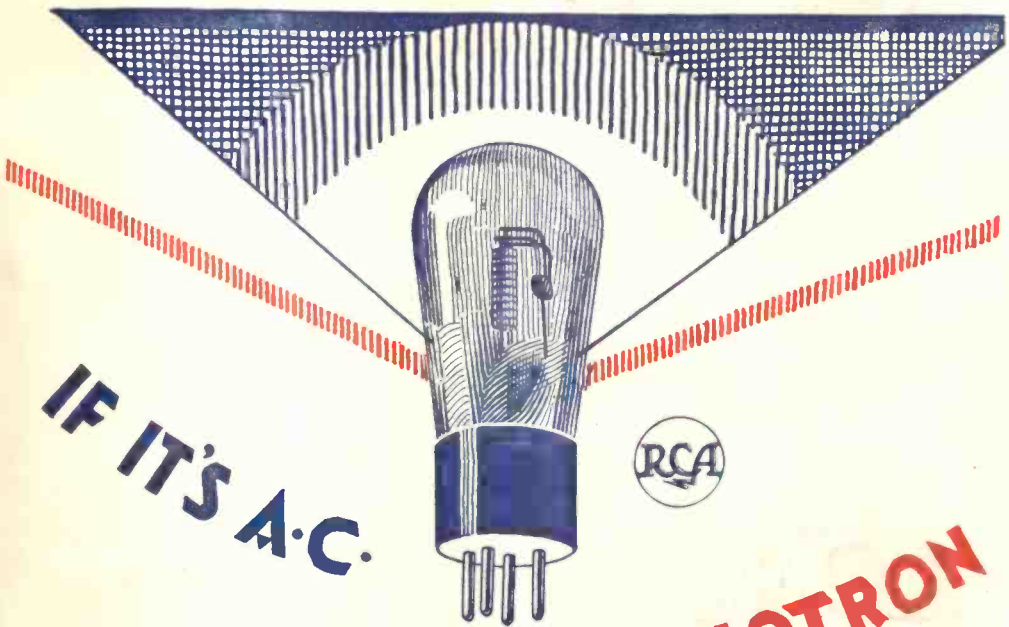
[T] is said of Mark Erickson that he is the only man on the stage to-day with a Danish name and an Irish brogue. A genuine silver-plated Irish brogue that ripples from his tongue. By rights his name should have been Patrick O'Grady, for he has what is known as typical Irish humor and even Irish red hair. On Thursday, August 22, he will be heard from 2BL in Irish songs and tram numbers. "I used to be a show rider in India," he said, "but I had to give it up because of an accident, and—not wishin' to indulge any further in work, I started to sing for me livin'."

For the Housewife

MANY housewives are adopting the latest labor-saving device—cooking by electricity. Many more would like to consider this proposition, but the fear of incurring further housekeeping bills prevents them from launching out in this direction. The talk to be given from 3AR on August 22 on "Economy in Electrical Cooking" should appeal to all housewives who are keen to take advantage of the most up-to-date method of housekeeping.

Repertory Player at 3LO.

CATHERINE NEILL, who has done much good work with the Adelaide Repertory Company, will be producing a series of one-act plays from 3LO, when she will introduce listeners to some little cameos of literature. Miss Neill has devoted many years to the study of play-producing, and has a most extensive repertoire, including translations from the Continental authors, and listeners may anticipate some enjoyable half-hour while this clever artist is before the microphone.



IF IT'S A.C.

THEN IT MUST BE

RADIOTRON



Look for this Seal.

Radiotron—

- UX 226 Amplifier .. 15/-
- UY 227 Detector £1/7/6
- UX 171A Power Amplifier 19/-
- UX 280 Rectifier £1/10/-

BECAUSE Radiotron Valves are subjected to over 40 individual laboratory tests before they are released—because leading manufacturers of quality receivers specify Radiotrons for initial equipment and for replacements—and because of their world wide reputation for dependability, most owners of Electric Receivers choose Radiotron A.C. Valves.

Distortionless performance due to watchlike assembly, long life and economy resulting from sturdy construction are assured with Radiotrons.

RADIOTRON A.C. VALVES ARE OBTAINABLE AT ALL RADIO DEALERS.

Amalgamated WORLD WIRELESS **Wireless**
(Australasia) Ltd
 47 YORK STREET, SYDNEY.

J. B. CHANDLER & CO.,
 45 ADELAIDE ST.,
 BRISBANE.

AMPLION

standing

A Z D hanging

cone

AC. 21



£ 2-17-6

THIS speaker, with its "16 inch" non hygroscopic bronze cone, its superlative "one-piece" mahogany bakelite moulding, and polished rim, is a most beautiful model, and well worthy of the name of Amplion. Its beautiful reproduction is well in keeping with its beautiful appearance.

TWELVE MONTHS GUARANTEE
WITH EVERY AMPLION SPEAKER

AMPLION A/SIA LTD., 53-55 York St., Sydney

Distributors in all States



*Junior
Hanging Cone,
AC2
£1/17/6*