

Complete Broadcasting Programmes a Week in Advance

Wireless Weekly

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INCORPORATING "RADIO IN AUSTRALIA & NEW ZEALAND"

VOL. 13. NO. 26

FRIDAY, JUNE 21, 1929

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

WITH A SILVER
PRIMARY



27/6

THE
PHILIPS
AUDIO
TRANSFORMER

First Article by
Ross A. Hull
New Technical
Editor

THE SIGNAL BOX
FOUR VALVE
RECEIVER

FURTHER NOTES
ON MODEL 'PLANE
BUILDING

The SIGNAL BOX Four

SHORT WAVE INCORPORATES

RADIOKES COMPONENTS

The Technical Editor, in this excellent little short waver, uses and recommends Radiokes parts as being the most suitable, efficient and economical.



Radiokes Midget Condensers are acknowledged as being the most precise job yet produced in this line.

They are small, efficient, and are very accurately made. Have arrow Bakelite knob, nickelled fittings, screw terminals, and specially treated plates. All sizes, from 3 plates to 23 plates, selling at moderate prices, from 4/3 to 8/6 each.

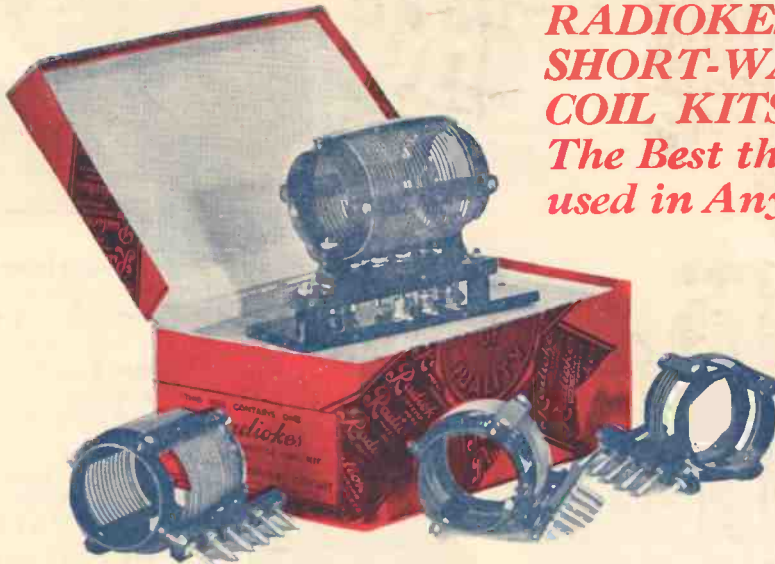
This famous little Radiokes R. F. Choke hardly calls for any description, as same is so well-known.

Suffice it to say that all those who "know" regard this as the "finest job they have ever handled." Adopted by manufacturers, custom builders and experimenters alike. Price is 8/6 ea.

Radiokes Collapsible Box shields have proved a boon to home constructors, who are now building the modern, full shielded, receivers. These Shield Boxes are beautifully finished and accurately constructed, and add that professional appearance to your finished job. They can be assembled after your wiring is completed and are simply dismantled to allow you to make inspections or alterations to your set at any subsequent time. Price 15/- each.

EVERYBODY KNOWS that

**RADIOKES
SHORT-WAVE
COIL KITS are
The Best that can be
used in Any Receiver**



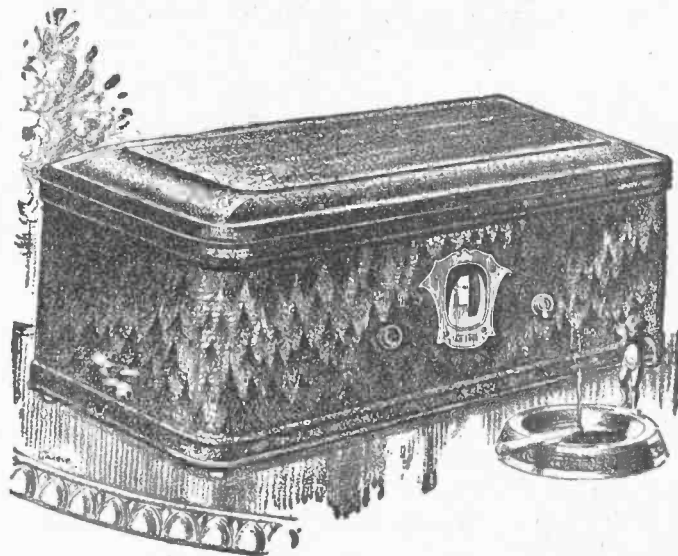
The best known Short Wave Coil Kits in this portion of the world are the excellent lines put up by Radiokes. Their popularity is gained through their own High Excellence. All the best short wave receivers offered throughout Australia have incorporated and specified Radiokes Short Wave Coil Kits. This because the various technical men throughout the States have tried out all and arrived at the unanimous decision that Radiokes Coils are the finest procurable. You may use them in your signal box with the assurance that complete satisfaction will result. Price of Standard S.W. Kit is 55/- and price of Screen Grid Short Wave Coil Kit is 72/6 per kit. Both kits cover a range of 15 to 130 metres approx.

OBTAINABLE FROM ALL HIGH-CLASS DEALERS OR DIRECT FROM

METROPOLITAN ELECTRIC CO. LTD. Radiokes House, 126-130 SUSSEX STREET, SYDNEY

The Proof of the Pudding is— —in these extracts

"—2YA Wellington, N.Z. comes in at good Loudspeaker strength any time after 3.30 p.m., in fact it sounds more like an interstate station. I have twice picked up WGY Schenectady, N.Y. Daylight reception on this set is marvellous."—A dealer in the Far North.



"—In addition to all Australian stations, the four Japanese stations, JOBK, JOAK, JOCK, JODK, were received by a client of mine."—A dealer in Far North West.

"—I listened to 5CL Adelaide during the test on the Loud Speaker, no other six valve set has yet done that here—"
A Braidwood dealer.

"—The Standard Astor Neurodyne gives wonderful results at night time. It is the sweetest set that I have ever heard—"
A dealer in the South.

"—We have no trouble in bringing in all interstate New Zealand and Japanese stations. Daylight Reception is really remarkable. We have handled Radio sets for over three years and we find that Astor stands superior to any set we have heard or handled—"
A large Radio House in Victoria.

ASTOR

Radio

PRICED FROM £5 TO £125

Dealers...Write for Attractive Proposition

AMPLION A/SIA LTD., 53 YORK ST., SYDNEY.

Messrs. Amplion A/sia Ltd., 53 York Street, Sydney.

Please forward me particulars of the Astor line of receivers.

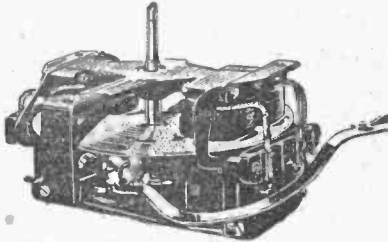
Name

Address

W.W.2

Always the latest
at HARRINGTONS

THE G. E. PHONOGRAPH MOTORS



Motor. It is a slow-speed motor of induction disc type, giving direct drive to turntable. There are no belts to slip or commutator to cause interference and noise. Absolutely silent running is assured.

PRICE £7'10'.

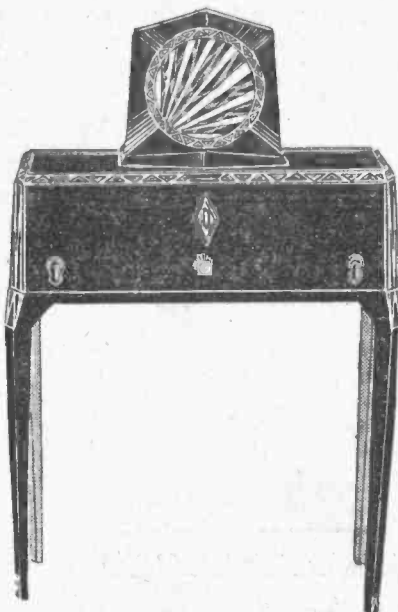
Practically every high-grade Electric Phonograph imported into the country uses the G.E.

Turntable and Speed Control, 15/- extra.

. . . newest triumph of R.C.A.

MODEL 33

SIX VALVES--ALL ELECTRIC



It takes something right out of the ordinary these days to create enthusiasm to any marked degree. And already the R.C.A. 33 has created something more than a mild sensation.

It is different to any Radio Set that has appeared before—different in appearance, performance, and price. Just fancy being able to buy a 6 Valve R.C.A., which operates directly from your house lighting or power supply, for £45, and the magnificent 100B Loudspeaker for £7/10/-.

HARRINGTONS WILL ARRANGE VERY CONVENIENT TERMS

Harringtons LTD

386 GEORGE STREET
 Branches all States and New Zealand

Open Friday Nights. 'Phone, MA600L

R.C.A. Model 33 Receiver. **£45**

R.C.A. Model 100B Loudspeaker. **£7'10'.**

Wireless Weekly

Incorporating Radio in Australia & New Zealand

Address:
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 3366 PP,
 G.P.O.,
 Sydney.



Automatic Traffic Signal. A recently installed automatic traffic device, which operates by sound wave. Light stays red until driver signals with horn that he is ready to cross. The impulse of the signal changes the light to green for 30 seconds. Pedestrians operate the signal by button.

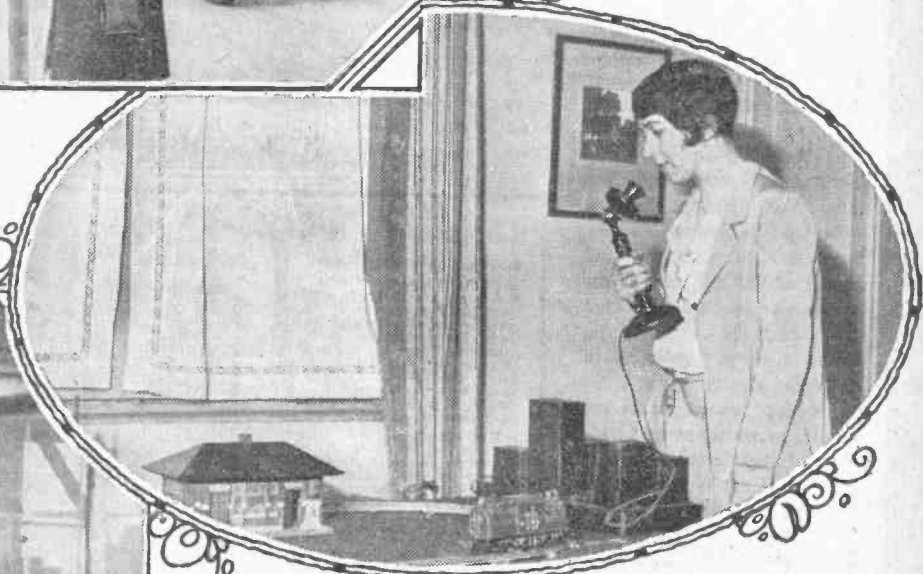
Radio News in Views?

World-wide pictures of radio interest

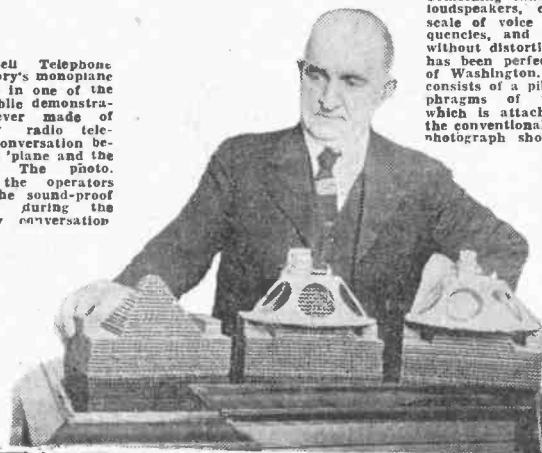
The oval below shows one more electrical "wonder" toy. Miss B. Gaucher is demonstrating a marvelous new model train, which is bound, more than ever, to fascinate the parents as well as the youngsters—an electric train which can be made to stop and go and directed into the "station" by giving orders over the attached telephone.



The Bell Telephone Laboratory's monoplane engaged in one of the first public demonstrations ever made of two-way radio telephone conversation between a 'plane and the ground. The photo shows the operators using the sound-proof "mikes" during the two-way conversation.



Something radically new in radio loudspeakers, covering the entire scale of voice and musical frequencies, and reproducing them without distortion and suppression, has been perfected by E. L. Rice of Washington. Mr. Rice's device consists of a pile of laminated diaphragms of varying diameters, which is attached to the apex of the conventional cone speaker. The photograph shows, first, the bare cone; second, Rice speaker attached to magnetic type reproducer; and third, attached to regular cone speaker.



BETWEEN YOU and ME and the MICROPHONE



We wish them long life, eternal happiness, good artists, and gorgeous programmes. We hope they may never receive a rough letter from anyone. We hope that their service to the public will be all the public expects.

WE hope? We are past hoping, dear friends. We know. Indeed, we have reason to believe, because we are given to understand that it is rumored that it has been suggested that the future of the programmes is in good hands: that, in fact, the new company's choice of executive could not have been bettered. Oh, how does WIRELESS WEEKLY know that which 'everyone is wondering about at the present moment? WIRELESS WEEKLY has every reason to know better than anyone else, as will soon be divulged.

grammes. It creates an authority or body outside the State, against which will be directed all the complaints which may arise concerning the programmes made available. In the event of dissatisfaction, it will be open for the Government authorities to retort that they are not directly responsible and use popular agitation as the occasion for pressure against the programme organisation." We chuck this mirror in free, with this threepenny copy of WIRELESS WEEKLY, for the benefit of anyone who cares to see himself in it.



WELL, BLESS our hearts! We'll be BLOWED! And what DO you know about THAT? Good HEAVENS! Good GRACIOUS! Good GOODness! Rake out the flute, dear friends, together with the saxophone, violin, banjo, and harp; test the strings of the old planner for primary inductances; and wind the sousephone on a double dotted crotchet. Bring forth the violas also, and the 'cellos and double basses. Tootle the cornets, harmoniums, and clarinets. Let the piccolo hover over the noise; and if you have a son who can play the mouth-organ as well as Captain Stevens, bring him along, too.

Altogether, ladies and gentlemen of the choir. . . and you with the mandolins—would you mind playing in sharps, with the rest of the bunch? Altogether, dear friends, in one grand paean of praise and thanksgiving—at last the Government has made up its mind about broadcasting! The Voice has spoken, with far-reaching effects.

OF course, you would expect far-reaching effects from a Cabinet with so many Loud-Speakers in it. . . . But, nevertheless, with an air of grace, politeness, and meekness, WIRELESS WEEKLY takes off its hat to the successful tenderers,

MIRRORS. Mirrors are horrible things. We see ourselves as others see us. A New Zealand paper sums up the new arrangements. "From the point of view of the

MISTER, ORRIN E. DUNLAP, of America, has added to the glories of his name by writing a book on "Advertising by Radio." One American critic doesn't think much of it, because Mister Dunlap hasn't answered the question, "Does Broadcasting Actually Influence Sales?" Well, if it don't, 23,000,000 of the wust is going to waste on two broadcasting chains alone; which sounds about as American as Prohibition. At any rate, the answer of our own fair land to the question is, that broadcast advertising may influence Sales, but not of Radio Sets—not in the right direction, we mean.

A JOURNAL, wishing to show how television has progressed, features the latest televised photograph. It is of a married couple descending the church steps. What we mean to say is, even if television IS a long while coming, there's no reason on earth why the future should be painted so miserably as all that.

THE GooDoyle? We think so. WIRELESS WEEKLY already knows its ABC fairly well.

James

Listeners We All Know—No. 3

THE CLASSICAL CLASS

HULLO, Egbert! Fancy you being here! What did you think of the classical programme the other night? Look, we've bin wondering how to pronounce Dvorak. Is it Dvorick, or just simply Ash tray? Don't worry if you don't want to; we know you feel deeply pained. Besides that stiff neck of yours.

The Classical Gent invites you out to his home to hear the special classical evening arranged by ZFC. "Second slice of the Mozart concerto," announces Mr. Halbert. The Classical Gent folds his hands on his lap, and sits in an attitude indicative of mute prayer. The Mozart concerto trickles sweetly through the loud-speaker. Trickles sweetly through the loud-speaker. Soft; soft. And there you are in Mozart's own green paradise, where the slopes rise from mirroring lakes, past statuary, into the veiling shadows of silent woods, and you hear the familiar Mozart grace notes in the distant calling of birds. (A good description; but too many adjectives.) These graceful visions are ticked off by the voice of the Classical Gent. "Isn't this wonderful music? Mozart's a marvellous man! I wish I could write like Mozart! Don't you think so?" He relaxes into his former coma. You attempt to pick up the thread of the conshirto. But he has another idea. "You know, I can hardly believe that people should have left such great talent to die in garrets and . . . and all that sort of thing. They didn't seem to appreciate genius in those days. Still, I suppose it's the same to-day. There must be just as many great men among us whom we don't appreciate. Do you think there is anyone living now who is as great as Mozart?" By this time, the concerto is all over; and the Classical Gent wants to know whether you still take milk and sugar. When you are gone, he goes to a neat little cabinet, where he keeps a gramophone, and puts on a record. It is "Mississippi Mud." "I am a firm believer in the classics," he will tell you, "but I must have a little relaxation, you know."



Well, Egbert? Found out how to pronounce Dvorak yet? No? Yes? No. If you don't want to commit yourself, we'll go up to see Mr. Charlie, and leave you there. Good-night, Egbert. G-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o-o night!

political administration of the scheme, this is a clever move. It entrusts to those who are specialists in the handling of musical and other talent the organisation of the pro-

The New ABC of BROADCASTING



Stuart F. Doyle.



Sir Benjamin Fuller.



John Fuller.



Frank Albert.

Next month Broadcasting in Australia enters upon a new period of development. The successful tenderers, the Australian Broadcasting Company, promise many innovations and excellent programmes in the next three years.

The four dominant personalities behind the A.B.C., Mr. Stuart Doyle, Sir Benjamin Fuller, and Mr. John Fuller, and Mr. Frank Albert, are introduced to listeners below. The ideas and enterprise of these men will be imprinted on future programmes.

Mr. Stuart F. Doyle

TO-DAY is the day of quick, fast work, and meritorious rise. The philosopher may sit back and enjoy life in his own way, but it is the dynamic, fighting, hard-working man who makes life possible. The prizes of living still go to the creative mentalities—to men who make accomplishments from possibilities, and to men who can organise the work of other men for the benefit of the community.

In the early 'nineties an ingenious small boy rigged up a shadowgraph show in a disused room in the home of his parents, and sought to collect pennies from his brothers, relations, and friends. It was a sign; but moving pictures weren't moving very much in those days: He was to study law. At an early age, he entered the office of a prominent firm of Sydney solicitors.

But he still remembered his shadowgraph show. He didn't want to delve into the business affairs and loves and hates and pockets of a lawyer's clients. He wanted to amuse people, and to amuse them better than anyone else could amuse them; he wanted to study their capacity for amusement and to fill that capacity to its uttermost.

In 1911 he joined the Greater J. D. Williams Amusement Co., Ltd., where, from a comparatively small position, he worked his way towards becoming the dominant personality of Union Theatres, Limited.

At forty-one, Mr. Stuart F. Doyle is all of that, and more. As head man of Union Theatres, Limited, he controls motion picture houses throughout Australia and New Zealand. The capital of his company is over three million pounds; its ramifications are spread throughout the world, and it has as-

sociate connections in every principal city of the world. Mr. Doyle's activities are not centred in the motion picture industry alone, but are distributed through commercial, sporting, and other spheres. He is known and respected in England, on the Continent, and in America, and his theatre enterprises in Australia, and the efficiency and advancement shown in the construction of his theatres, have placed him on a level where men of constructive thought win admiration, even from America, land of mighty theatres and original ideas.

"Service above all things," says Mr. Doyle. "Service to the public. To give service, accept your responsibilities seriously, and reasonable profits will automatically accrue."

Now this comparatively young man is chairman of directors of the Australian Broadcasting Company, Limited, the successful tenderer for the supply of Australia's first national broadcasting service. His ideas of service and of public amusement are now to be translated into radio broadcasting, and his life-long study of the psychology of the public, and of its recreative requirements, is to be tested through a new medium. He succeeds to an interesting situation.

Broadcasting in Australia is pioneered. In each capital city, services are established, and, during five years, the industry has progressed to enormous dimensions. The Government has made its regulations for control of the industry, and the individual companies, by a series of test-and-elimination experiments, have brought forward a kind of programme, which, according to their experience, best serves the public demand. What remains to be done is to unify the opinions of the scattered companies into a complete knowledge of what the public wants, and to organise broadcasting on a national scale, so that the public will get what it wants. Is Mr. Stuart Doyle the man to do this?

In his own business he is reputed to give lightning decisions on the greatest of matters, and has impressed all his undertakings with the stamp of his own personality. He has surrounded himself with a loyal and efficient organisation of clever young men, because he believes that modern business is for youth, and youth alone. He sets a tremendous pace for his subordinates, and has found that youth alone can follow him. From such a man we may expect creative schemes and efficient methods, a constant striving after original ideas and living programmes, and quick appreciation of the worth of performers before the public.

He has many revolutionary ideas, he says, which, in his opinion, will lift broadcasting out from the rut of the commonplace. As a hard-working, hard-thinking, hard-driving business organiser, he will strain every nerve to put broadcasting on a satisfactory footing.

So, whether listeners will agree with Mr. Doyle in the future, or whether they won't, they will know that broadcasting in Australia has at last found its personality.

"The Fullers"

SIR BENJAMIN FULLER is probably one of the best-known figures in the theatrical business of Australia.

From a very small beginning, he and his brother, Mr. John Fuller, have built up an enormous theatrical and vaudeville business, which covers all New Zealand and every principal city in Australia. The company's activities run from vaudeville and revue to grand opera, and it has a circuit of excellent theatres, as good as, if not better than anything of its kind in the Southern Hemisphere.

ROBOT MAN TURNS ON LIGHTS

New developments in mechanical devices from a famous laboratory

Listeners-in are promised the benefit of the company's various theatrical presentations. Artists under their control who are suitable for broadcasting will be readily available.

Sir Benjamin Fuller has no intention of pushing his own artists down the throats of listeners-in, as he puts it. He wishes to serve the public from his sense of national responsibility, and will tolerate nothing in the Broadcasting Company's activities which will not elevate the standard of broadcasting services.

Sir Benjamin Fuller's great interest in educational matters is well known. He has endowed a bursary in perpetuity, and is ever taking an active part in the educational affairs of the community.

Mr. Frank Albert

MR. FRANK ALBERT is a man whose great wealth and business acumen have resulted from a lifelong association with the music publishing business. He has made a phenomenal success of everything connected with music, and his musical knowledge is admitted on all sides.

He is prominent in sport, and is well known as the owner of the yachts Bona, Rawhiti, and Norm, which last he bought for his son from Lord Forster.

Mr. Albert is prominently associated with the Australian Copyright Owners' Association, and will thus be the link between the Australian Broadcasting Company, Limited, and the copyright people, so important to the broadcasting world.

Mr. Albert wishes to dispel any doubts that, because he is associated with the new organisation as one of its directors, the music which he controls may dominate the company's programmes. On the contrary, arrangements will be made with the Australian Copyright Owners' Association to obtain the best music from every country for the new programme.

A GLIMPSE into the future when electricity transmitted without wires will provide not only entertainment, but also light and power, was furnished recently by the research department of Westinghouse Electric.

Unusual electrical devices shown included the Telex, brother of Televox. This latest mechanical servant is directed through the medium of light beams rather than by sound as is the case with the Televox.

The Telex utilises two photo-electric cells which are sensitive to a beam of light thrown upon it by a light pistol held by the operator. One of the cells is the selector which progressively chooses any one of three circuits. Then the beam of light is flashed on the operator cell and Telex opens or closes the chosen circuit.

At a demonstration, the Telex was given the task of turning off and on the lights in the room. From one to three flashes of light on the selector cell would determine which group of lights were to be turned out, then a single flash on the operator cell and Telex would turn off the lights.

It is possible to operate the Telex from a distance of 75 feet, the electric pistol concentrating a strong beam of light on the sensitive cells from that distance to put the latest robot through its paces.

Quite as interesting as the Telex was the musical beam of light by which music produced on a phonograph was carried with-

out wires to a loud-speaker across the room. In this the music from the phonograph is picked up magnetically and carried to a gas-filled tube. The soft glow of this tube is trained on a photo-electric cell which is placed in the centre of an ordinary automobile headlight reflector. The photo cell then impresses the waves carried by the light on another circuit, which carries it to the loud-speaker, which reproduces the music. When the beam of light is played directly on the photo-cell the music is loud and distinct. If the beam is moved to one side, the music becomes less distinct.

Among other electrical wonders shown were the Knowles grid-glow tube and photo-glow tube. These tubes may be used indefinitely without using any appreciable amount of current. The photo-glow tube may be made to pass a current by casting a light upon it, while the grid-glow tube will pass a current upon the mere approach of a human hand.

The possibilities of power transmission by short radio waves were further shown. A picture of the day when electric light users would tune in on a power station for their light current as they now tune in on a radio broadcasting station, was painted.

Through the use of a model it was also shown how airports may be illuminated at night at the sound of an aeroplane motor. In this model a specially prepared phonograph record produced the roar of the 'plane motor.

INTERNATIONAL TIME CHART FOR S.W. LISTENERS

Comparison of Time.
Behind New South Wales, etc.

In Advance of New South Wales, etc.	N.S. Wales, Victoria, Queensland, Tasmania.	South Australia	Japan.	China, Philippines, Western Australia.	Straits Settlements, (For Dutch East Indies add 19 mins.)	India, Ceylon.	Aden.	Greece, Egypt, Turkey, S. Africa.	Central European Time, (Germany, Switzerland, etc.)	Greenwich Time, (Great Britain, France, Belgium, Gibraltar, etc.)	Azores.	Brazil (except Amazon and Acre District).	Uruguay.	Argentina.	Chile.	Bolivia.	New York, Quebec, Jamaica, Peru.	Sao Paulo, Vancouver.
+1 1/2h.		-1/2	-1	-2	-3	-4 1/2	-7	-8	-9	-10	-12	-13	-13 1/2	-14	-14.43	-14.32	-16	-18
1.30 a.m.	Midn.	11.30 p.m.	11.0 p.m.	10.0 p.m.	9.0 p.m.	7.30 p.m.	6.0 p.m.	4.0 p.m.	3.0 p.m.	2.0 p.m.	Noon.	11.0 a.m.	10.30 a.m.	10.0 a.m.	9.17 a.m.	8.28 a.m.	9.0 a.m.	6.0 a.m.
2.30 a.m.	1.0 a.m.	12.30 a.m.	Midn.	11.0 p.m.	10.0 p.m.	8.30 p.m.	6.0 p.m.	5.0 p.m.	4.0 p.m.	3.0 p.m.	1.0 p.m.	Noon.	11.30 a.m.	11.0 a.m.	10.17 a.m.	10.28 a.m.	10.0 a.m.	7.0 a.m.
3.30 a.m.	2.0 a.m.	1.30 a.m.	1.0 a.m.	Midn.	11.0 p.m.	9.30 p.m.	7.0 p.m.	6.0 p.m.	5.0 p.m.	4.0 p.m.	2.0 p.m.	Noon.	12.30 p.m.	Noon.	11.17 a.m.	11.28 a.m.	11.0 a.m.	8.0 a.m.
4.30 a.m.	3.0 a.m.	2.30 a.m.	2.0 a.m.	1.0 a.m.	Midn.	10.30 p.m.	8.0 p.m.	7.0 p.m.	6.0 p.m.	5.0 p.m.	3.0 p.m.	2.0 p.m.	1.30 p.m.	1.0 p.m.	12.17 p.m.	12.28 p.m.	Noon.	9.0 a.m.
5.30 a.m.	4.0 a.m.	3.30 a.m.	3.0 a.m.	2.0 a.m.	1.0 a.m.	11.30 p.m.	9.0 p.m.	8.0 p.m.	7.0 p.m.	6.0 p.m.	4.0 p.m.	3.0 p.m.	2.30 p.m.	2.0 p.m.	1.17 p.m.	1.28 p.m.	1.0 p.m.	10.0 a.m.
6.30 a.m.	5.0 a.m.	4.30 a.m.	4.0 a.m.	3.0 a.m.	2.0 a.m.	12.30 a.m.	10.0 p.m.	9.0 p.m.	8.0 p.m.	7.0 p.m.	5.0 p.m.	4.0 p.m.	3.30 p.m.	3.0 p.m.	2.17 p.m.	2.28 p.m.	2.0 p.m.	11.0 a.m.
7.30 a.m.	6.0 a.m.	5.30 a.m.	5.0 a.m.	4.0 a.m.	3.0 a.m.	1.30 a.m.	11.0 p.m.	10.0 p.m.	9.0 p.m.	8.0 p.m.	6.0 p.m.	5.0 p.m.	4.30 p.m.	4.0 p.m.	3.17 p.m.	3.28 p.m.	3.0 p.m.	Noon.
8.30 a.m.	7.0 a.m.	6.30 a.m.	6.0 a.m.	5.0 a.m.	4.0 a.m.	2.30 a.m.	Midn.	11.0 p.m.	10.0 p.m.	9.0 p.m.	7.0 p.m.	6.0 p.m.	5.30 p.m.	5.0 p.m.	4.17 p.m.	4.28 p.m.	4.0 p.m.	1.0 p.m.
9.30 a.m.	8.0 a.m.	7.30 a.m.	7.0 a.m.	6.0 a.m.	5.0 a.m.	3.30 a.m.	Midn.	11.0 p.m.	10.0 p.m.	9.0 p.m.	8.0 p.m.	7.0 p.m.	6.30 p.m.	6.0 p.m.	5.17 p.m.	5.28 p.m.	5.0 p.m.	2.0 p.m.
10.30 a.m.	9.0 a.m.	8.30 a.m.	8.0 a.m.	7.0 a.m.	6.0 a.m.	4.30 a.m.	2.0 a.m.	1.0 a.m.	Midn.	11.0 p.m.	9.0 p.m.	8.0 p.m.	7.30 p.m.	7.0 p.m.	6.17 p.m.	6.28 p.m.	6.0 p.m.	3.0 p.m.
11.30 a.m.	10.0 a.m.	9.30 a.m.	9.0 a.m.	8.0 a.m.	7.0 a.m.	5.30 a.m.	3.0 a.m.	2.0 a.m.	1.0 a.m.	Midn.	10.0 p.m.	9.0 p.m.	8.30 p.m.	8.0 p.m.	7.17 p.m.	7.28 p.m.	7.0 p.m.	4.0 p.m.
12.30 p.m.	11.0 a.m.	10.30 a.m.	10.0 a.m.	9.0 a.m.	8.0 a.m.	6.30 a.m.	4.0 a.m.	3.0 a.m.	2.0 a.m.	1.0 a.m.	11.0 p.m.	10.0 p.m.	9.30 p.m.	9.0 p.m.	8.17 p.m.	8.28 p.m.	8.0 p.m.	5.0 p.m.
1.30 p.m.	Noon	11.30 a.m.	11.0 a.m.	10.0 a.m.	9.0 a.m.	7.30 a.m.	5.0 a.m.	4.0 a.m.	3.0 a.m.	2.0 a.m.	Midn.	11.0 p.m.	10.30 p.m.	10.0 p.m.	9.17 p.m.	9.28 p.m.	9.0 p.m.	6.0 p.m.
2.30 p.m.	1.0 p.m.	12.30 p.m.	Noon.	11.0 a.m.	10.0 a.m.	8.30 a.m.	6.0 a.m.	5.0 a.m.	4.0 a.m.	3.0 a.m.	1.0 a.m.	Midn.	11.30 p.m.	11.0 p.m.	10.17 p.m.	10.28 p.m.	10.0 p.m.	7.0 p.m.
3.30 p.m.	2.0 p.m.	1.30 p.m.	1.0 p.m.	Noon.	11.0 a.m.	9.30 a.m.	7.0 a.m.	6.0 a.m.	5.0 a.m.	4.0 a.m.	2.0 a.m.	1.0 a.m.	12.30 a.m.	Midn.	11.17 p.m.	11.28 p.m.	11.0 p.m.	8.0 p.m.
4.30 p.m.	3.0 p.m.	2.30 p.m.	2.0 p.m.	1.0 p.m.	Noon.	10.30 a.m.	8.0 a.m.	7.0 a.m.	6.0 a.m.	5.0 a.m.	3.0 a.m.	2.0 a.m.	1.30 p.m.	1.0 a.m.	12.17 p.m.	12.28 p.m.	Midn.	9.0 p.m.
5.30 p.m.	4.0 p.m.	3.30 p.m.	3.0 p.m.	2.0 p.m.	1.0 p.m.	11.30 a.m.	9.0 a.m.	8.0 a.m.	7.0 a.m.	6.0 a.m.	4.0 a.m.	3.0 a.m.	2.30 p.m.	2.0 a.m.	1.17 a.m.	1.28 a.m.	1.0 a.m.	10.0 p.m.
6.30 p.m.	5.0 p.m.	4.30 p.m.	4.0 p.m.	3.0 p.m.	2.0 p.m.	12.30 p.m.	10.0 a.m.	9.0 a.m.	8.0 a.m.	7.0 a.m.	5.0 a.m.	4.0 a.m.	3.30 p.m.	3.0 a.m.	2.17 a.m.	2.28 a.m.	2.0 a.m.	11.0 p.m.
7.30 p.m.	6.0 p.m.	5.30 p.m.	5.0 p.m.	4.0 p.m.	3.0 p.m.	1.30 p.m.	11.0 a.m.	10.0 a.m.	9.0 a.m.	8.0 a.m.	6.0 a.m.	5.0 a.m.	4.30 p.m.	4.0 a.m.	3.17 a.m.	3.28 a.m.	3.0 a.m.	Midn.
8.30 p.m.	7.0 p.m.	6.30 p.m.	6.0 p.m.	5.0 p.m.	4.0 p.m.	2.30 p.m.	Noon.	11.0 a.m.	10.0 a.m.	9.0 a.m.	7.0 a.m.	6.0 a.m.	5.30 p.m.	5.0 a.m.	4.17 a.m.	4.28 a.m.	4.0 a.m.	1.0 a.m.
9.30 p.m.	8.0 p.m.	7.30 p.m.	7.0 p.m.	6.0 p.m.	5.0 p.m.	3.30 p.m.	1.0 p.m.	Noon.	11.0 a.m.	10.0 a.m.	8.0 a.m.	7.0 a.m.	6.30 p.m.	6.0 a.m.	5.17 a.m.	5.28 a.m.	5.0 a.m.	2.0 a.m.
10.30 p.m.	9.0 p.m.	8.30 p.m.	8.0 p.m.	7.0 p.m.	6.0 p.m.	4.30 p.m.	2.0 p.m.	1.0 p.m.	Noon.	11.0 a.m.	9.0 a.m.	8.0 a.m.	7.30 p.m.	7.0 a.m.	6.17 a.m.	6.28 a.m.	6.0 a.m.	3.0 a.m.
11.30 p.m.	10.0 p.m.	9.30 p.m.	9.0 p.m.	8.0 p.m.	7.0 p.m.	5.30 p.m.	3.0 p.m.	2.0 p.m.	Noon.	11.0 a.m.	10.0 a.m.	9.0 a.m.	8.30 p.m.	8.0 a.m.	7.17 a.m.	7.28 a.m.	7.0 a.m.	4.0 a.m.
12.30 a.m.	11.0 p.m.	10.30 p.m.	10.0 p.m.	9.0 p.m.	8.0 p.m.	6.30 p.m.	4.0 p.m.	3.0 p.m.	Noon.	11.0 a.m.	11.0 a.m.	10.0 a.m.	9.30 a.m.	9.0 a.m.	8.17 a.m.	8.28 a.m.	8.0 a.m.	5.0 a.m.

The above chart is published for the benefit of those short-wave listeners who are sometimes at a loss to figure out the times of transmission of foreign stations. The table above shows at a glance how many hours behind N.S.W. other countries are.

A BRILLIANT ? FUTURE for AUSTRALIAN BROADCASTING

Because we are in a position to benefit from British, Continental, and American development, Mr. Hull believes Australia's radio future is a brilliant one.

Australia's atmospheric conditions make it a veritable radio paradise. In the Northern Hemisphere, and particularly in America, poor conditions in the atmosphere are a definite handicap.

By ROSS A. HULL

I HAVE sworn off the business of giving expression to my first impressions. A few experiences have shown that though they may be the most amusing or the most interesting, they are often the most distorted. All of which is a round-about way of starting off to say that, though Australian broadcasting now impresses me as being an awful mess, after a few years away from it, I do not intend to talk about it.

You know, first impressions can be so infernally thin and one-sided. The writings of travellers in criticism or comment of other countries, their peoples, and their institutions provide ample evidence of this fact. One reads the brilliant and searching findings of some writer abroad concerning the judicial system of, say, Los Angeles. The whole thing, he will tell you in a series of "Smart Alec" phrases, is a criminal farce, reeking, all the way through, with filthy graft. This masterful summing-up of the unfortunate judicature, however, was the result, in all probability of a 24-hour stop-over in the city, a half-hour chat with a taxi-driver, and two profound ten-minute discussions with hotel porters. Maybe the subject is New York night life. In this case our hero will spend an evening in the only night club he can find (where the cover charge is far too hot and the band too noisy) and then write back with the story that New York Night Life is a myth—that the night clubs are run solely for the benefit of pleasure-seeking tourists, and that everyone has a devil of a job trying to look as though they were enjoying themselves.

When one has gone to a foreign country, received all these conventional first impressions, and then stayed on long enough to see through the surface and to get right into the swim, one starts to appreciate these first impressions as a particularly pitiful brand of puerility.

The few Australian programmes I have heard since my return, compared to the American broadcasting in which I have been immersed, do seem tame, uninteresting, and amateurish. Australian broadcasting, however, is running under such different conditions and serving such different people, that this reaction would undoubtedly be amended after mature observation.

The one conviction that has gained weight after a few years of contact with broadcasting in an advanced stage of development is that the future of broadcasting in this country is destined to be a brilliant one. At one time, before I had the opportunity of getting an inside view of American broadcasting, I had the idea that worth-while progress would never be made on account of the limitations imposed by the conditions under which we had to operate. Now I

can see that these limitations are quite insignificant, and that they are completely offset by advantages with which even the most successful broadcasting systems in other countries have not been blessed.

There is, for instance, the enormous advantage of a reasonable limit on the number



ABOUT three years ago Ross A. Hull, then Federal Secretary of the Wireless Institute of Australia, and with an unusually creditable record as an amateur experimenter, left Australia to tour America.

In that country he joined the headquarters of the A.R.R.L., where he became Associate Technical Editor of QST, well-known to radio experimenters the world over, and Director of the Headquarters laboratory. During the last year he conducted a Technical Development Programme in that laboratory on problems pertaining to short-wave transmission and reception. The results attained in this work are considered outstanding. Already they have resulted in what could be termed a revolution in experimental short-wave technique throughout the world. In addition to this work, Mr. Hull, who is a member of the Institute of Radio Engineers, shared the authorship of *The Radio Amateurs' Handbook*, regarded as the most authoritative text-book of its kind.

In America he found time to visit almost all the worth-while radio laboratories and manufacturing plants, so acquiring a valuable knowledge of modern practices and trends. Mr. Hull was obliged by the United States Immigration authorities to return to Australia last month, when "Wireless Weekly" was fortunate enough to secure his services as Technical Editor.

of broadcasting stations. In America, with some 600 broadcasting stations in operation (a great many of them mediocre ones) an enormous problem has had to be faced in the control of their operations for the avoidance of interference. Then, it has meant that the American receiver must always be a relatively complex and costly affair, of five, six, or seven valves, if it is to provide the reception of one station at a time.

Conditions in England or in Europe are somewhat similar. In Australia, fortunately, the distribution of the few stations throughout the frequency spectrum is really not a problem at all and interference between stations need never be tolerated, even with relatively simple receiving equipment of a type available to almost everyone. At the same time it must be said that this favorable condition has been imposed upon in this country. A great many receivers have been simplified to such an extent that even under our almost ideal frequency channel distribution they fail to serve effectively.

A further enormous advantage possessed by Australia is that it is a veritable paradise as far as atmospheric conditions are concerned. A few hundred nights of experience in listening on the broadcast frequencies in various parts of America has convinced me of this fact. On the Atlantic coast, in particular, conditions are so wretched that one wonders how broadcasting in that section has made any advances at all.

Aside altogether from atmospheric disturbances, which, in the summer, make anything but local reception almost an impossibility, transmission characteristics appear to be so poor that it takes a mighty fine six tube receiver to provide the equivalent performance of a couple of valves in Australia. In Connecticut, located almost centrally in a nest of the world's most powerful stations, one usually must be content to listen to the local transmitters, even in winter, if one is to avoid a dozen different varieties of fading and distortion.

After experience with Australian conditions the 50 kilowatt transmitter of WEAJ, at 90 miles distance, sounds as if it were three thousand miles away. WGY's magnificent transmitter of the same power, when heard at 100 miles to the south-east, sounds for all the world like a dizzy one flea-power amateur station located at the west end of the Great Australian Bight. These conditions, of course, are not found throughout the United States, but it is in very few locations that radio waves appear to perform in the same way as they do here. We are, indeed fortunate.

Yet another important factor favoring the development of broadcasting in Australia is

the unique opportunity which exists for the exploitation of methods and practices found satisfactory in England and Europe, as well as America. Laggng somewhat behind those countries it should be possible to create a structure (if only we are willing to be shown) which would stride beyond the others by reason of the better foundation on which we are able to build.

More important still is the fact that we, in Australia, are in a position to avail ourselves of the technique and apparatus of all the world. In America one often hears the complaint that the ideal apparatus for their work is not available. "If we only had our hands on some of those European or English tubes," they would say, "we sure could build a set with a real performance." And the story in England is doubtless the same.

Out here we can never make that sort of wail. In no other country of the world, it

would seem, is there such a variety of equipment available. Components of every conceivable size, shape, and breed, from the best manufacturing plants in the world, exist in abundance. Surely we should be able to make combinations of them which would surpass, in performance, the receivers of any other land.

The chief problem at the moment would seem to be that of overcoming the present impression, deeply implanted in the public's mind, that broadcasting is inherently the sort of animal it appears to be at the moment. It must be established, by some means or other, that broadcasting at its best actually has an entertainment value quite unequalled in any field, and that our present transmissions, and particularly our present reception, are so far removed from broadcasting at its best as to be acclaimed as passable only by those who have heard no other.

Of course, quite the best method of convincing the public of this will be to improve broadcasting to the point where there can be no denying the fact. With the new, or at least, greatly re-vamped transmitters of the immediate future, and the programme services promised, we have at least a magnificent opportunity of doing so.

Just as soon as the quality of the transmissions (from an electrical standpoint) has made the necessary advances, all that remains will then be to prove that a vast number of receivers in present operation are too antiquated to do justice to them. As in England and America, the radio receiver will then have every chance of coming into its own as a musical instrument of genuine charm.

Surely there is enormous scope for immediate progress and a brilliant future for Australian broadcasting!

:-: How to Service Radio Sets :-:

The eighth article of the series on Servicing Radio by an experienced business man in radio.

It must be a poor customer, indeed, who is attached to his individual radio, or one who has become sore on radio just due to this one fact, who will not let you install a pair of good modern all audio-frequency transformers after you explaining how the engineering was in its infancy at the time of his original purchase (and is not up to the finish yet), but the present transformers, which may not be vastly improved for a long time, are so much better than his old, that there is no comparison. He was getting one or two harmonics in the wave train where three or more were coming to his set. In losing some of the harmonics you do not lose the effect of speech or music, but you do lose its realism.

Transformer coupling was the first method used for audio amplification, but due to the over-night enthusiasm about radio, developments came thick and fast. The next practical means for coupling the two circuits, output and input, was with resistance coupling. This method has its good points, and also its bad points, and, although in a very small minority in the field, it has its service points.

We know that a plate circuit is a closed circuit, across tube electrons from plate to filament, to B battery, to plate. Also that a grid circuit is separate and distinct, although of open circuit at the grid, filament point. This circuit is grid, back through some resistance or inductance medium to filament.

The action that is necessary is for some medium to change the charge of electrons on the grid in synchronism with the amplitudes of audio frequencies in the preceding primary. To do this with resistance coupling, a condenser, generally of .006 microfarad capacity, connects the plate and grid circuits.

A grid is always negative, and a plate is always positive.

One side of the condenser being connected to the positive plate has a positive charge impressed on that side. This positive side attracts negative electrons to the opposite side, as in all condenser action, drawing them from any conductor attached to the opposite side.

It happens that this conductor's other end is fastened to the grid, and, as the grid does not become positive in the vacuum, it is a case of merely drawing the negative electrons from the grid to the condenser, leaving the grid in an extremely less negative state, or nearly positive.

The action that takes place is, the plate side of the condenser becomes more or less positively charged as more or less positive current flows in the plate circuit, which is

governed by the previous grid. This then draws more or less negative electrons to the opposite plate, from the grid, and the grid fluctuates in unison with the plate circuit.

This grid conductor, in its state of having a strong negative end, but not a correspondingly strong positive end, is susceptible to any influence, and that is the reason grid wires must be as short as possible, and protected from any extraneous influence.

The action of the leaks in the plate circuit is similar to a high resistance variable volume control in a plate circuit: the more resistance you add the less plate current can pass, and as you take out resistance the more the plate current can be pulled through up to the point where a tube will break down and oscillate, due to heavy plate current impressed on the plate. Therefore, the value commonly used of 100,000 ohms is sufficient to keep the 20A type tubes from oscillating and is not too much resistance so that volume is cut down.

The action of the leaks in the grid circuit is more critical, and needs service, as the changing in value of leaks from atmospheric and other conditions causes the whole action of the audio coupling to be upset, and, as there are large quantities of old type india ink resistances in the sets now in use, the sale of non-changeable metallic leaks is a service point.

After the collection of negative electrons occurs at the condenser during a wave train, and between the intervals of wave trains, these electrons must properly leak off somewhere, so a resistance leak is provided. If no leak was used, most of the electrons would wash to the positive filament at all times, irrespective of any action on the condenser, so a leak with sufficient resistance to keep the electrons back on the conductor is inserted. If this leak has too small a value, or not enough resistance, the electrons leave the grid conductor prematurely, and the grid gets a weak action from the condenser, with corresponding loss of volume.

If the value is too high or too much resistance, the electrons cannot leave soon enough, and the residue interferes with the next wave train action, therefore a distorted or blocking effect occurs.

When the resistance of the old type resistor is high one day and low the next, due to humidity, heat, cold, and all such causes, the customer wonders what is the matter

with his radio, and then blames it on the weather.

Sell him the new metallic leaks that are not affected by atmospheric conditions, and adjust leak values to his tubes.

Push-pull amplification was used for quite a while in Radiola IIIA sets before the transformer manufacturers and radio journals played it up to the fan who must have more than two stages of audio-frequency, and they filled him full of the fact that push-pull eliminates distortion, internal harmonics, non-overloading, diabetes et al. It neutralises magnetic flux, etc. It, etc. They also told him he could buy two transformers, two sockets, and two tubes in place of the one transformer, socket, and tube he had.

Of course, the manufacturers did not know how to get smooth results at that time from one transformer as they do to-day; so what else could they do?

So-called push-pull divides the path of the input to two grids, using one common winding. When one grid is becoming more negative, the other grid is becoming less negative, and vice versa. These grids control their respective plates accordingly. When one grid becomes more negative it stops the flow of electrons more and less plate current flows. At the same time, the other grid is becoming less negative, and allowing more electrons to reach the plate, hence a greater flow of plate current from this plate.

The output from the two plates goes to a common winding, the battery going to the electrical centre of this winding.

When one plate is pulling more current through its winding from the electrical centre, the other plate is correspondingly weaker. Then the opposite takes place with transposed strength. This presumably gives two amplitudes where an ordinary inductive transformer would have only one.

The magnetic flux of these two actions is picked up by a single coupled winding, and fed to the speaker inductively.

Push-pull is supposed to give more of a smooth action, instead of a pulsating effect. But—

There is very little to interest a service man in push-pull, as very few sets are equipped with it except custom-made, and these are generally made and owned by the fellows who know more about it than any service man; so why call a service man?

If the primary of a push-pull goes, and you can't get another immediately, and the customer wants radio, simply turn it into a single stage of cascaded transformer coupling, replacing the two push-pulls with one transformer, and using one tube. This goes for Radiola IIIA or any of them.

SESSIONAL NEWS



MR NORMAN'S SESSION



THE 2BL Boy Scouts' Association session opened with loud shoutings, on Tuesday, June 11. The 1st Chatswood troop was present in the studio to give its war-cry. Mr. H. R. Lee, Honorary Deputy-Commissioner of the Association, spoke to his legions all over New South Wales, and introduced Sir Kelso King, chairman of the association. Sir Kelso King gave an interesting talk, and introduced the Governor, His Excellency Sir Dudley de Chair, who opened the session officially from Government House.

The association's executives are most enthusiastic about the new session, and have instructed scouters (patrol masters) throughout New South Wales to arrange for the establishment of listening posts, so that their patrols may get the latest advance information of the association's activities.

It has been arranged that "WIRELESS WEEKLY" shall print weekly the latest information as to the future activities of the New South Wales Boy Scouts' Association.

NEXT TRIP OF RADIO CLUB.

THE Atlantic Oil Company's Deisel-electric oil tanker will be in Sydney on June 22. Mr. Norman will take a party of boys over her on that day. The Atlantic Oil Company has placed at Mr. Norman's disposal a special ferry steamer, which will leave Fort Macquarie for the Brunswick.

Executive officers of the company will be aboard the Brunswick and at the works, to explain technicalities to the boys. The party will be divided up into squads of fifty.

No boy should miss this opportunity of seeing and having explained to him the intricacies of this electrically-operated ship, whose capacity is 4,000,000 gallons of gasoline.

There will be no need for boys to bring their lunches, as the company is generously providing all kinds of light refreshments.

MISS VARLEY'S SESSION



THE annual elections of the 2BL Women's Sports Association are arranged for 2.30 p.m. on Monday, June 24, at the offices of the New South Wales Broadcasting Company, Limited, Market Street, when each club will be represented by its two voting delegates. All office-holders will retire, as a matter of course, but will all be eligible for re-election. Nominations will be submitted. Voting will be by secret ballot.

Judging by the very happy feelings between members of the association and the committee as to the satisfactory work of the

officers during the past year's activities, there is little likelihood of much change in the committee's personnel.

Clubs will also have the opportunity of nominating new club delegates for the incoming year.

ANNUAL GENERAL MEETING.

ONCE more we draw the attention of members and their friends to the annual general meeting of the 2BL Women's Sports Association, which will be held on Wednesday, June 26, at David Jones' private dining-hall. All club members and their friends are invited to be present. The cost will be 1/6. This meeting will mark the close of the first year of the association's activities.

"WIRELESS WEEKLY" takes this opportunity of congratulating Miss Varley on the splendid work of the association she has organised. We doubt whether there is another such association in the world. We are sure there is no more popular women's session in Australia.

READING SESSIONS



ON Saturday morning Captain Stevens' talk will be concerned with "Temperament," a subject raised lately in "WIRELESS WEEKLY" by Mr. Barnett, and Mr. Chapple.

On Sunday the Woodbine Willie sermon will be on "Lies, and the Love of God." This sermon is specially for the edification of those people who say God is a cruel God, otherwise He wouldn't let people suffer so much. The radio church service this Sunday will be a full choral service, with prayers and responses, drawn from recordings of the greatest choirs in the world.

During the week Captain Stevens' readings will be of short romances based on great historical events. Next Thursday, in the evening, he will probably interview another celebrity: And we almost forgot to mention that to-day (Friday) he will talk on "Big Game Shooting in India."

A few Sundays ago, the captain tells us, he put on his surplice and marched down the aisle of St. Barnabas' Church, Chatswood, with the choir. Rev. C. E. Adams, who often assists him during his midday Children's Session, as Uncle Bill, asked him to read the lessons. "I read the story of Ruth," said the captain, "and I made it very dramatic, I'm afraid." We said the story of Ruth was very beautiful, because it was a story of eternal youth. (We still aren't sure about this, but it seemed a safe guess). Anyhow, the captain said he wasn't too sure about the youth part; he thought the girl was quite out of fashion—she had an absurd, old-fashioned preference for Boaz.

MUSICAL SESSIONS



JUNE 24 is Mr. Chapple's birthday; but please don't send him anything; he hasn't been a very good boy lately.

June 26 is the night on which Mr. Chapple aided by Mr. Don Finlay, of the Turret Theatre, North Sydney, will operate a classical programme. All star cast. Ida Turnbull, Jules Van der Klei, and Ewart Chapple do the musicking; and Miss Phyllis Magrath, Mr. Richard Parry, and Mr. John Gould will act in the nice plays which Mr. Don Finlay, of the aforesaid Turret Theatre, will present. It appears there is an organ in 2FC's studio; and they can manipulate this so that you'd prefer it to the Town Hall organ. So the big musical event of the evening will be the "Agnus Dei" of Bizet, who wrote "Carmen," and is now dead, sung by Miss Ida Turnbull, and helped along by Mr. Chapple (at the organ) and Mr. Jules Van der Klei (at the 'cello). The chief thing in plays to be presented is "Danger," which was written by Richard Hughes, a modern Welsh dramatist. It is said to be the first play ever presented from the B.B.C. The action all takes place in a mine—coal—and the only way to listen to it will be with the lights out. Then you will be thrilled by the explosions, etc., etc., and all that sort of thing.

June 28 is the night when Mr. Chapple presents the public with a little Vice-Regal Music from Government House.

So, altogether, it's a kind of Chapple Gala Week.

COOKING SESSIONS



NEXT Saturday Mrs. Cranfield will talk on Scone-making. Mrs. Cranfield will talk about all kinds of scones; and the morning should prove very instructive indeed.

On Wednesday Mrs. Cranfield will talk on Gas Stove Cooking; and in view of the now-prevailing gas shortage the talk should not be without a certain wistful charm.

On Tuesday, which should have come in a paragraph earlier, there will be instructions on how to make Woollen Crochet Slippers for use during the cold weather.

One must also remember that Nurse May speaks from 2BL during Mrs. Cranfield's session on Infant Welfare, every Monday and Friday; and that Nurse Parry, of the St. John Ambulance, speaks on First Aid every Tuesday.

Polo Week

THE competition for the Australasian Polo Cup starts at Kensington Racecourse on Thursday, June 27, and on that afternoon the description will be broadcast through 2BL. Three teams from New South Wales, viz., Inverell, Goulburn, and Harden, will compete with Queensland, the only other State to be represented.

Although the entry is a small one, good polo can be confidently expected, as the recent form of the three New South Wales teams has been of a very high standard, and there is really little between them.

The Goulburn line up this year has been altered, as the result of an accident which recently befell Phil Ashton, who injured his knee and will be prevented from playing serious polo for some considerable time. His place will be taken by Mr. Curtis Skene, who showed such good form during his recent trip to America, and his inclusion will undoubtedly strengthen the combination.

Messrs. Geoff, Jim, and Bob Ashton will take the field with this player, and the colors of the team are red and blue squares. Inverell will, in all probability, be represented by A. G. Foster, Gordon Munro, Douglas Munro, and F. W. Edwards, and Queensland's line up will be B. C. Bell, C. M. Feez, R. M. Bell, and T. W. Allen.

The Dudley Cup tournament will start on Saturday, June 29, on which day the final match of the Australasian Polo Cup will be played, and the tournament will be carried on throughout the week ending July 6.

Through the courtesy of the N.S.W. Polo Association, the New South Wales Broadcasting Company has been able to arrange for the complete Polo Carnival to be broadcast. The descriptions will alternate through 2BL and 2FC throughout the week.

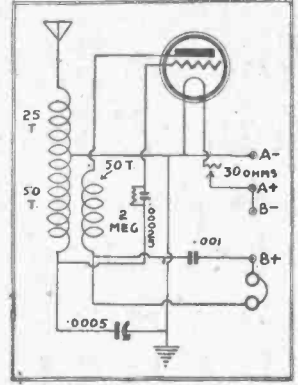
British Marching Songs

ALFRED CUNNINGHAM, the noted English baritone, has included in his programme for the evening of July 2 a group of British Marching Songs, which he will sing to the accompaniment of the Metropolitan Band. The band will play the first verse, he will sing the second, with the drummer beating time, conveying the suggestion of troops marching, then gradually

THE IMPROVED COUNTRYMAN'S ONE-VALVE

A one-valve set under the heading, "The Countryman's One-valve," recently appeared in "WIRELESS WEEKLY," and it has been very popular, not only with country listeners, but with city listeners also. Reports show that the set is a very good distance-getter.

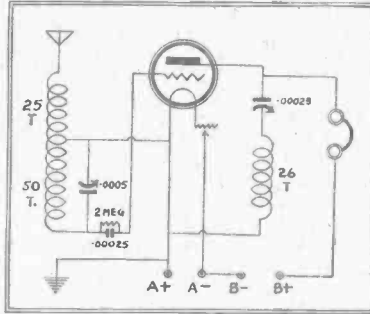
However, there is one bugbear to the arrangement, and this lies in the fact that the reaction coil is made variable with regard to the secondary by means of a spindle. It becomes extremely awkward to adjust reaction with the fingers if the receiver requires adjusting on a distant station, more especially if the set is housed in a cabinet. Therefore, the following improvement will no doubt be appreciated.



The old circuit.

Wind coils as shown in circuit diagram, all coils on the one former, which should be three inches in diameter. Space the 50 and the 26 turn $\frac{1}{2}$ inch. Now, instead of taking the plate of the valve to one end of the coil, carry it to the fixed plates of a .00025 variable condenser. The moving plates of the condenser should connect to the moving plates of the main tuning condenser.

This adjustment can be made in a few moments, and is well worth while. On test, the improvement increased volume on distant stations enormously so those who are receiving New Zealand, Japanese, and other long distance stations (as advised by letter) should see how much farther this little set will carry them.



The new circuit.

working up to the band playing full accompaniment. An unusual idea, which should find favor. The songs are: "Tommy Atkins," "Soldiers of the King," "Boys of the Old Brigade," "The Girl I Left Behind Me," "The British Grenadiers," and "The Saucy Art-thusa."

Lithgow Band

ON Sunday, June 30, the Lithgow Municipal Band will be broadcast through 2FC. Other items will be contributed by Lithgow artists.

NEW PHONOGRAPH PICK-UP

NOTHING typifies the tremendous strides made in the standard of radio reproduction so much as its modern association with the phonograph. Until recently the highest praise bestowed upon a radio set was that it sounded almost as good as a phonograph. Now the position is completely reversed, and the electrical reproduction of phonograph music is unquestionably the best.

The pick-up is used as the connecting link between the record and electrical amplifier with loud speaker. It transforms the energy imparted to the needle by the groove of the record into electrical impulses, capable of actuating the amplifier. This transformation must be effected so that faithful reproduction is given without too much record wear. Light weight is important, as a heavy pick-up results in extreme wear, especially when combined with a highly damped movement.

The records are cut for a standard 4oz. sound-box, and as the new Philips pick-up weighs but 4.5oz., it compares very favorably with the standard. Faithful reproduction is obtained by the scientific design of the movement, which allows the needle to follow accurately the groove of the record, and ensures that the electrical impulses generated are exactly proportional to the movement of the needle. This design also



reduces record wear, in that the needle follows the groove accurately without cutting. Excessive damping of the movement causes the pick-up and tone-arm to vibrate at the frequency imparted to the needle, with disastrous results to the record. The electrical output of a pick-up is obtained by the movement of an armature in a magnetic field, produced by permanent magnets. The armature being driven by the needle, and the output is regulated by the travel of the armature and the strength of the field.

With a Philips pick-up two straight bar magnets are used, thus ensuring a very strong magnetic field in conjunction with light weight, and the movement is suspended so that the armature can vibrate freely. The travel is longer than usual.

It can thus be seen that, due to the efficient design, its audio output voltage is much higher than that of most pick-ups, the normal output being one volt R.M.S. This increases to 2.5 volt R.M.S. on loud passages.

The peak voltage, which is that effective for amplification, is R.M.S. x 1.4, and, therefore, using the pick-up one, A415, and a type 4003 Philips audio transformer, the voltage available at the grid of the power tube is—1x1.4 x 15 x 3, equal 63, so that one stage is all that is necessary before the power tube. Another stage would merely spoil the excellent quality of reproduction by overloading the last valve.

IN "Wireless Weekly," issue June 7th, in the advertisement of R. W. Patterson, Radio Engineer, 22a Bond St., the price for a 3-valve All Electric Receiver complete was mis-stated at £2/10/. The correct price is £22/10/.

IN our advertising columns this week appears a special announcement by Boyd Edkins, Ltd. Perlin Batteries are offered at the amazing price of £2/10/-. This offer is for 30 days only, the previous price of these batteries being £5/10/-. We take this opportunity of advising our readers to make the most of this offer.

How to Make Your R.O.G. LOOP the LOOP

Improvements for the model 'plane described last week. How to make it fly as you desire.

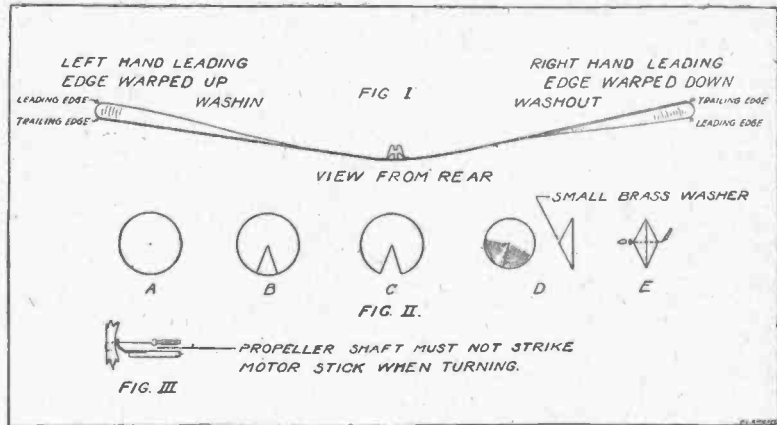
By THE PILOT

MODEL aviators who have embarked with "Wireless Weekly on a career of model 'plane building, can have a world of fun with their Baby R.O.G.'s—the 'plane they learned to build last week—if they will follow the suggestions in this article. The longer you work with the R.O.G. the more amazed you will be at its flying qualities.

The first step is to build a 'plane that will give you the longest possible flight. Any well-built R.O.G. should do 30 seconds, and the best of them will exceed 50. If the 'plane you built last week won't equal the first of these marks, let's take it back to your work-bench and see if we can't improve it. If, by any chance, you haven't built the R.O.G., you can get a kit, containing the necessary wood, metal parts, tissue, cement, etc., by getting in touch with Boy Scouts' Association Shop, 285 Pitt Street, Sydney. The directions appeared in our last issue.

Most beginners make their propellers too heavy. If your ship has a tendency to nose-dive, no matter how far forward you set your wings, the chances are you need a lighter propeller. Its maximum thickness should be not more than 1-16 inch at the hub, and 1-32 for each blade. Sand your prop down to these dimensions. Then hold it up to the window. It should be so thin that the light will show faintly through. Now, if you'll try gliding your 'plane from your hand to the floor, you'll notice that it no longer has that strong tendency to nose-dive.

Perhaps you've found, when attempting to fly your 'plane, that the propeller shaft has a tendency to strike the fuselage stick and thus slow up the propeller so much that the 'plane will not fly. In that case, more than likely, your propeller shaft isn't straight. Examine Fig. III. on the diagram. This shows you that the shaft should be perfectly straight and should clear the fuselage stick by enough margin so that there's no danger of the two striking. Notice, too, how the thrust bearing is bent. Compare your 'plane with the drawing, and see what corrections you can make.



Many beginners make the error of powering their ships with a single-strand rubber motor. This isn't strong enough to pull the ship satisfactorily. You can make yourself a double-strand motor by taking a length of rubber a little more than twice as long as the distance from your front hook to your rear hook, doubling it, and tying the loose ends in a square knot. This knot should be at the rear end of the 'plane—not the front! If it's at the front, it will strike the fuselage stick when it's turning.

Perhaps your motor catches on the "can," and won't unwind. The "can," you'll remember, is the little piano wire loop on the middle of the motor stick. Its purpose is to prevent the motor from bending the stick into a bow. If your rubber catches on it, in unwinding, your "can" isn't high enough. Bend another one, a little larger, and your motor troubles will be over.

One great reason for short flights is the weight of the 'plane'. Perhaps, throughout, you have made your parts too heavy. In that case, there's just one thing to do—build another Baby R.O.G., following the dimensions in the drawing exactly. The wing spars should be just 3-32 inch wide by 1-32 thick. The motor stick should be just 1-16 inch across the top and 1-8 inch from top to bottom. Your bamboo ribs and tips should be just 1-32 inch square. Build your parts to these sizes, and your whole 'plane will not weigh more than an ounce or so. And it will give you a long flight.

Some builders have difficulty getting the proper "set" to their wings. Both halves of the wing should form exactly the same angle with the tail surface. You can readily see that if the wings are tilting off at an angle, your 'plane is going to fly erratically. The

way to get the right set—the right balance—on your wing, is to adjust your wing clips. Inspect them closely. If they're not square, your wing won't be properly set. In that case, you'll want to take off the clips, rebend them, and put them back on. Once your wing is properly balanced, the Baby R.O.G. will fly steadily.

A number of boys are writing in to ask if the wings are covered on both sides. The answer is "no." The wings are covered on the top only, and the tail surfaces on the bottom only.

The drawing in last week's "Wireless Weekly" shows the R.O.G. equipped with flat fibre or cardboard wheels. Many boys are now building cone-shaped wheels. Fig. II. shows you how to do this. Simply cut small discs out of heavy drawing paper—make them any size you wish—and remove a V-shaped segment. This leaves your discs resembling a pie with one piece cut out. Bring the edges together where the segment was removed, and glue them together. You now have two flat-tish cones.

If you wish, at this point, you may glue very small brass washers at the inside centres of the cones. These will act as bearings for your axles. These washers shouldn't be larger than 1-8 in. in diameter, with a hole the size a phonograph needle will punch. Glue together the edges of your two cones, and you have your completed wheels. They're light and very serviceable.

Does your 'plane have a tendency to roll over on its back, or to turn in too small a circle? Fig. 1 in the drawing shows how to correct this.

First of all, though, you'll want to know what causes your ship to roll over. The answer is—the turning movement of the propeller. Propellers are called "right-hand" or "left-hand" according to the direction in which they turn. Imagine yourself sitting in the cockpit, looking forward at the prop. If it turns to the right, or clockwise, it's a right-hand prop. If it turns to the left, it's a left-hand. Your Baby R.O.G. has a right-hand prop.

You can readily see that the prop., whirling swiftly to the right, tends to throw the 'plane to the left, and even to turn it over on its back. This turning force is called "torque."

Your rudder, or fin, acting like the keel of a ship, helps correct this tendency, but many builders find that the fin won't do the entire job. Their 'planes still flop over, or else turn in too sharp a circle. Fig. 1 shows you the most effective way to correct for the torque.

MODEL AVIATION SESSION

At 6.20 every Wednesday the Pilot broadcasts from 2BL. All listeners interested in model aviation are invited to tune in. Questions and problems in construction of models are broadcast.

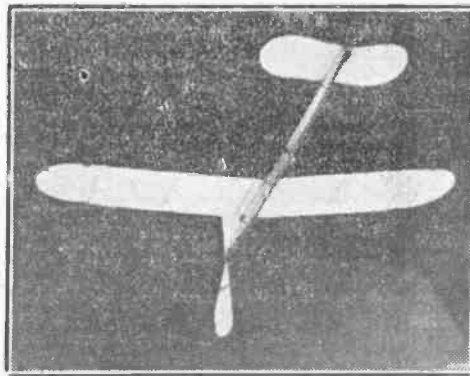
This drawing pictures the wing as you would see it from a point directly behind it. The heavy edge is the trailing edge. At the left, you'll notice, the leading edge is bent up. That's called "washin." Washin gives the left half of the wing more lift, because it allows the rush of air to strike underneath and push up on the wing. And, with the left side of the wing lifting more, your 'plane will no longer have the tendency to tilt to the left.

Now notice the right half of the wing. The leading edge is depressed. This is called "washout." "Washout" reduces the lift on that side of the wing. This further helps correct the tendency of your 'plane to tilt to the left.

Experiment with washin and washout. You can give the wing washin and washout just by twisting it in your hands, so that one leading edge will be lifted up and the other depressed. By this means, and by bending your rudder, you can make your ship fly in a straight line, turn in a large circle either right or left, or turn almost on a penny. It's great fun, and it teaches you many of the principles of aeronautics embodied in the flying of big ships.

Getting your R.O.G. to loop the loop is an art. Set your wing forward, so that the 'plane will climb rapidly. Then wind up your motor until it shows a double row of knots. (You'll need lots of power for this manoeuvre.) Release your 'plane. If your wing is set right, it will climb almost straight up, turn over on its back, swoop down, and start to climb again. Perhaps it will do two loops. Perhaps it will loop once, and then barrel-roll! You'll not be able to predict the manoeuvres this little ship will go through if you give it power enough, and set the wing so that it will climb!

If you can make your ship loop more than twice, you're a master builder. You might hold a "loop the loop" contest. The boy whose 'plane does the most perfect loop, or loops the greatest number of times, wins.



Another of the "flying sticks" to be described next week by WIRELESS WEEKLY. This is called a "pusher," because the propeller is behind the wing, pushing the 'plane forward. It flies with the small end to the front, and has made records of 150 seconds.

More good fun is the altitude contest. Set your wings to climb, wind up your motor, and see how fast your ship can reach the ceiling. Time each flight with a stop watch. The best climber wins!

Even old-time model aviators enjoy working on the Baby R.O.G. It's such a willing performer that they're continually making new ones and experimenting with them.

Stick with your R.O.G. Next week, you're going to learn to construct the indoor pusher, a ship with the propeller BEHIND the wings, and you'll want to have all the model-building experience you can acquire.

PROBLEMS

PUZZLING out your own aeronautical problems has a certain fascination, but it is not always that you can answer your own questions.

In that case, get your best friend to juzzle out your problems with you, or ask your father to help. If they can't help you, read every authoritative piece of aviation literature you can get your hands on.

But should all your usual sources of information fail you, don't be discouraged. Write out your question, and send it to "The Pilot," c/o 2BL, and it will be answered over the air or in the columns of "Wireless Weekly."

A selection of the questions likely to crop up are printed below:—

Q: What is the S hook for?

A: The S hook is used for fastening the rubber motor of the model aeroplane to the rear hook when the motor is being wound with a mechanical winder. It is not needed when the motor is wound by hand.

Q: Should I cover the bottom of my wing as well as the top, or should I cover only one side of the frame?

A: The wings of the Baby R.O.G., and later models to be described, the Indoor Pusher, and the Indoor Tractor, are known as single surface wings. They are covered on the top side only. Japanese Imperial Tissue is the best covering for the purpose. Covering the bottom surface would not give enough additional lift to make up for the weight.

Q: Do you cover the tail surfaces of the Baby R.O.G. on the top?

A: The tail surfaces of both the Baby R.O.G. and the Indoor Tractor are covered on the bottom, and are flat with the fuselage.

Q: Which side of the fin should be covered? Should both sides be covered?

A: It makes no difference in the performance of the 'plane which side of the fin is covered. The fin gives directional control only, so it would be of no use to cover both sides.

Q: How many turns should be given to the Baby R.O.G. motor?

A: The number of turns to be given a rubber motor is variable, but probably you will find 250 turns the best number for your Baby R.O.G., at least at first. If you go over that, you may break your motor; although it should be able to stand 400 turns without stretching, or you may break your motor stick, which is worse.

AN AERONAUTICAL DICTIONARY

WHAT's aerostation? What's an ornithopter? A helicopter? An air-eron? An airfoil? What's an aeroplane, anyway?

Everyone who starts out to read a book on aviation, unless it's written particularly for the beginner, finds himself asking questions like this. The words crop up everywhere—they're even beginning to crop up in everyday reading—but it's hard to get clear and simple definitions for them.

The reason is that the science of aeronautics is a young science. Man's knowledge about heavier-than-air craft is still too new to be well organised. There are books and books, but some of them are too far behind the swiftly-advancing science to be valuable, and most of them are far too technical for the beginner.

Because of this confusion in the literature of aviation, we are printing definitions of terms used widely in flying and in aeroplane design.

Here are the first definitions. Follow them weekly in "Wireless Weekly." Learn them—and try them on your friends.

Aeronautics: The science and art pertaining to the flight of aircraft. Aeronautics is the general term that applies both to heavier-than-air and lighter-than-air craft. Which leads us to—

Aviation: The science and art of operating heavier-than-air craft. Aviation doesn't apply to ballooning, because the balloon is lighter than air. And—

Aerostation: The science and art of operating lighter-than-air craft, such as balloons and dirigibles.

Aeroplane: A mechanically-driven heavier-than-air craft fitted with fixed wings. The aeroplane can fly because the wings, which are pushed against the air at high speed, hold it aloft. A kite stays up because the pressure of moving air against its surface more than makes up for the pull of gravity. The aeroplane is really a kite, with the difference that the propeller pulls it through the air, while a kite string merely holds the kite against the wind. In principle, the propeller is the kite string of the aeroplane.

Balloon: A lighter-than-air aircraft fitted with a non-porous gas bag, which, when filled with coal gas or hydrogen, lifts it above the ground. Free balloons are not tethered to the ground, except while they are being inflated, while captive balloons are anchored.

Dirigible: A lighter-than-air aircraft held aloft by a gas bag or gas bags, which can be directed. Present-day dirigibles have a rigid duralumin framework covered with a skin or envelope, and are fitted with motors. The hydrogen or helium gas, which lifts them from the ground, is contained in a number of bags made of goldbeaters' skin—the intestines of animals.

Glider: A form of aircraft, of the heavier-than-air class, but without a power plant. The Wright Brothers used gliders in the experiments which led to their first successful aeroplane flight, and gliders have contributed greatly to the progress of aviation.

Helicopter: A heavier-than-air type of aircraft, which is supported in the air only

by the vertical downward thrust of revolving airfoils or propellers. The helicopter's propeller turns horizontally, thus pulling the craft straight up in the air. Helicopters travel forward just as aeroplanes do—by means of a vertical propeller.

Ornithopter: A form of aircraft, heavier-than-air, which flies by means of flapping wings. It is really a mechanical bird. So far no experimenter has been able to build one successfully, because of mechanical difficulties. Man isn't a bird yet.

Land 'Plane: An aeroplane fitted with a landing gear, which enables it to take off from and alight on the ground. It is not adapted to rising from or alighting on the water.

Seaplane: An aeroplane equipped to take off from and alight on the surface of the water. It cannot take off from the land, and cannot land on dry ground without danger.

Amphibian: An aeroplane designed to alight on or rise from the surface of either the land or the water. It is a combination of the landplane and the seaplane.

Note: At first blush it seems strange that aeroplanes are classified according to their landing gear, but on second thought it is natural enough. What goes up must come down, and an aeroplane must depend upon its understructure both to get into the air and to get back down on the ground safely. Aeroplanes are also classified according to the position of the propellers, the number of wings, the number of passengers they carry, and so on.



On the day Stony won at Canterbury, Mr. Ferry's rooster was crowing vigorously. So he announced a competition in which all his listeners who heard the crowing were to send in letters remarking the fact; the letters would be placed in a hat, from which Mr. Oswald Anderson, Manager of the N.S.W. Broadcasting Company, Limited, would draw the winner. The prize was the above photograph of Stony's race, including a photograph of the famous rooster, and the still more famous Mr. Ferry. The result of the competition will appear next week.

NEW PROGRAMME FEATURES

Coming Items Which are Worth Watching For

Government House Musicals

ARRANGEMENTS have been made with Lady de Chair for the New South Wales Broadcasting Company, Limited, to prepare a programme to be broadcast from Government House on the evening of Friday, June 28, through 2FC.

The artists contributing are Madame Sonya Michell—the first appearance in Australia of this Continental pianist—who is making a short stay in Sydney. Madame Michell, a pupil of Emil Sauer, has given many successful recitals on the Continent and in America, and her work is of a high standard.

Elise Steele, the noted Australian violinist, and Ernest M'Kinlay, well-known New Zealand tenor, who has just returned to Australia after four years abroad with the Westminster Glee Singers, will also be associated with this programme.

Dorothy Helmrich

DOROTHY HELMRICH will sing from 2FC on the evening of July 3. Please don't miss this recital. Miss Helmrich is one of the greatest artists we have heard in Sydney. She has a fine voice, but, more than that, it is her interpretation that matters. With a certainty seemingly born of intuition, Miss Helmrich renders every song as the composer intended it to be rendered, and impresses her audience with its meaning—too often an entirely new meaning for Sydney people. We believe that Miss Helmrich will follow the arrangement of her last Sydney broadcast—first, an old English and Italian group; second, German Lieder; then modern Russian; ending with several modern songs, mostly English, including several fantastic settings of old English nursery rhymes.

Regent Theatre Organ Recitals

STANLEY WALLACE, the Regent Theatre organist, will make his debut on the air on Sunday evening, June 23, when 2FC listeners will have an opportunity of enjoying an hour's music by this well-known artist. Mr. Wallace is very keen to get acquainted with the microphone, and is busy preparing an interesting programme for the occasion of his introduction. The second recital will be broadcast through 2BL on Sunday evening, June 30.

Young Violinist

VINCENT ASPEY, the young English violinist who is rapidly coming to the fore in Sydney's musical circles, gave promise of big things at an early age. When he was 11 years old, he had the honor to play before the Governor-General of New Zealand (Lord Jellicoe). He has been asked to include in his programme for June 20 the same item which was so enthusiastically received on the occasion of the Governor's reception—Vieuxtemps' arrangement of "Yankee Doodle." His appearance on June 20 will be from 2BL studio.

"Tea for Three"—H. W. Varna Production

THE next production by the H. W. Varna Company—"Tea for Three"—may be taken as a hint for husbands not to regard a dutiful wife as a home fixture, expected to be always at hand when business releases him from its exactions, but allowing the patient wife no relaxation during the hours she may be left to her own devices.

In this play, Mr. Carter is despotic in his home, and a "slogger" in his business. His wife has interest in the attentions of a genial man about town, whom she receives frequently at her home for afternoon tea. The husband becomes jealous at the perfectly genuine friendship of his wife for this visitor—a young doctor, Phillip Cullamore—upon which Phillip, feeling Carter is unreasonable, as he (Phillip) is innocent of wrong doing, spreads a report he has committed suicide. On hearing the news, Carter is greatly shocked and very remorseful. He learns later, however, that the doctor has not done away with himself, and his relief brings him to a realisation of his own selfishness. From then on he gives his wife more generous consideration, to the better relationship of all three.

Doctor Cullamore is played by H. W. Varna, Meg Service takes the part of Doris, the wife, and the husband is portrayed by H. J. Salier. The play is set down for the evening of July 3, and 2BL listeners are anticipating with pleasure the production under Mr. Varna's able guidance.

Mutiny of the Bounty

MANY requests have been received for a repetition of Mr. C. C. Faulkner's historical story of "The Mutiny of the Bounty." The story is produced in dialogue, with atmospheric backgrounds; and is certainly one of the best things we have heard over the air. Last time, we specially admired the scene, if that is the right term, in which the first bird heralded land to the starving castaways. This scene was handled with very great skill and artistic imagination. We shall certainly tune our set on to 2FC on Monday night, July 1.

SIGNALS UP

THE "Signal Box Four," which is described this week, is a new and unique receiver, and fulfils many purposes. It is designed primarily as a special short-wave receiver to suit both short-wave telephony listeners and amateur transmitters, but, in addition, will be suitable for use on the normal broadcast wavelengths. The coil kit used is one available to every constructor. By a special tuning arrangement quick adjustment for international short-wave stations may be had, and for the amateur transmitter, an extra control allows the covering of his exclusive waveband in each frequency allotted for his work, allowing a sweep over the tuning dial of approximately 1 metre. Screen-grid R.F. amplification is included.

Jack Barty at 3LO

JACK BARTY, the hale and hearty English comedian, who has created such a favorable impression at the Tivoli, and is now on the air from 3LO, tells a funny story which concerns a "trick cigar" that he always carries about with him. Once when he was travelling by train to the north of England, he sat opposite a gentleman, who, hearing that he was a professional comedian, challenged Mr. Barty to make him laugh. Rather nettled at the patronising tone of his companion, Jack told all his best yarns, but failed to raise the vestige of a smile. Finally, he put his hand in his pocket, brought out his cigar, and said, "Well, if you can't laugh at any of my jokes, try a cigar," at the same time thrusting the "cigar" into the mouth of his tormentor. One bite, and the victim knew he had been tricked, and the situation so appealed to his sense of humor that he laughed heartily, and expressed his desire to own a similar cigar so that he could play the trick on his own friends.

William G. James Talks

ONE of the most appreciated talks in the Education Hour at 3LO is that given by the distinguished Australian composer-pianist, William G. James, who will give a further talk to students of music on June 27. People living in the country cannot always fully realise the value of these talks to country students, who, however clever and enthusiastic they may be, often find it difficult, in the absence of a highly qualified teacher, to make any marked progress. To such listeners the talks given by Mr. James have a great interest. They are brimful of helpful hints, both with regard to the theoretical and practical side of music, and when illustrated with well selected records leave nothing to be desired.

Popular Jazz Band

AN opportunity will be given to listeners on June 27 to become acquainted with the talented individual members of the Radio Revellers, for, in response to many requests, instrumental solos by the Revellers

have been included in the programme. Ern Hall, whose clever work at the Green Mill, Biron's, and with the "Ten Loonies," has made him an artist of outstanding ability, will be heard in a saxophone solo, Peter McCarthy will give a banjo selection ("March Militaire") and Bob Brookshaw, who is already most popular as a pianist, will contribute "Lopeziana." In addition to their solos, the Revellers will give their customary light and attractive dance programme.

just completed a successful season at Adelaide, where she proved a great favorite.

Cameos from the Classics

A SERIES of talks, which will be greatly appreciated by all lovers of literature, will commence from 3LO on June 27, when J. Howlett Ross will be heard in "Cameos from the Classics." Each talk will deal with an individual writer, and the idea is to give a brief survey of the author's life, and a reading from one of his works of an animated narrative, dramatic discourse, or beautiful lyric. Scott, Longfellow, Shakespeare, Milton, and Tennyson are numbered among the chosen and those who take the opportunity of listening will vastly improve their literary knowledge in a very pleasing manner.

Old Time Dance Night

FROM time to time the New South Wales Broadcasting Company receives various requests from listeners. One would like more "better class" music; another would like steel guitar solos, a third thinks there are not quite enough sketches, a fourth complains "let us have more jazz." But there are listeners of the old school, who seldom if ever voice their wants. They appreciate the entertainment which is offered them; but to them it is not like "the old days." So now the company is to give these people an "Old Time Night." Old time dances, old time songs, bringing back memories of days gone by, when entertainment was not so easily obtained as it is to-day, will be played.

Saturday night, June 22, is 2FC's big "Old Time Dance Night." There will be long dance groups. Willie Shimo will supply humorous numbers, Norman Janson, Alf Lawrence and Nell Crane are singing old favorite songs. A unique feature of the programme is the space devoted to the "Grandmas of the good old days." Throughout the evening there will be the gay cross patter of "The Old" versus "The New"—1900 and 1929 will argue the merits of days past and present, until at last 1900 retires gracefully, and the modern music of 1929 will conclude the programme.

MAY LICENSES.
Wireless licenses in force in the Commonwealth at the end of May were as follows:—

	In Force.	Month's Totals.
N.S.W.	98,550	1,673 Increase
Victoria	143,344	49 Decrease
Queensland ..	24,681	54 Increase
S. Aust.	23,573	387 Increase
W. Aust.	3,799	32 Increase
Tasmania ..	4,604	137 Increase

298,551 2,234

New South Wales maintains a healthy monthly increase, and during the last twelve months has made a net gain of 21,546 licenses. Victoria during the same period shows a gain of 6632 licenses.

As the increase of licenses for the whole of the Commonwealth during the past twelve months is 38,044, New South Wales is responsible for 77 per cent. of the total.

Licenses in New South Wales should exceed 100,000 by the end of the month, bringing the Commonwealth total over the 300,000 mark.

Return of Pat MacLean

PAT MACLEAN, who is always sure of a warm welcome from her audiences, will broadcast from 3LO on June 25, and give a new series of child impersonations. Miss MacLean, who is a versatile little artist, has

3LO SPORTING NOTES By ERIC WELCH

EASILY the most interesting racing from the listener's point of view is that during the winter months, when the great cross-country races are held. The excitement attached to racing over obstacles is not to be found in flat races, and, in addition, the races over obstacles are run over distances which enable listeners-in to obtain a story of good length. Because of the possibilities of cross-country racing, 3LO, Melbourne, has made special arrangements to have all of the important races broadcast this year, and included in the broadcasts will be descriptions of the Grand National Hurdle and Steeplechase, and the Australian Hurdle and Steeplechase. The Grand National meeting will open at Flemington on Saturday, July 6, but before then the majority of the leading candidates for the races there will be seen in action in races preparing for the great Flemington events. One meeting which can be relied upon to attract a number of national candidates is that at Caulfield, on Saturday, June 22, when the Toolambool Hurdle Race and the Wanda Steeplechase will be events of outstanding importance. Indications are that the cross-country horses this

year will be above the average, and the form shown at Caulfield may help racegoers in their efforts to select the winners of the Nationals. All of the events at the meeting at Caulfield will be described for 3LO Melbourne by Eric Welch, whose comments on the form of the National horses should interest those who are in doubt as to the possible result of the more important races at Flemington.

SO successful has the experiment been of describing two football matches each Saturday, from 3LO, Melbourne, that the policy will be carried out as often as possible. A great opportunity is presented on Saturday June 22, when two such matches as those between Melbourne and Carlton and between Footscray and South Melbourne will be played. Rod McGregor will be at the Melbourne Cricket Ground to describe Melbourne's clash with Carlton, a game which never fails to provide a great spectacle, while Mel Morris will be at Footscray, where the local team will meet South Melbourne. Both teams have been showing improved form this season, and their meeting is expected to provide a close game all the time.

THROUGHOUT the winter there are very few mid-week race meetings in the country, so that meetings will be held regularly in the metropolitan area. There is a good deal to interest listeners in the provincial meetings, but the winter meetings in the metropolitan area are of some importance, and it is expected that a great deal of interest will be taken in the broadcast descriptions of the races at the Epsom Turf Club's meeting on Wednesday, June 19, by Eric Welch, for 3LO Melbourne. Selections for the meeting by Eric Welch will be broadcast with the news session on the night preceding the meeting, and he will speak from the studio on the morning of the races, reviewing the form of the candidates and giving his final selections.

Girls' Sunday Service

A SERVICE of great interest will be given from Scots' Church on Sunday night, June 23, and broadcast by 3LO. This will take the form of a special "Girls' Sunday Service," and will be conducted by Dr. Borland, with a special address by Miss Marjorie Black, headmistress of "Fintona," who will speak on "The Girl of To-day." Thousands of girls throughout Victoria will be listening to the service, which should be well worth attention.

5 YEARS

In the brief span of half a decade, broadcasting has grown from a diffident, friendless infant to a powerful, commanding adult. The period of adolescence has been an extraordinarily interesting one, and much is to be said for those who nursed it to its present position. A short review of the development of Australian broadcasting in comparison with other countries is given below.

THE development of broadcasting in Australia during the past five years must be regarded as very satisfactory when it is realised the Commonwealth now has a ratio to 100 of population of 4.73 licenses in force.

Taking into consideration Australia's remoteness from the older countries, its enormous area, and sparsity of population, a comparison with the ratios in other countries should therefore be very interesting. The following figures are compiled from various sources:—

Country.	Licenses in force.	Ratio to 100 of Population.
Australia	296,317 ..	4.73
United States	Unknown ..	6.59
England and Wales ..	2,450,000 ..	6.35
	(approximately)	
Scotland	183,000 ..	3.71
Germany	Unknown ..	4.85
Ireland	55,000 ..	3.07
New Zealand	43,000 ..	3.05
South Africa	17,000 ..	1.00
	(white population)	

How the Licenses Increased.

Coming to the development of licensed receivers in Australia, the following is taken from a report issued by the Postmaster-General's Department:—

"Development in Australia, of course, did not come all at once—the increase was gradual, with a certain hesitancy in the early stages.

"Taking July, 1924, as the commencing month—that is, the month when the present system of payment by listeners for services rendered was first introduced, we find at the end of that month there were 1206 licenses in the Commonwealth. Six months later the total increased to 38,336; twelve months later the figures increased to 85,130. The next twelve months showed a remarkable increase, for by the end of December, 1926, the Commonwealth figures totalled 187,228, with a density of 3.9 per cent. of the population. At the end of 1927 the licenses in force numbered 258,179, with a ratio of 4.19 density. Twelve months later—December, 1928—the Commonwealth figures reached 288,874, the ratio increasing to 4.59." It is anticipated the 300,000 mark will be passed by the end of this month, June, 1929.

The Position in New South Wales.

Regarding licenses in New South Wales, it is interesting to note that that State (having overcome the initial difficulties in the early stages) has shown during the past two years a remarkable and steady increase in licenses not equalled by any other State in the Commonwealth. We find since May, 1927, over 40,000 new licenses have been added. It seems safe to assume that the increase in New South Wales during the remaining months of this year should reach a total of 110,000 licenses.

Relay Stations Will Increase Licenses.

As to the future, it is anticipated that one of the first relay stations to be built by the Commonwealth Government under the National Broadcasting Service will be in the Newcastle district, where there is a population of over 200,000 people who will come

directly under the influence of radio. Newcastle at the present time suffers from certain disabilities in respect to its reception of programmes from Sydney. The night programmes are affected to a certain extent by distortion, and it is to the relay station that listeners in that district look for relief. It may be anticipated that within twelve months of the establishment of a relay station in the Newcastle district 20,000 new licenses will go towards swelling the total for New South Wales.

The Mother State a Big Factor.

The potential future for new licenses lies with the Mother-State. Assuming that of the sixteen relay stations to be erected by the Commonwealth four of these will be erected in New South Wales, by virtue of the geographical situation of N.S.W., the adjoining States—Queensland, South Australia, and Victoria—will come intimately under

The density of licenses in Australia compares more than favorably with that of other countries. It is anticipated that 300,000 licenses will be in operation by the end of this month.

the influence of the radio programmes transmitted from New South Wales.

Victoria's Remarkable Progress.

When the license position in New South Wales is compared with Victoria it is realised that progress in the southern State has been very remarkable. The ratio to the population in Victoria is 8.07 per cent., and careful critics of the wireless situation claim that the tremendous rush of licenses in Victoria was due to the large number of crystal set receivers operating during the years of 1926-27.

In twenty-four months 100,000 licenses were put on, and although no actual figures are available, it is believed that over 60 per cent. of the licensed receivers in Victoria today are crystal sets, whereas in New South Wales it is stated that no more than 25 per cent. of license receivers are crystal sets.

How Interference Retarded Progress.

If these proportions are correct there is an explanation for it. Melbourne is happy in having its two "A" class transmitting stations in the same area about 10 miles from the city, with the result that crystal reception over a distance of fifteen miles is an easy matter. There are only two "B" class stations that have any power at all operating in Melbourne, and both of these are

erected right in the heart of the city. On the other hand, one "A" class transmitting station in N.S.W. is operating from one of the most populous suburbs in Sydney. In addition to this there are four "B" class stations operating in Sydney, two of which, on high power, are in the suburbs and the other two work from the city. It has been stated that within twelve months of the operation of these high-powered "B" class stations in the suburbs of Sydney from 10,000 to 20,000 licenses lapsed in New South Wales one year alone. This was reflected in the licenses, for it is found that between July, 1925, and July, 1926, only 2000 increase in licenses was shown.

Since July, 1926, however, there has been in New South Wales a steady and gradual increase, in which every month shows an advance. It is interesting to compare the New South Wales yearly increases from that date:—

May, 1926, to May, 1927	20,000
May, 1927, to May, 1928	21,000
May, 1928, to May, 1929	22,000

Crystal Sets are Vanishing.

Three years ago the percentage of crystal sets operating in N.S.W. was about 70 per cent., the reduction from 70 per cent. to 25 per cent., its present proportion, has been effected by slow and easy stages. In Victoria, however, the large percentage to-day of crystal set receivers, estimated at 60 per cent., is explained by the fact that local interference has not played a big part in reception of programmes by listeners, and it is still possible in Melbourne to satisfactorily receive the two "A" class stations' programmes with a very humble type of crystal set. It is evident, now that a change over from crystal set to the valve set is taking place, as we find that during the last twelve months licenses in Victoria have suffered several setbacks. Between May, 1928, and 1929, the increase in the southern capital is under 7000.

As To The Future.

The departmental report previously referred to goes on to deal with relay stations and programmes under the National Broadcasting Service.

"The two factors," says the report, "of good programmes and satisfactory reception form the basis of the new policy approved by the Government for the establishment of a National Broadcasting Service throughout the different States. The programme services from all the national stations (the Class A Stations) will be provided by an organisation with the requisite experience and facilities, under contract to the Postmaster-General, who will arrange for competent and constant supervision of the programmes. In this way it may reasonably be anticipated that the services will be considerably improved in regard to items of education, information, and entertainment, all of which will be given a fair share in the programmes. The technical side will be established and maintained by the Postmaster-General's Department."

Wireless Weekly

Incorporating "Radio in Australia and New Zealand."

FRIDAY, JUNE 21, 1929.

Relay Stations Wanted

NOW that it has been decided who shall supply the broadcasting programmes for the following three years, the next thing for the Government to set about is the erection and operation of relay stations.

For several years the broadcasting public has been awaiting these stations which will mean more than a hundred per cent. improvement in the service rendered to the country districts. Since the proposed relay stations were first mooted there have been many developments in radio engineering, and it should be possible to give this service at a much cheaper rate than previously reckoned.

Land-lines and short-wave broadcasts have become far more reliable in the last twelve months than they ever were before. Super-power broadcasting, employing up to 50,000 watts, has also altered the situation completely.

Apparently the cost of installing relay stations and their doubtful success were the main difficulties in the way of their earlier operation. But these causes cannot very well be advanced when there are many thousands of listeners in country districts throughout Australia waiting for the service.

The most difficult problem and the one needing the most consideration will be where the relay stations will be situated. Districts like Ballarat, Newcastle, and Rockhampton are fairly certain of maintaining a station but the situation of stations in other towns is likely to be the subject of much controversy.

Population alone will not be the main issue, as there are many districts where reception is unsatisfactory on account of atmospheric conditions.

These may justly seek a relay station, but their demand is fairly sure to be opposed by those of larger and perhaps more remote towns.

The whole question can only be decided upon a thorough field investigation of the country districts of Australia. And the sooner the matter is examined the better for listeners in generally.

IS BROADCASTING SERVICE USEFUL TO FARMERS?

ONE occasionally hears opinions expressed about the broadcasting services that indicate a certain selfishness or else a superficial examination of the purpose of the service. Some of these opinions are directed to the market reports and other information broadcast for persons on the land. Sir James Barrett, president of the Melbourne Listeners' League, is reported to have said recently that the ideal programme should exclude these.

It is generally the city man who objects to having to hear market reports. Such criticism bears on the surface of it evidence of two kinds of selfishness. First it is unreasonable to object to items which may be interesting or valuable to others, and, also, it is presumptuous to think that every listener can find items satisfying to him at all times. If the broadcasting company satisfies any one man all the time it is falling in its service; because it cannot and does not attempt to cater for only one taste or type of listeners all the time. There must be something for everybody—for every type of listener some time or other, and it is but reasonable that there must be some sort of allotment of programme time to different tastes and interests.

Thus the market reports find a place in the programme. Stations like 3LO and 2FC have wisely made a feature of a regular service of news and information of the char-

acter more appreciated by and useful to the man on the land. And there is no doubt, either, of its usefulness or of its appreciation by the people for whom it is intended. Many congratulatory letters are received by 3LO from country districts indicating that any reduction of the market reports service would be a distinct loss to farming interests. And, some months ago, when it was suggested in some quarters that the market reports should be curtailed, there were vigorous and numerous protests voiced by country listeners.

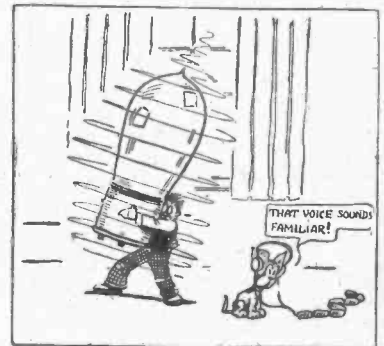
City dwellers are apt to forget the condition of the man on the land, and, indeed, many of them have no conception of what those conditions are. The prices of commodities produced on the farm and sold in the markets must necessarily be known by the primary producers. And, manifestly, it is added value to know what those prices are as quickly as possible after the market sales. Broadcasting is the quickest and surest means of conveying that information to the interested people far distant from the markets and well has it served the purpose.

There are very many narratives of actual experiences of farmers and others who have been able to profit by a sudden rise in market prices, which information came to them from the loud speaker. And any delay in or curtailment of that service to particular listeners would be a most unreasonable and retrograde step.

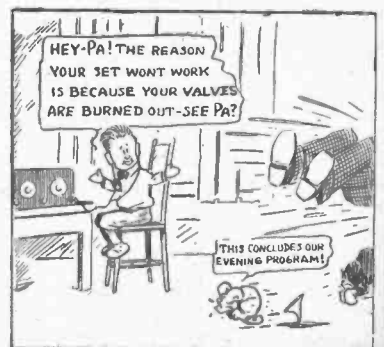
BUILDING A SET . . . No. 6

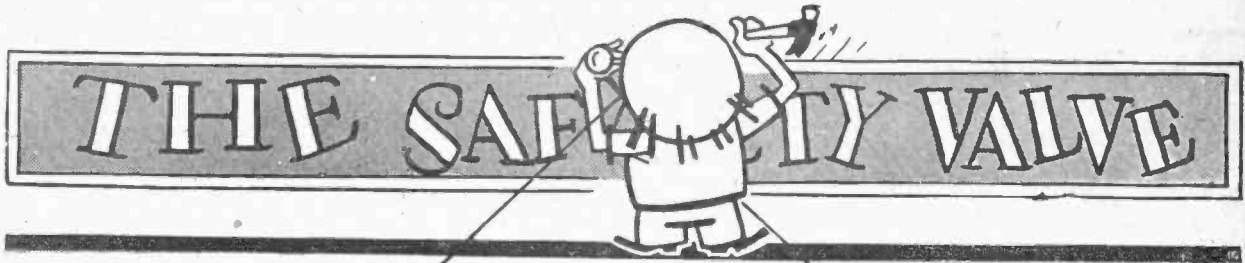


Before Working On A Set, It A Good Idea To Remove The Tubes.



The Way The New Tube Seems When He is About to Put It in His Set.





Readers are urged to express their opinions on matters pertaining to broadcasting. If you have some grievance, if you have some constructive criticism to offer, here is your chance for expression—your safety valve. The editor assumes no responsibility for statements made by readers and published on this page, as opinions of correspondents do not represent our editorial policies or beliefs. Anonymous letters are not considered.

2UW Modulation

Dear Sir,—Isn't it a curious fact that one of our B class stations—2UW to be exact—has the best modulation in Australia? Considering the fact that the apparatus is all A.W.A., it is not a surprising fact that this station has 100 per cent. modulation, but there are other stations using the same apparatus, and their modulation is—(speak the epithet for yourself).

How can it be explained? Have not the A stations mechanics with years of practical experience, or is this all so much bunk? Of what use are these radioelectricians if they cannot give us the service for which we pay?

In addition, I consider that 2UW has the best programme. Certainly there is no variety, but this is a point in its favor, for the programme always appeals. If I were asked to pay my license fee to any particular station I wished, the station I should choose would be 2UW. If a plebiscite were to be taken with the idea of one station only remaining on the air, I should plump for the same station.

Yet B stations get nothing from the licenses. We listeners pay for the programmes—and as these are putrid, I should like to know why the A stations are not using the money to good effect on their stations. There is room for improvement in modulation at every station, with the exception of 2UW, which is perfect.

It is to be hoped that the new Broadcasting Company, in their endeavor to improve the programme, will not forget the little technicalities that are so necessary. Bad modulation is worse than a flat piano and a sharp cornet playing a duet at 3 o'clock in the morning.

Yours, etc.,
W. HEARN.
Sydney.

More Modern Items

Dear Sir,—It would give "radio fans," especially those of the northern districts, great pleasure if a little more modern and popular items were broadcast. Ninety per cent. of the musical items given from the studios are as ancient as the sun, and make "fans" wonder if there is a competition among the artists to sing or play the most uncommon item. The programmes need a little pep put into them to bring them up to the 20th century ideals and not to the Puritan age.

Yours, etc.,
"RADIO FAN."
Cardiff.

Dismal Programmes

Dear Sir,—I quite agree with "Something to Cry Over," Brisbane, in what he has to say about tuning in 4QG. I am a country listener, and on Sunday—the only day in the week we get to ourselves—we have nothing else to listen to but a dismal church service in the morning, and during the afternoon we hear nothing until 3.15, when a few band numbers are broadcast. As the cows have to be milked at half-past three, we don't hear much of it.

If the Government handles the southern stations anything like 4QG, then the southerners will find they have something to squeal about.

Yours, etc.,
COUNTRY LISTENER.
Amamoor.

Mexico City

Dear Sir,—This may be of interest to your readers who are short-wave fans.

Station XC51 (Mexico City), operating on 44 metres, was received by me yesterday, and again to-day, between the hours of 3 p.m. and 5 p.m. Except for local interference (which at times was bad) reception was almost perfect. Circuit of set used is identical with the Go-Getter, published by you some time ago. The announcer at XC51 has a very high pitched voice, and after each item says a word which I presume is Spanish, and then gives the call "XC51."

Items heard by me were all phonograph records, including dance numbers, popular ballads, and operatic singing, etc.

Yours, etc.,
A. E. BILLSON.

Lakemba.

600 Metre Band

Dear Sir,—In reference to Mr. R. E. Abbott's remarks ("Safety Valve," 31/5/29) regarding reception on 600 metres, the under-mentioned stations were logged here during the last month:—Daylight Reception: Sydney, Melbourne, Adelaide, Hobart, Brisbane, Townsville. Night Reception: As above, plus Perth Broome, Wyndham, Cooktown, Wellington, Awanui, Auckland, Suva, Apia, Vila, Rabaul, Madang, VQB Sandakan, VSB Nukualofa, VVB Bombay, VPB Colombo, KEP San Francisco, VPW Singapore. These were logged either in daylight or between 0100 and 0300 Sydney time, there being too much qrm and qrn on this band for DX work. The receiver uses two stages of R.F. and two stages audio.

The station mentioned by Mr. Abbott, viz., KPFI, is the R.C.A. Station at Bolinas, California. This station also works on 10418 K.C. traffic to KAZ Manila. For those who can read Morse, the 600-metre band has a real kick, and quite an interesting hour can be spent.

Let's hear from anybody else interested in 600-metre traffic.

Yours, etc.,
Cremorne.
A. G. WEYNTON.

Well, Well!

Dear Sir,—As thiz iz mi virst addeempt ad a leddr i zubbise i had beddr ztart bi dellung u i ave a naufool god owing 2 thiz derrick weather.

I zee the deenial editr as bin dorkin abowt the zcreed grid valfe, bud i thig perzonaly e chusid no whad e iz dorkin about. Atishoo!

Well, i muzd ged a dew angergief, zo i op u r as thiz leaves me at prezend. ATISHOO! ATISHOO!

GEORGE.

S.W. Experiments

Dear Sir,—The following may be of interest to those of your readers who listen on short waves.

I made a short-wave receiver my elf, a d reception was everything claimed by the writer. However, having an experimental nature, I tried several little adaptions, with the result that the set is now equal to one using an R.F. stage of screen-grid.

First of all, I placed a .001 fixed condenser across the primary of the first transformer. This, I found, improved reaction control, a.d enabled me to boost up weak stations. However, some telephony stations were rather mushy, so after messing around for some time, I eventually found that a .002 fixed condenser across the secondary of the last transformer made everything O.K.

I next turned my attention to fringe ht. a, which would present itself on different occasions. One often reads that a 100,000 ohm variable resistance across the secondary of the last transformer will do the trick. I tried this, and it was certainly an improvement, but an idea (I do not understand the technical side of reception, and therefore cannot explain what made me do it), made me place the resistance at the opposite end of the circuit, i.e., between plate and B plus of the first audio transformer. The result was magical.

I found that I could receive 5SW (set is detector and two audio) from 6 a.m. till 8.30 a.m. at full speaker strength: They were perfectly clear.

At night time, RFN could be heard at fair speaker volume, so I experimented with various grid leaks, and eventually found that a 5 meg. leak, instead of the 10 megohm leak suggested, boosted up the signals considerably, and absolutely removed all tendency of the set to go out of oscillation with a pop.

Perhaps these points may be useful to others.

Yours, etc.,
O. FRANKMAN.
Campsie.

Amateur Aviators

Dear Sir,—It was with feelings of interest and delight that I read your article on the proposed Model Aero Club in to-day's "Wireless Weekly."

I feel quite sure that your efforts in this direction will be highly successful, for, like myself, there are many young Australians keenly alive to the possibilities of aviation and most anxious to dabble in such an interesting and scientific hobby as model plane building.

Unfortunately civil aviation authorities are sadly lacking in "push" and "pep," and perhaps in this new field of experiment the "ham" will again demonstrate his leadership, as he did in the wireless game. I hope soon to see that section of "Wireless Weekly" known as "Amateur Aviators."

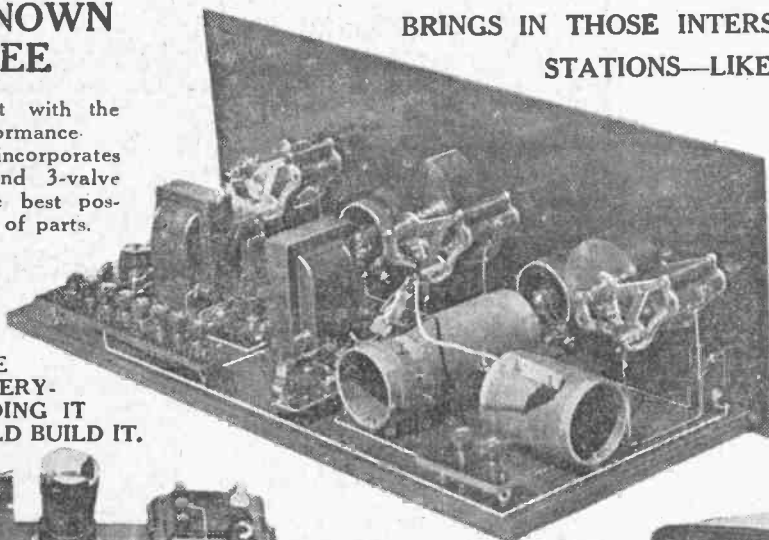
2BL and "Wireless Weekly" are to be congratulated on this "Aviation Move," and may I wish you all the success you desire. Anxiously awaiting next week's copy.

Yours, etc.,
G. C. CAWOOD.
Burwood.

Which Would U. Prefer?

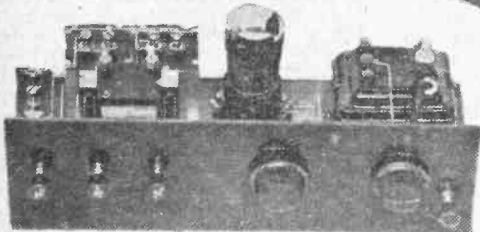
To Chance a Set Which "Might" Work or—
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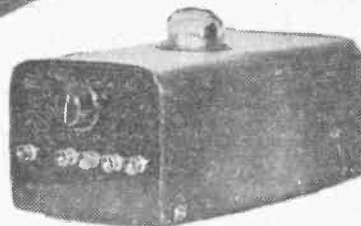
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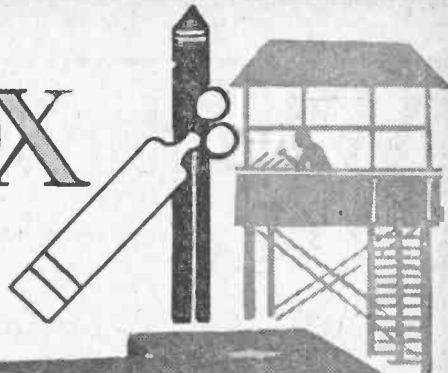
SYDNEY
25 New Royal Arcade,
Near
Palace Theatre.
'Phone, M6138.

NEWCASTLE
13 Union Street.
off
Hunter Street West.
'Phone, New. 1622.

PARRAMATTA
Corner Church
and
Macquarie Streets.
'Phone, UW 9601.

SYDNEY
126A Pitt Street.
near
King Street.
'Phone, M6138.

The SIGNAL BOX FOUR



*A short-wave receiver
for the amateur
experimenter*

THIS set is designed primarily for use in Australian experimental short-wave transmitting stations. Drastic changes have taken place in short-wave receiver design during the last year. It is now one thing for the experimenter to knock some form of old-fashioned "low loser" together in the space of an hour or two, and quite another thing to produce something that will meet present-day requirements. Not only has the number of amateur stations on the air increased considerably, but severe restrictions have been imposed on the frequencies reserved for the work of the amateur.

With the SIGNAL BOX FOUR the reader is able to set his receiver to the "all clear" position for the station he wants, whether he be short-wave broadcast listener or amateur transmitter.

Really designed for short-wave reception, yet with a good performance on the normal broadcasting channels the SIGNAL BOX FOUR should have a wide appeal. There have been many "super" short-wave receivers described in WIRELESS WEEKLY, such as the ALL EMPIRE and the AIR KING, and in those designs primary attention was given to the requirements of the international

broadcast listener, with little or no consideration to the amateur transmitter.

True, in 1928 either of those preceding receivers would have met his requirements reasonably well. But in 1929 it is a far different story. There are a lot of new factors to be taken into consideration, and the amateur knows just what is needed in the way of short-wave reception in 1929, owing to very different operating conditions. Over in America Ross A. Hull, from the Laboratory of the American Radio Relay League, made known these necessities, which included tuning to cover only the required frequency band, peaked audio amplification to help along selectivity, and many other refinements. It was certainly an extreme necessity in America, owing to the huge number of amateur stations in constant operation, and the idea naturally spread over the rest of the world.

Probably in Australasia the amateur transmitter is a little more fortunate; he is somewhat isolated from the congestion in the rest

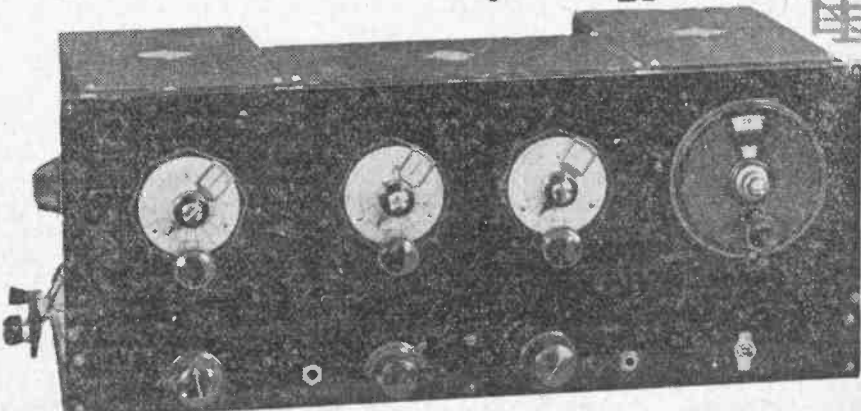
of the world. He needs selective tuning just the same, however, for the reason that high-frequency communication brings the world to his fireside. The SIGNAL BOX FOUR is a receiver that fulfils immediately the amateur requirements without any detriment to the man who wants to roam over much wider frequencies in search of such stations as G5SW, KGO, or PCJ.

The receiver was designed around the now well-known Lewcos short-wave coils, of which there are two to one kit. These coils are of a particularly robust design, and arranged with a six-pin base mounting, which is standard practice in England. They are, respectively, in the A.M.S.4 and the A.M.S.9. When tuned with a .00025 mfd. variable condenser the tuning range of the A.M.S.4 is from 20 to 45 metres, and the A.M.S.9 from 40 to 90 metres.

Many will say, "But that capacity is really too large for ease of tuning," and the "ham" will say, "What earthly use are two coils when tuned with such a high capacity?" That is where the difference comes in with the Signal Box Four. The writer reviewed his descriptions of the All Empire and the Air King receivers, and thought that while no trouble would be experienced in locating the distant telephony stations with these receivers as they stood, the tuning would be hopelessly "sudden" for the man who didn't care a rap about those 'phone stations and wanted to keep within those narrow confines of the "ham" bands.

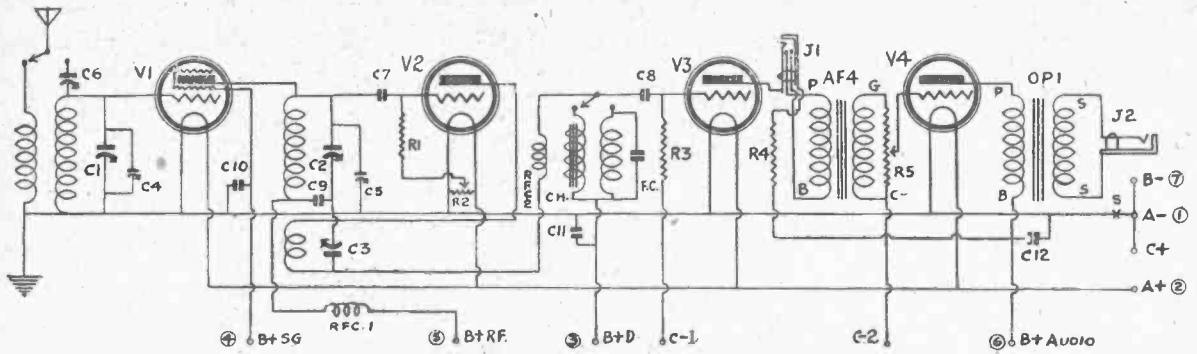
How to cater for both without offending either one or the other? It was decided to test out the Lewcos coils in the first place with a somewhat lower tuning capacity, as used in the former receivers mentioned, namely, .00015 mfd. A temporary detector circuit was rigged up, using a Formo short-wave De Luxe .00015 mfd. variable condenser, and the Lewcos six-pin mounting, and it was found that with the two Lewcos short-wave coils the whole of the useful ranges for the short-wave broadcast listener and the transmitter were well included.

This is quite all right for the first listener, but what about the second? By the introduction of a simple expedient in the form of a very small capacity tuning condenser in shunt with the main detector tuning condenser, the transmitting amateur may spread his two most important frequencies over



List of Parts for the Signal Box Four

- | | |
|--|--|
| 1 Dilecto Bakelite panel, 20 by 8 by $\frac{1}{4}$ inches. | 1 Essanay 50 MMfd. shielded midget variable condenser. |
| 1 sheet 14 gauge aluminium, 20 by 6 inches. | 1 double circuit jack. |
| 1 sheet 14 gauge aluminium, 20 by 10 inches. | 1 single circuit jack. |
| 3 Arizona sub-panel brackets. | 1 battery switch. |
| 3 Radiokes standard screening boxes. | 1 switch arm and two contact studs. |
| 2 Lewcos short wave coil kits, with two standard 6-pin base mountings. | 2 TCC .01 fixed condensers. |
| 1 Lewcos radio frequency choke. | 1 Electrad .0001 fixed grid condenser. |
| 1 Radiokes RF choke. | 1 Electrad .002 fixed condenser. |
| 2 Radiokes 3-plate midget variable condensers. | 1 Electrad .006 fixed condenser. |
| 4 Benjamin or AWA UX anti-vibration valve sockets. | 2 Mullard 5 meg grid leaks and holders. |
| 2 Formo short wave De Luxe .00015 mfd. variable condensers. | 1 Mullard or Ferranti 20,000 ohms fixed resistance. |
| 1 Formo .00035 mfd. variable condenser. | 4 Ormonde baby vernier dials. |
| 1 Ferranti AF4 audio transformer. | 1 Ford spark coil secondary winding or equivalent impedance (for peaked audio). |
| 1 Ferranti OP1 output transformer. | 6 terminals. |
| 1 Ferranti audio choke. | 1 7-way battery plug. |
| 1 400 ohm potentiometer. | Wiring used, Lewcos stranded insulated flex wire. |
| 1 Royalty 0 to 500,000 ohm potentiometer. | 2 TCC 1 mfd fixed condensers. |
| | Valves used, Six-Staty SG410 (screen grid), 8S4075HF (detector), 8S410P 1st audio and 8S410SP 2nd audio. |



the whole tuning scale of a vernier dial driving this small condenser.

Looking at the circuit diagram we see that it is very little different, except for certain innovations, from the receivers the writer has described previously. A screen-grid R.F. amplifier is, of course, used, tuned as before. All the valves in this receiver are of the four-volt variety, and the screen-grid R.F. valve is one of the new Six-Sixty SG410 types, one or two samples of which have just reached Sydney. The characteristics of this valve are similar to the well-known A442 or PM14, so that no detailed description is needed here.

On each Lewcos short-wave coil unit an aerial coupling coil is included in the form of a separate winding (like the rest of the coils, of copper strip with blue silk insulation) with the filament end of the grid coil and one end of the aerial coupling coil connected together. There is, therefore, no need to make this connection on the base mounting, and in the case of the detector unit the aerial coil is, of course, not used.

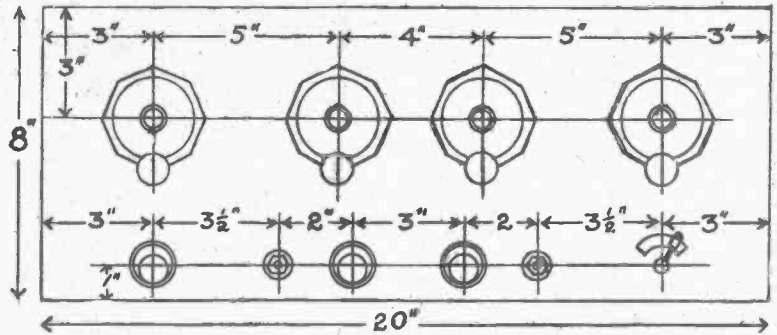
There are two alternative aerial couplings to the R.F. stage, one being through the aerial coupling coil provided, and the other through a Radiokes three-plate midget variable condenser marked C6. This connects direct to the grid of the R.F. valve. It has often been found, when looking over the queries from readers who have built foregoing short-wave tuned R.F. receivers described by the writer, that in many cases a little trouble has been encountered in getting the R.F. stage to amplify properly.

There is absolutely no reason why this should be so, and the explanation seems to be due to lack of resonance in the two tuned circuits. A slight difference in the wiring will

often unbalance two matched coils considerably, especially where a small shunted capacity is used. To compensate for this and to preclude the possibility of any such trouble, the Signal Box Four has included in shunt with the .00015 Formo condenser tuning the R.F. stage a 50 micromicrofarad Essanay shielded midget variable condenser.

This has proved a valuable asset in mak-

shunt, marked C5. This midget variable is also one of the Radiokes productions, and to start with should be of the three-plate variety. The idea of this is so that the amateur transmitter may set the tuning dial of the main control at the bottom of his allocated 20 or 40 metre band, and lock it there, afterwards removing plates from the small midget until the band he requires is



ing sure that the two circuits are in resonance. As this little condenser is in itself shielded, it is mounted on the Dilecto panel underneath the aluminium sub-panel with the copper shield connected to the rotor and earth with the rest of the earthed circuits. Three Radiokes standard screening boxes hold the essentials of this receiver, and they are arranged as may be seen from the photographs and the drawings.

Passing on to the detector circuit, we find again a Lewcos coil tuned by a Formo .00015 mfd. S.W. De Luxe variable condenser, but with a small midget variable in

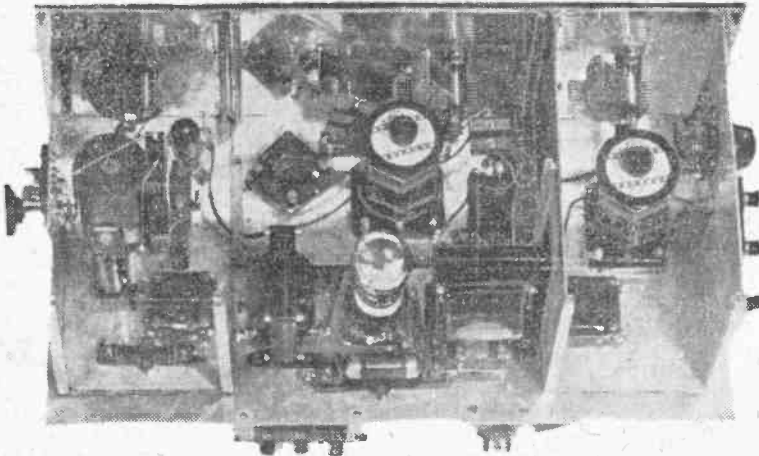
spread over the tuning range of the shunted vernier dial. At the filament end of the grid coil is placed a .002 Electrad isolating condenser in series with the return to the variable condensers, so that the plate voltage to the R.F. valve may be passed through the grid coil to the plate of the screen-grid valve.

In series with the B positive R.F. supply is a Lewcos R.F. choke, which may be seen in the detector compartment. A .0001 mfd. grid condenser is used with a 5 meg. Mullard grid leak, and the return taken down to a 400 ohm potentiometer shunted across the filament supply. The valve used as detector is a Six-Sixty SS4075HF, which performs especially well in this position.

Reaction is controlled by the variable capacity method, the condenser used being a Formo .00035 mfd. Normally .00025 is ample with the Lewcos reaction winding, however. The connections to the Lewcos six-pin base mountings may be seen from the drawings. In the last screening box is placed the reaction control condenser and the first audio stage.

This audio stage is different from anything the broadcast listener has been used to, and is designed to suit either class of user, as mentioned before. It consists of a choke and resistance coupling, but with a switch to throw from the iron core choke to an open impedance winding. The iron core choke in the case of the original receiver is one of very small dimensions that the writer had by him, but this may be any of the usual audio chokes on the market, such as Ferranti.

The open winding for "peaked" audio amplification is the secondary winding of an old Ford spark coil, taken off the primary and iron wire core, and mounted vertically on a

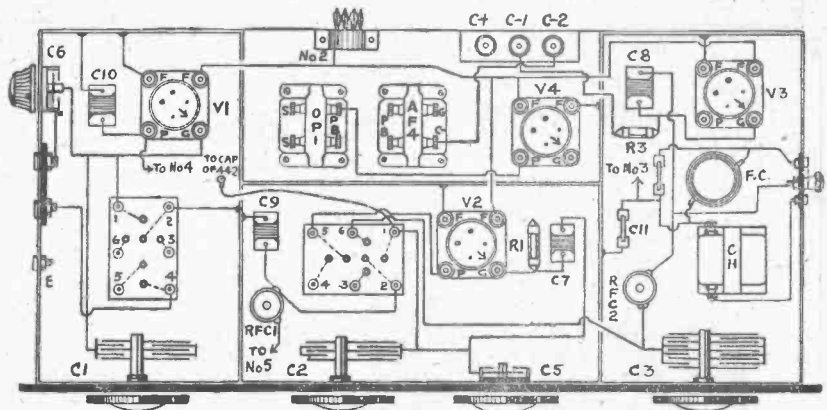


wooden mandrel. It is shunted by a .01 mfd. tuning condenser, but the experimenter will need to find the right capacity for his requirements by trial. The switch is mounted on a piece of Dilecto at the side of the screening box, and must be insulated from the metal.

In series with this switch from the reaction coil is a Radiokes R.F. choke. The audio coupling condenser is a T.C.C. .01 mfd., with a 5 megohm grid leak connected down to C negative 1. This first audio valve is a Six-Sixty 4IOP, and is followed by a Ferranti AF4 audio transformer.

A double circuit jack is included in the primary circuit. Although there is a volume control across the secondary of this transformer it will be more advisable for the amateur transmitter to work with headphones from the first stage. In series with the plate circuit of this first audio valve is a Mullard 20,000 ohm wire wound fixed resistance, which not only cuts the plate voltage down from the total to a lower value for the first stage, but helps to ensure stability in the audio amplifier.

The volume control is a Royalty 0 to 500,000 ohm potentiometer shunted across the secondary of the AF4, with the moving contact one hole fixing, which is in accordance with



and then attach the aluminium sub-panel by means of three Airzone sub-panel brackets. stand the bases of the three screening boxes in position on top of the sub-panel and mark them off, afterwards bolting them down with 1/8 inch brass nuts and bolts.

There is no need for concern in the mounting of the variable condensers, as the rotors are all earthed directly to the metal by the wire contact hole fixing, which is in accordance with

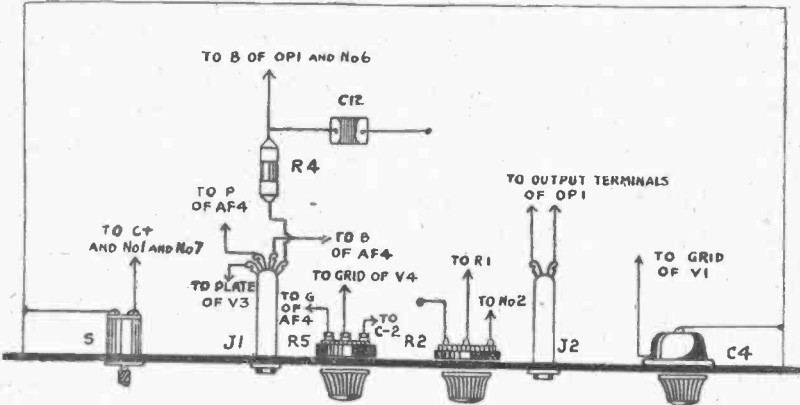
phony is wanted at its best it is only a matter of a flick of the two-way switch from one to the other. By means of the 400 ohm potentiometer in the detector grid circuit, oscillation may be set for beautifully smooth operation, and this state of affairs is essential for all parties.

In any short-wave receiver there is not the slightest excuse for "overlap," "fringe-howl," and audio howling, and the elimination of these troubles is just a natural sequence of events. The normal performance of the SIGNAL BOX FOUR is to "pull them in as fast as you twist the dials."

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connected to the grid of the Six-Sixty SS410SP super-power valve in the last stage. The output from the final stage is taken through a Ferranti OPI output transformer to the single circuit jack.

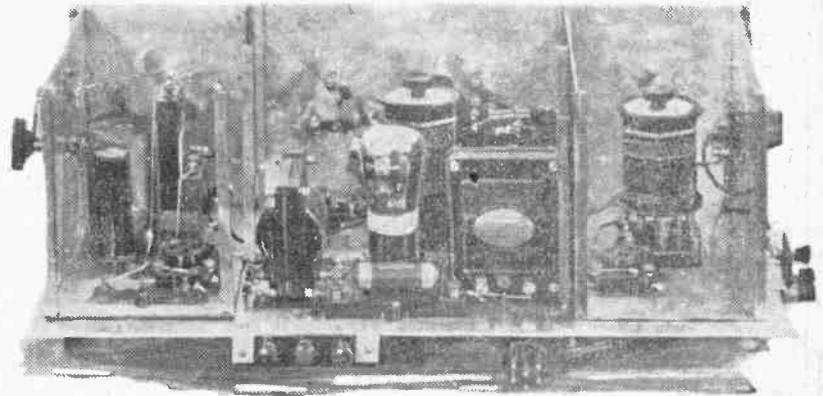
Note that there are no filament resistances of any kind used throughout the set, as all the valves are of the 4 volt type, with a 4-volt accumulator as the filament supply. If the reader feels at all insecure, there is no reason why he should not protect his valves with ballasting resistances of the Amperite type. This is not normally necessary if due care is exercised. The vernier dials for the tuning controls are all of the Ormonde baby vernier type, although at the time the photographs were taken the dial controlling the reaction condenser was of the Pilot Kilograd type.

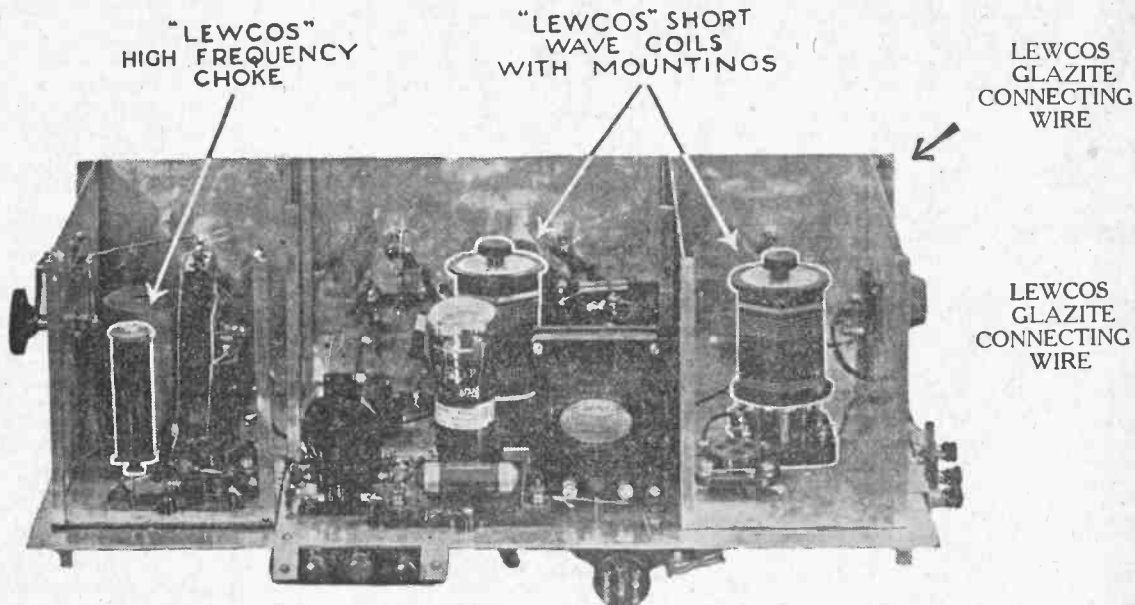
The Lewcos Company has some special coils to cover the broadcast band when tuned with a .00015 mfd. condenser, and although no specifically designed short-wave receiver can be expected to give the best of performance on the lower frequencies without making due alterations in tuning capacity, etc., you will find the Signal Box Four as good as any average one stage R.F. receiver for this purpose.

As all the constructional details are fully outlined in the drawings, there is no necessity for point to point wiring instructions. The Radiokes screening boxes will be found particularly useful in the construction. The thing to do is to start off by screwing the aluminium panel to the back of the Dilecto,

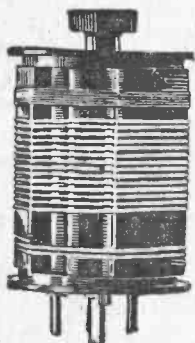
the circuit. The jacks, potentiometers, switch, etc., are all mounted at the bottom of the Dilecto panel, and are thus two inches clear of the metal, with no need for worry about insulating these items. The seven-point Alpha plug used for battery connections takes care of the A negative, A positive, B negative, B positive S.G., B positive R.F., B positive detector, and B positive audio, and there are three terminals mounted alongside on a strip of Dilecto for the C positive and two C negatives.

The peaked audio amplifier will be found invaluable to the "ham," and when tele-





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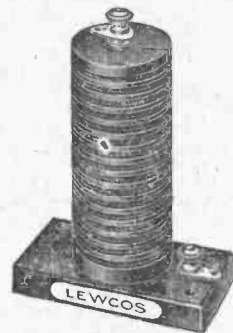
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IN this issue, the Technical Editor describes the construction of a remarkably efficient short wave receiver which has given excellent results. Because of their undoubted efficiency and their compact, easy mounting, "Lewcos" Short Wave Coils and the "Lewcos" High Frequency Choke were selected for the "Signal Box Four."

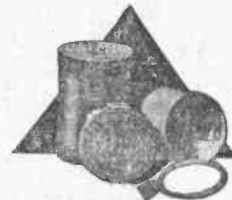
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PROVING RADIO!

No. 26 *Audio frequency is treated in greater detail this week, and we learn how to construct a simple amplifier. This section will be concluded next week, when instructions for improving amplifiers, and remedying faults will be discussed.*

SINCE we have found how an oscillating current (such as a radio signal) is rectified, we must pass on to the next stage. This is called amplification. This means that the signal is increased in electrical strength, so that when the resultant current actuates the electromagnet of a loud-speaker, there will be a great attraction of the diaphragm, and, consequently, increased volume.

Probably the most frequent query met with is, "Can you tell me how to add a stage of audio to my receiver?" or "How can I increase the volume of my crystal or one-valve set, so as to work a loud-speaker?"

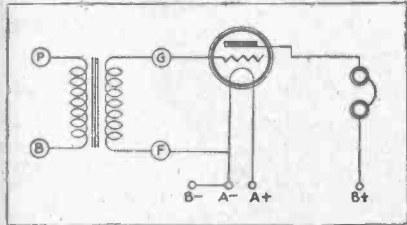
This has been answered many times through the query columns, where circuit diagrams have appeared. There are, however, many who require additional details regarding amplifiers, so that these "Proving Radio" notes should be of great interest to them, also.

Every subject referred to in this lesson has been previously treated in detail, so that there is no excuse for the reader who says "I cannot understand."

Amplifiers have many uses. Besides being capable of stepping up weak signals so that they are loud enough to work a speaker, an amplifier can (if made as a separate unit) be used to amplify a gramophone pick-up, and can be attached to any existing one-valve or crystal set.

An amplifier makes use of special stages, which vary with the system to be followed. Transformer coupling means that transformers are used in each stage. Resistance coupling infers that resistances are used.

For best all-round results, it is generally admitted that transformer coupling is best, though a slight increase in volume may be had by using three stages of resistance coupling.



This is termed a "schematic diagram." The circuit is that of the one-valve amplifier being discussed in this week's lesson. Symbols were treated recently.

ing. However, two stages of transformer coupling constitute a maximum unit. If more than two step-up transformers are used, distortion will result.

There are other types of amplification, but these are slightly more complicated, so they will not be treated here.

There are two types of amplification used in radio. The first is termed "radio-frequency amplification," and this is used to step-up the signal before it has been rectified, i.e., before it has passed through the detector stage, and made audible. Once past the detector (i.e., the rectifier), the resultant signal can be heard, or, in other words, is audible. If we desire to increase the volume,

we must add a different type of amplifier, termed an audio amplifier.

If you have a galvanometer (you can make one for a few pence, as recently described in "Proving Radio" experiments), connect this up to a coil; then, by placing another coil by the side of it, in circuit with a battery, you will find that every time the contact is made on the coil containing the battery (this is called the primary circuit) the galvanometer needle will swing away, and sharply return. The same happens when the contact is broken. This experiment is explained in detail in "Proving Radio," Part 6.

Now, you will notice that, though the current from your battery may be left on, the needle will not be deflected from its normal position until the circuit is "made" or "broken." This is because magnetic lines of force are caused to spread out from the primary coil every time the contact is made or broken, and these lines of force are intercepted by the other coil, containing the galvanometer. (This is known as the secondary.) That proves, then, that, if the current does not fluctuate, the secondary will not receive any power from the primary. This can be proved by rapidly making and breaking the primary circuit, when the galvanometer needle will keep moving.

Now, if we utilise a current in our primary that alternates, it will readily be seen that a large current will be taken by the secondary. An oscillating current need not necessarily be A.C., for we have just proved that D.C. (direct current) from our battery will operate the galvanometer if the D.C. is made intermittent. This proves that a rapidly changing D.C. can be used to operate the galvanometer.

It is rapidly pulsating D.C. that operates a transformer. The transformer consists merely of a primary and a secondary, as just explained, with an iron core in the centre of the windings. The reason for the inclusion of this core (which consists of a number of strips of laminated iron) is that the magnetic lines of force are assisted in their travel from primary to secondary, as iron is the best possible conductor of magnetic lines of force. If you hold a magnet over some iron filings, or over some iron wood screws, you will see this for yourself. Try the same experiment with brass, lead, aluminium, and other metals, and you will appreciate this point even further.

Now on to construction. You will find it very easy. We shall take a one-valve transformer coupled amplifier first.

No panel will be required. Rheostats are unnecessary on a simple audio amplifier, and if the valves used take a filament voltage equal to that available at the source, filament ballasts need not be used either. A filament ballast is a fixed resistance used to break down the filament voltage.

For a one-valve amplifier, first mount components as shown. To the left of the baseboard (which should measure six inches by six inches) mount the "input" battery strip. This is made by cutting a piece of ebonite 3 inches by 2 inches, and mounting two terminals upon it, 3/8 inch from the ends and 1/8 inch from the bottom of the strip. The baseboard layout will show this clearly.

The transformer should next be mounted.

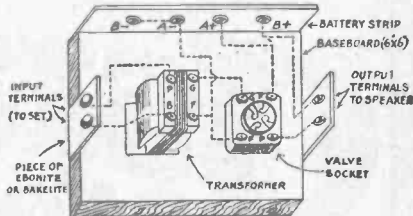
See that the primary of the transformer is turned towards the input terminals. If the primary is not so marked, you will know that the primary consists of the terminals marked P and B, or Plate and B plus. If an English type transformer is used, these terminals will be marked OP and IP respectively, OP meaning output primary, which is plate, and IP, input primary, meaning B plus.

Next mount the valve socket, on which you will find four terminals. These will be marked P (plate), G (grid), and F (filament). There are two filament terminals. Keep the G terminal of the valve socket as near as possible to the G terminal of the transformer. This latter terminal will be on the secondary of the transformer. There will be two terminals, one marked G (or grid) and the other F (or filament). Sometimes this latter terminal is marked "G.B.," meaning grid bias. In the English type transformer IS (input secondary) will represent the grid, and OS (output secondary) will represent the filament.

On the right hand side of the baseboard mount another battery strip similar to the input terminals. These two latter terminals are for "output," and the loud-speaker should be connected here when the amplifier is to be used.

At the back of the panel mount another strip of ebonite, this one to be of equal width, but six inches long. On this strip mount four terminals, marked A plus, A minus, B plus, and B minus.

The wiring will only take a few minutes. Start off by connecting (on the rear battery strip) A minus to B minus. Now turn to the input terminals, and connect one to the plate of the transformer, and the other to B plus of the transformer. Next connect a short wire from the grid of the transformer



Explanatory diagram: This is called a "back of panel wiring diagram." The wiring is shown in dashes.

to the grid terminal of the valve socket, then carry a wire from the filament terminal of the transformer to the negative filament terminal of the valve socket, and thence to A minus on the rear battery strip. Then connect A plus on the rear battery strip to the remaining filament terminal on the valve socket. The only connections left are the output terminals and the plate terminal of the valve socket. Connect this latter to one of the output terminals, and the other output terminal to B plus on the battery strip.

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Connect up the "A" battery, and see if the filament is O.K. Then connect up the "B" battery, and, if everything is in order, you are ready to test out the amplifier.

This is simplicity itself. The input terminals have merely to be connected in place of the telephones on your previous set. Take a little care, however, to see that the output terminal that connects to the plate of the transformer is connected to that telephone terminal on your existing set that is connected to the plate terminal of the previous valve. If this is not done, the amplifier will probably howl, as the primary winding is reversed.

If the set is a crystal, the above precaution does not apply.

The ratio of the transformer to be used in constructing this amplifier depends on the position it is to occupy. If already one transformer is being used in the set, the ratio of that to be used in constructing the amplifier described here should be 3:1. If, however, the existing set is not making use of amplifiers, the ratio can be 5:1.

Sometimes it will be found that the tone of reproduction can be improved by placing a .002 fixed condenser across the secondary of the transformer. If the set will not oscillate properly when the amplifier is connected, a .001 fixed condenser across the primary of the transformer will usually do the trick. If, however, the set whistles, there are three things that should be looked for. The first is that the primary winding of the transformer connections may be reversed. This may be done accidentally when using two transformers of different makes (one already existent in the set). The remedy is to reverse the primary connections on the amplifier.

The next is that plate and grid leads may be too close, causing interaction. The remedy is to keep these leads as far apart as possible.

Finally, the fault may be that R.F. (radio frequency) is getting into the audio side of the receiver. The remedy is to place an R.F. choke in series with the plate of the detector valve. As its name implies, an R.F. choke prevents radio frequency impulses from reaching the audio side of the receiver, or, in other words, stops the unrectified signal from mixing with the rectified signal.

For a two-valve amplifier, the procedure is exactly the same. Another transformer and valve socket will be required. This transformer should have a ratio of 3:1. The only alteration will be to the size of the panel, and the battery strip. The panel should be 9 by 9 inches. The battery strip should have another terminal placed upon it, marked B plus maximum. To distinguish the two B plus terminals from one another, the first is usually marked B plus detector, as it supplies a positive potential to the plate of the detector valve.

After mounting all components (in the second amplifier the procedure is exactly the

same as in the first) connect up the first amplifier as explained at the commencement of this article, only instead of using output terminals at the end of the first stage, take the two leads to the primary of the second transformer, remembering that the plate of the valve must go to the plate of the transformer. The other lead (which is B plus) will connect to the B plus maximum terminal, and also to one of the output terminals. The remaining output terminal will connect to the plate of the second valve socket.

The two F terminals of the transformers should be connected. As explained previously, a lead is taken from here to the negative terminal of the first valve socket.

If it is desired to use grid bias (and it is advisable for reasons which appear hereunder) leave out the connection from the F of the transformer to the valve socket, and instead take this lead to another terminal on the battery strip which should be marked C minus. This lead connects to the negative terminal of a 4½ volt "C" battery. The positive terminal of this battery should connect to the negative terminal of the "A" battery, i.e., the battery which supplies the filament current. If transformers of different makes are used, the same rules for prevention of whistling will apply.

The advantages of using grid bias are:— (1) less "B" battery consumption; (2) improvement in tone of receiver. A "C" battery will last approximately a year, as no current is taken from it to any great extent. The theoretical action of the grid itself has already been discussed in a previous lesson.

The valves should be removed when you have finished with the amplifier. If it is desired to incorporate a switch to save shifting the valves, this should be placed in series with the A negative lead.

If, on connecting up, the "A" battery leads get hot or start to burn, quickly disconnect the lead from the "A" battery to the A negative on the amplifier, then remove the lead which connects A negative to B negative. This lead should then be taken from B negative to A positive. If you take a glance at your existing receiver, you will see to which lead of the "A" battery the B negative terminal should connect.

If there is a crackling sound when the amplifier is in operation, it shows that the transformer is faulty. Probably the primary has become burnt out. Sometimes a 100,000 ohm. fixed resistor across the primary terminals of the faulty transformer will fix this.

Approximately 90 volts should be used on the amplifier, depending on the valves used. The detector should be supplied with about 22½ volts, or, in any case, considerably less than the voltage used when the set was operated as a one-valve set. Unless this voltage is reduced when the amplifier is being used, the set will oscillate.

PROVING RADIO CLUB NEWS

MR. HUEY, VK2HU, has informed the Executive that he will give slow morse tests on 230 metres at 8 p.m. every Sunday. Members should take full advantage of these tests. VK2HU will start on 'phone, so that members will be able to locate him.

The secretary reports that although all tickets have not yet been returned indications are that the dance held on June 6 at the Palais Royal will be a success.

The Botany Group will hold its initial meeting on June 13, at the home of Mr. Judd, Botany Road, Botany. The group is still open for new members.

The Eastern Suburbs Group is now faced with the problem of finding a new meeting place. Would any person who has the room

to accommodate the group please get in touch with Mr. Hook, 29 Blairgowrie Street, Dulwich Hill (phone, Pet. 3272)?

The Auburn Group reports that the initial meeting was a great success. The subject of the meeting was the atomic and electronic theory. This group meets on Friday night at the residence of Mr. W. R. Clark, Albert Road, Auburn, and is still open for members.

EASTERN SUBURBS.—The subject at the last meeting of this group was simple and secondary cells.

DULWICH HILL.—This group also attacked the subject of simple and secondary cells.

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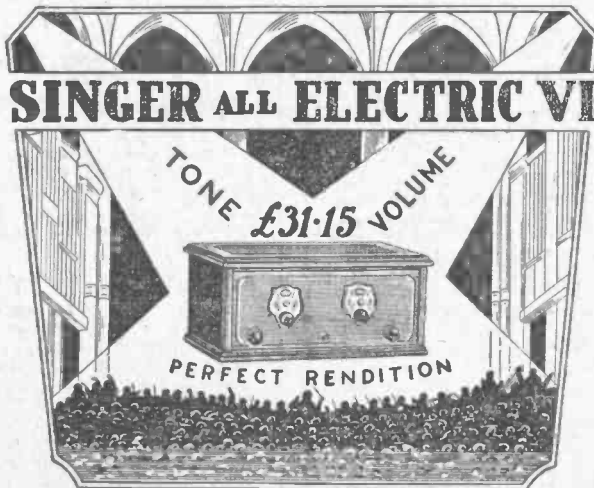
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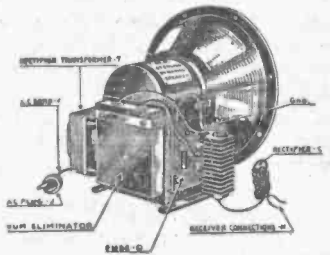
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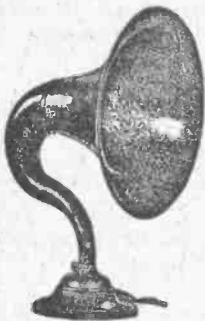
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POWER and SUPER POWER

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A FEW years ago, when the potentialities of radio were just beginning to be understood and the future loomed like a hazy, half-formed picture, the energies of those connected with the radio industry were directed in one great channel. That channel was the development of the art of receiving radio signals, and consisted mainly in developing new circuits, perfecting the vacuum tube or valve, and trying to use more and more of them in these circuits, with a view to making radio available to everyone, regardless of locality or distance.

POWER IN REPRODUCTION

As we all know, this goal was achieved. The receiving set of to-day is not greatly influenced by distance, and now radio progress is branching out into another and larger stream, that exceeds in scope that of its predecessor. This new trend is the development, not of power in distance reception, but of power in the reproduction of the received signal.

The same individuals and organisations who previously contended with the problem of receiving the signal are now devoting their energies to the perfection of the received signal. The problems encountered in this field of audio-frequency reproduction, although they have been great, have been vanquished just as were the problems of radio-frequency reception before them. The modern home receiver not only brings in the signal, often from a great distance, but it reproduces it with a degree of power and a quality of tone that make radio truly an "entertainment" in every sense of the word.

It is unfortunate, though true, that the average set builder and radio enthusiast have always taken the audio-frequency amplifier more or less for granted. It is looked upon merely as a matter of a couple of tubes, a couple of transformers, and the job is done. Such factors as biasing, tube characteristics, impedance, transformer response, etc., never assume the importance that was attached to the number of turns on the coils, the size of the condensers, the type of the hook-up wire, or other details of minor importance in the radio-frequency end.

POWER AMPLIFIERS

Now that the importance of undistorted power and purity of tone have become more fully recognised the average set owner is taking a greater interest in this part of the receiver, and the intensely interesting facts previously known to the few are now being set as standards by the many. To the specialist in power amplification has come the opportunity of developing this art along many lines. First came the long-distance telephone, and then the radio telephone; then followed the radio receiver with the broadcasting studio, and now a new field is opened by the talking movie. In the development of power amplifiers for these dif-

ferent branches of the industry we have had occasion to observe and record many interesting facts regarding different types of amplifiers, ranging all the way from a small kit built to operate a dynamic speaker of the "home" type to the "big boys" that we install in arenas, race tracks, auditoriums, etc.

MATCHING A CIRCUIT

Perhaps the most important feature in the designing of a good audio amplifier, just as it is in the radio-frequency end of radio reception, is that of adapting or matching each circuit to the preceding circuit. This is done by regulating the components of each circuit in such a manner that they compensate for the characteristics of the components of the preceding circuit. In a radio receiver, for instance, if the output of the detector, the amplifier, the power amplifier, and the speaker all exhibit different characteristics at different frequencies, the final output of the loud-speaker will very likely be deficient in some ranges of the musical scale and over-emphasised in others. There are, of course, artificial means of making the sound more pleasing, but these cures are never as satisfactory as a complete elimination of the trouble at its source. In the case of a radio receiver equipped with inferior transformers, the result may be a poor response on the low notes. This result is often disguised by using a loud-speaker that will dull or mute the high notes, which undoubtedly makes the output more pleasing; yet a critical musical ear invariably detects the fact that the entire range is not being reproduced faithfully, but is simply disguised by the over-emphasised booming of the lower frequencies and the stunting of the high.

INPUT INTERFERENCE

In a well-designed assembly the input impedance of the amplifier is carefully matched to the source that feeds it, while the output is likewise regulated to meet the requirements of the loud-speaker that is to be used. This is true not only with the input of a radio set, but with any source that may be operating the amplifier, be it microphone or phonographic pick-up. An interesting illustration of this fact is shown in the accompanying diagram. Here we have taken one of the amplifiers that was not adjusted to suit any particular pick-up, tried it out in conjunction with five different phonographic pick-ups of good manu-

facture, and plotted curves of the frequency response of each pick-up. As may be seen, the results were erratic, to say the least. Some pick-ups gave terrific response at frequencies where they should not, and practically nothing at other spots where they were most needed. We then adjusted the amplifier to meet the requirements of each pick-up, and it was found that they all gave the very excellent results shown by curve No. 6. It is a simply a matter of regulating the amplifier to compensate and reinforce any deficiencies present in the phonographic pick-up employed.

PLENTY OF "LEEWAY"

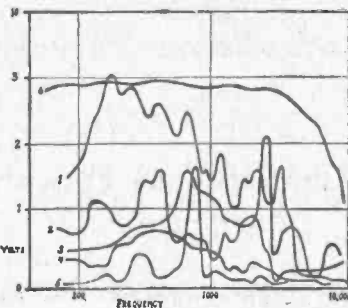
Another feature of flawless reproduction at great volume is the rating of an audio frequency amplifier. An amplifier, like any other instrument, must have plenty of "leeway." Just as a resistance manufacturer will rate a resistor at, for instance, 2 watts, when it will really stand up to 8 or 10 watts, so must the super-power amplifier be rated, not at what it will do in sheer noise, but what it will give in "undistorted output." An example of this rating is shown in powerful amplifiers that consists of two UX 250 tubes, two UX 281 rectifier tubes, and is fed by two UX 171 tubes in push-pull. This amplifier is rated at 15 watts undistorted output, and yet, in actual power, it is capable of developing 40 watts output. Thus it may be seen that in the purchase or construction of a power amplifier this distinction should always be made if mistakes are to be avoided.

To the average owner of the usual dynamic speaker the need and uses of such tremendous power would seem extraordinary, and yet the field of utility is growing every day for installations such as these. The talking moving picture theatre demands an amplifier of great power, and, with the general acceptance of the "talkie," the need is becoming greater every day for amplifiers designed to meet this purpose. The ball park, the prize fight ring, or the outdoor stadium all require amplifiers to carry the full volume of the sound to the farthest corners. Industrial uses increase also, as the value of this service becomes more appreciated. Hospitals, for instance, are using moderate power amplifiers to notify the personnel of the positions of doctors and internes at all times, just as large factories use their amplifiers to keep in touch with departments and personnel.

FOR ADVERTISING

The possibilities of employing these amplifiers for advertising purposes have been appreciated, particularly in stores, restaurants, ballrooms, etc., where the amplifier generally works in conjunction with a phonographic pick-up and a microphone pick-up that may be cut in to announce numbers, prices, menus, prizes—in fact, whatever the owner may be featuring. Music and speech amplified to terrific volume have poured over the city from aeroplanes. The possibilities are unlimited.

So, in closing, we may say that, although radio etiquette dictates "do not annoy the neighbors," there are many uses for tremendous power which, quite paradoxically, sometimes gives enjoyment to the neighbors, and to everyone who may not be near enough to the source of the sound to hear clearly.



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Local Programmes, Friday, June 21

2FC

EARLY MORNING SESSION

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

MORNING SESSION.

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

MIDDAY SESSION.

Announcer: A. S. Cochrane.
 12.0: "Big Ben" and announcements. 12.1: Stock Exchange, first call. 12.3: Official weather forecast, rainfall. 12.5: Summary of news, "Sydney Morning Herald." 12.10: Rugby wireless news. 12.13: A Reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" mid-day news service; Producers' Distributing Society's report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular studio music. 2.0: "Big Ben"; close.

AFTERNOON SESSION.

Announcer: Laurence Halbert.
 Accompanist: Ewart Chapple.
 2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben"; popular music. 3.38: Phyllis Broadbent, soprano: (a) "The Little Damsel" (Novello); (b) "If I Lost the Stars" (Drummond). 3.45: A Reading. 4.10: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.15: From the Studio: Phyllis Broadbent, soprano: (a) "The Bitterness of Love" (Dunn); (b) "The False Prophet" (Scott). 4.22: Studio music. 4.30: J. E. Paterson will speak on "Our Trout Rivers," continued from last week. 4.45: Stock Exchange, third call. 4.47: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

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

EVENING SESSION.

Announcer: Laurence Halbert.
 Accompanist: Ewart Chapple.
 Note: Favorite Item Week—To-night the items by artists are almost without exception by special request. From the 17th to the 22nd is "Favorite Item" Week, when listeners were advised of the artists who were appearing, and asked if they would like their favorite numbers included in the programme. The response has been very flattering, indicative not only of the popularity of the individual artists, but of the Broadcasting programmes which are being supplied.
 7.40: Popular music.
 7.45: Programme announcements.
 7.48: From Farmer's Restaurant: Items by the dance band.
 8.0: "Big Ben." A theatrical transmission will be arranged from one of Sydney's leading theatres.
 9.0: "Big Ben." From the studio: Weather report. Studio Dance Band, conducted by Cec Morrison.
 9.12: Hazel M'Pherson, contralto—
 (a) "When You Come Home" (Squire).
 (b) "Has Sorrow Thy Young Days Shaded?" (Moore).

9.19: John Boulton and Reg Mitchell sketches—
 (a) "The Wanderers in a Bush Sketch."
 (b) "The Compact."
 (Adapted from Australian authors by Boulton and Mitchell).
 9.31: Studio Dance Band, conducted by Cec Morrison.
 9.50: Wendling and Molloy, instrumentalists—
 (a) "Constantinople" (Carlton), request.
 (b) "When You Played the Organ and I Sang the Rosary" (Gilbert), request.
 (c) "Love Sings a Song in My Heart" (Cherniavsky).
 (d) "She's Got a Great Big Army of Friends" (Nelson).
 9.57: Hazel M'Pherson, contralto—
 (a) "Nearer, My God, to Thee" (Carey).
 (b) "Lie There My Lute" (Macconn).
 10.4: John Boulton and Reg Mitchell, sketches—
 "The Dotted Line" (Boulton).
 10.16: Studio Dance Band.
 10.27: Late weather report.
 10.28: To-morrow's programme.
 10.30: National Anthem; close.

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2BL

MORNING SESSION.

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

MIDDAY SESSION.

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

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.
 Accompanist: Kathleen Roe.
 3.45: G.P.O. chimes; popular music. 4.0: G.P.O. chimes; Frank Botham, baritone—(a) "The Two Grenadiers" (Schumann), (b) "Come and Trip It" (Handel). 4.7: Captain A. C. C. Stevens will speak on "An Indian Jungle Story." 4.22: Bertha Waters, soprano—(a) "Florian Song" (Godard), (b) "Love Song of Hardy" (Batten). 4.29: Popular music. 4.40: Frank Botham, baritone—(a) "Glorious Devon" (Sanderson), (b) "The Drover" (Stoneham). 4.47: "Sun" news service. 4.52: Popular music. 5.0: Bertha Waters, soprano—(a) "By my Roses" (Slaters), (b) "Wake Up" (Phillips). 5.7: Pianoforte reproduction. 5.17: Popular items. 5.23: Producers' Distributing Society's poultry report. 5.27: Features of the evening's programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.
 5.30: Children's session, conducted by Uncle

Bas; music and entertainment; letters and stories. 6.30: "Sun" news and late sporting. 6.40: Dinner music by the Instrumental Trio—(a) "Gumnuts' Dance" (Railton), (b) "If I Had You" (Shapino), (c) "Selection of Popular Songs" (Coates), (d) "Song of the Volga Boatmen" (arr. Lake). 7.7: Australian Mercantile, Land, and Finance Co.'s report; weather report and forecast by courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market report; grain and fodder report ("Sun"); dairy produce report ("Sun"). 7.25: Mr. Pim and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: Ad Ad Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.
 Accompanist: G. Vern Barnett.
 8 p.m.: G.P.O. chimes.
 2BL Light Orchestra—
 (a) Suite, "Danse Revels" (Phillips).
 (b) "Adagio Elegiac" (Wieniawski).
 (c) Intermezzo, "The Jewels of the Madonna" (Wolf-Ferrari).
 8.20: Mr. Optimist and Mr. Pessimist.
 8.30: 2BL Light Orchestra—
 (a) "Midsummer's Night Dream Fantasy" (arr. Finck).
 (b) Selection, "The Daughter of the Regiment" (Donizetti).
 8.50: Charles Tidswell in unusual songs.
 (a) "King Billy" (James).
 (b) "The King Who Wanted Jam for Tea" (Charles).
 8.57: 2BL Light Orchestra—
 "Chopiniana" (arr. Finck).
 9.7: Weather report.
 9.8: James Donnelly, monologues.
 9.15: C. R. Dexter, last-minute racing information.
 9.30: Charles Tidswell, in unusual songs—
 (a) "Olga Petrovitsch" (Gideon).
 (b) "Amapu" (Gideon).
 9.37: 2BL Light Orchestra—
 (a) "Parsifal" (Wagner).
 (b) Selected.
 9.52: Harry Groot in popular numbers.
 9.59: From Sydney University, Union Hall—Cec Morrison's Dance Band.
 10.14: From the studio; late "Sun" news.
 10.19: From Sydney University, Union Hall—Cec Morrison's Dance Band.
 10.28: From the studio; late weather report.
 10.30: From Sydney University, Union Hall—Cec Morrison's Dance Band.
 10.57: From the studio; to-morrow's programme.
 10.59: From Sydney University, Union Hall—Cec Morrison's Dance Band.
 11.30: National Anthem; close.

2GB

10.0: Music. 10.10: Happiness talk by A. E. Bennett. 10.20: Music. 10.30: Women's session, by Miss Helen J. Beegling. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service, by Mrs. Dorothy Jordan. 2.50: Music. 3.30: Close down. 5.30: Children's session, by Uncle George. 7.0: Music. 7.45: Feature story. 8.0: Miss Ethel Muller, contralto. 8.7: Instrumental Trio. 8.15: Mr. Len Howell, tenor. 8.22: Symphony Orchestra. 8.30: Miss Gwen Selva, soprano. 8.40: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.45: Address. 9.0: Weather report. 9.3: Mr. Clement Hosking, baritone. 9.15: Symphony Orchestra. 9.23: Miss Ethel Muller, contralto. 9.33: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.38: Instrumental trio. 9.43: Mr. Len Howell, tenor. 9.58: Miss Gwen Selva, soprano. 10.3: Instrumental music. 10.30: Close down.

2UW

MID-DAY SESSION.

12.30: Request numbers. 1.0: G.P.O. clock and chimes; music. 1.15: Talk on Home-craft, by Pandora. 1.40: Music and request numbers. 2.30: Close down. 3.30: Musical programme.

EVENING SESSION.

5.30: Children's Hour, conducted by Uncle Jack. 6.30: Close down. 7.0: G.P.O. clock and chimes; request numbers. 8.0: Music. 9.0: G.P.O. clock and chimes. Comments on Foreign Affairs, by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.

Interstate Programmes, Friday, June 21

3LO

EARLY MORNING SESSION.

1.15: Morning melodies. 7.20: Morning exercises to music. 7.30: Stock reports; Stock Exchange information; general news; shipping and sporting information. 8.0: Melbourne Observatory time signal. 8.1: Morning melodies. 8.15: Close down.

MORNING SESSION.

11.5: Miss I. V. Crawford will speak on "Practical Psychology." 11.25: "Au Fait" will speak on "Fashions." 11.45: Under the auspices of the Department of Health, Dr. Scantlebury will speak on "Some Aspects of Infant Welfare."

MID-DAY SESSION.

12.0: Melbourne Observatory Time Signal. 12.1: British Official Wireless news from Rugby; Reuters and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; special report by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: The Station Orchestra—Overture, "Robespierre" (Litolff). 12.30: Wilfrid Thomas (bass)—"Thou Art My Peace" (Schubert), "None but the Lonely Heart" (Tschalkowsky). 12.37: Stock Exchange information; prices received by the London Stock Exchange this day. 12.43: The Station Orchestra—Selection, "Miss Dolly Dollars" (Herbert). 12.53: Madoline Knight (contralto)—"Old Time Ballads." 1.0: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecasts; river reports, rainfall. 1.8: Wilfrid Thomas (bass)—"The Hunting Horn" (Foster), "Out on the Deep" (Lohr). 1.15: The Jedral Trio (Alva Hattenbach, violin; Edna Hattenbach, cello; and John Simons, piano). The Trio—"Andante" (Mendelssohn), "Scherzo" (Mendelssohn). Piano Soli: "Menuetto and Trio" (Mozart), "Alia Turca" (Mozart). The Trio: "Serenade" (Moszkowski), "Ständchen" (Pacini). 1.45: Close down.

AFTERNOON SESSION.

2.15: The Mozart Trio (Prof. Rachmanoff, piano; David Zisserman, cello; Peter Bornstein, violin), in a programme of classical music; Interim, J. Alexander Browne, selected. 3.15: Miss Frances Fraser will speak on "Peter Pan—For Grow-ups." 3.30: The Station Orchestra—Selection, "Mdlle. Modiste" (Herbert). 3.40: Skipper Francis (baritone)—"You Can't Stop the Sun from Rising" (Francis); selected. 3.47: The Station Orchestra—"A Cockney Suite" (Ketyby). 3.52: The James Girls, in a Musical Selection. 4.7: The Station Orchestra—Selection, "Zaza" (Leoncavallo). 4.17: Skipper Francis (baritone)—"The Mustard Club" (Francis); selected. 4.24: The Station Orchestra—"Reign de Terpsichore" (Hosmer). 4.30: Bert Ray (comedian)—"Dooley's Relations." 4.40: The Station Orchestra—Musical comedy selections. 4.50: News service; Stock Exchange information. 4.55: Close down.

EARLY EVENING SESSION.

5.45: Answers to letters and birthday greetings by "Billy Bunny." 6.15: "Billy Bunny" has another batch of stories. 6.35: Captain Donald MacLean will continue his series of adventure stories.

EVENING SESSION.

6.50: Madam Soward, "French Without Tears." 7.5: Stock Exchange. 7.15: Market reports. 7.30: News session. 7.43: Birthday Greetings. 7.45: Out of the Past. 7.48: Under the auspices of the Department of Agriculture, H. W. Davey, Chief Orchard Supervisor, will speak on "Orchard Hygiene."

NIGHT SESSION

8.0: Programme announcements. 8.1: H. K. Love will speak on "Technicalities." 8.16: Collingwood Citizens Band—March, "Drum, Trumpet." 8.22: Herold Kyng (basso cantante)—"Three Shakespearean Songs" (Quilter). 8.32: Collingwood Citizens Band—"The Harmonious Blacksmith." "Romance" (Rubinstein). 8.42: Herold Kyng (basso cantante)—"Now Sleeps the Crimson Petal" (Quilter). Selected. 8.50: J. Harcourt Bailey (entertainer)—"The Steam Roller Man's Story" (Roland). 9.10: Madoline Knight (contralto)—"Old Time Ballads." 9.17: Collingwood Citizens Band—Selection, "The Gondoliers." 9.30: The James Girls—In a concoction of coon melodies. 9.45: The Jedral Trio (Alva Hattenbach, violin; Edna Hattenbach, cello; and John Simons, piano)—Trio, "Andante" (Reissiger); "Pierrette" (Chaminade). "Cello," "Slumber Song" (Rimsky-Korsakov). The Trio—"The Old Refrain" (Brandt-Kreisler). "Flower Waltz" (Tschalkowsky). 10.10: News service. British official wireless news from Rugby. Meteorological information. Announcements. 10.18: Eric Welch will speak on to-morrow's V.A.T.O. races at Caulfield. 10.25: Bert Ray, comedian, "Whimsicalities." 10.41: Ern. Hall's Radio Revelers with Hugh Euxham—"Where the Cot, Cot, Cotton Grows" (Kleina).

"Cinnamon Cake" (Bernard). "My Fleur-de-lis" (Kimrough). "Avalon Town" (Brown). "Shake That Thing" (Jackson). "Glad Rag Doll" (Ager). "You are Wonderful" (Ash). "There Ought to be a Law Against That" (Friend). "The Rose of Flanders" (O'Hagan). "Oh, Ya, Ya" (Frish). "Stars are the Windows of Heaven" (Mahe). "Only a Rose" (Friml). "That's Her Now" (Ager). "Song of the Vagabonds" (Priml). 11.30: God Save the King.

3AR

MORNING SESSION

10.0: G.P.O. clock says "Ten." 10.1: "Age" market reports; farm and station produce, fruit, fish, and vegetables. 10.25: "Age" shipping reports; ocean forecasts. 10.30: Mail notices; express train information. 10.35: "Age" news service, exclusive to 3AR. 10.59: Weather forecast.

MORNING MUSICAL SESSION.

11.0: Ballads. 11.30: The Discus Ensemble presents a famous Australian Percy Grainger, piano "Sonata in F Minor" (Brahms), Op. 5. 12.0: Ballads. 12.30: Close down.

AFTERNOON SESSION.

3.0: The Strad Trio—"Trio, Op. 32. D Minor" (Arensky), Allegro Moderato, Scherzo, Elegie, Finale. 3.50: Frank Johnstone, cello—"Memories" (Bopper), "Menuet" (Squire). 4.18: The Strad Trio—Trio, "Canon" (Lavater), "Menuet" (Haydn), "Ave Maria Stella" (Grieg), "Polish Dance" (Scharwenka). 4.30: Close down.

EVENING SESSION.

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

NIGHT SESSION.

8.29: Did You Know That? 8.30: Community singing, transmitted from Geelong. 10.20: News service, exclusive to 3AR; announcements. 10.30: God Save the King.

4QG

EARLY MORNING SESSION.

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

MORNING SESSION.

11.0: Music. 11.5: Social news. 11.15: Lecturette. 11.30: Music. 11.35: More social news. 11.45: Music. 12.0 (noon): Close.

MIDDAY SESSION.

1.0: Market reports; weather information. 1.20: From the Paris Cafe: Lunch-hour music. 2.0: Close down.

AFTERNOON SESSION.

3.0: Records. 3.30: Mail train running times. 3.31: From St. John's Cathedral, a recital by Mr. George Sampson, F.R.C.O. (City Organist). 4.15: This afternoon's news. 4.30: Close down.

EARLY EVENING SESSION.

6.0: Mail train running times; mail information; shipping news. 6.5: Dinner music. 6.25: Commercial announcements.

THE CHILDREN'S HOUR.

6.30: Bedtime stories conducted by "The Sandman." 7.0: News in brief. 7.5: Stock Exchange news. 7.6: Metal quotations. 7.7: Market reports. 7.25: Fenwick's stock report. 7.30: Weather information. 7.40: Announcements. 7.43: Standard time signals. 7.45: To-morrow's sporting fixtures reviewed.

NIGHT SESSION.

8.0: To-night's programme will be relayed from the Acacia Garden, Australian Hotel, Queen Street, Brisbane, and will include soprano solos by Miss Ida Wright and Miss Jean Marriott; contralto solos by Miss Jean Naylor, and items by the Anglo Male Quartette. 10.0: News, weather information. Close down.

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5CL

MORNING SESSION.

11.0: Chimes. 11.1: Recordings. 11.15: Kitchen Craft and Menu Talk. 11.30: Recordings. 11.45: Mr. L. G. Cant will speak on "First Aid to the Injured." 12.0: Chimes. 12.1: Recordings. 12.15: General news service. British official wireless news. 12.40: Recordings. 12.52: Railway information. Stock Exchange information. Meteorological information. 1.0: Chimes. 1.1: From Adelaide Town Hall community singing. 2.0: Close down.

AFTERNOON SESSION.

3.0: Chimes. 3.1: The Royal Trio 3.8: Mollie Warden (soprano). 3.15: Len Phillis (banjoist). 3.21: Walter Kingsley (baritone). 3.27: The Royal Trio. 3.33: Eileen Boyd (contralto). 3.39: Arthur Douglas. 3.45: Franklin Bair (tenor). 3.51: The Royal Trio. 3.58: Mollie Warden (soprano). 4.3: Arthur Douglas. 4.8: The Royal Trio. 4.15: Musical Appreciations. A Short Lecturette, with Illustrative Recordings, by Horace Perkins, Mus. Bac., A.M.U.A. "Inflammate" (Rossini), sung by Florence Austral. "Prelude in C Sharp Minor" (Rachmaninoff), played by the composer. "The Lovers Curse," "The Meeting of the Waters" (Irish folk songs), sung by Margaret Sutherland. Trio in D Minor" (Mendelssohn), played by Thelma G. Cahala and Korot. 4.55: Stock Exchange information. 5.0: Close down.

EVENING SESSION.

6.0: Chimes. 6.1: Birthday greetings, correspondence, songs and stories by "Miss Wireless." 6.30: "Milk Mushroom" (6.45: SCL's sporting service, supplied by "Silvius." 7.1: Senior Birthday League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: "Mo" Manning. 7.25: Mdlle. Marcelle Berardi. 7.19: "For All." 7.40: Mr. A. Oranfell (bass). M. A. F. G. S. will continue his series of talks on "Pioneers of Australia."

NIGHT SESSION.

8.0: Chimes. 8.1: Boake-Smith's Palais Royal Band—"Is She My Girl Friend?" (Yellen). "Precious Little Thing They Call Love" (Davis). "There's a Rainbow Round My Shoulder" (Johnson). 8.10: Mollie Warden (soprano)—"The Second Minute" (Kernell). 8.13: Boake-Smith's Palais Royal Band—"You're Wonderful" (Fields). "Avalon Town" (Clarke). "Dream Melody" (Kachler). 8.23: Arthur Douglas (Scotch comedian) will entertain you. 8.27: Boake-Smith's Palais Royal Band—"I'm Sorry, Sally" (Kahn). "Carolina Moon" (Davis). "Mississippi Blues" (Baris). 8.37: Margaret Pirie (contralto)—"A Green Cornfield" (Hoad). 8.40: Boake-Smith's Palais Royal Band—"Bally of My Dreams" (Kernell). "Me and the Man in the Moon" (Leslie). "Promise Me" (Stranks). 8.50: Harold Williams (baritone)—"The Trumpeter" (Baron). 8.53: Boake-Smith's Palais Royal Band—"A Shen's Dream" (Pollack). "Dream House" (Davis). "Out of the Dawn" (Donaldson). 9.2: Meteorological information, including Semaphore. 9.3: Oversea grain report. 9.4: Boake-Smith's Palais Royal Band—"Without You, Sweetheart" (De Sylva). "Was It a Dream?" (Coslow). "Lonesome Girl in Town" (Baer). 9.14: Mollie Warden (soprano)—"The Leaves and the Wind" (Franco Leon). 9.17: Boake-Smith's Palais Royal Band—"Anything You Say" (Donaldson). "Merry Weather" (Lehar). "That's Her Now" (Yellen). 9.27: Arthur Douglas (Scotch comedian)—Four Minutes' Humor. 9.3: Boake-Smith's Palais Royal Band—"Suzanna's Sauskinie Shoes" (Wergall). "I Fell Head over Heels in Love" (Thayer). "Because My Baby Don't Mean Maybe Now" (Donaldson). 9.41: Margaret Pirie (contralto)—"Pirate Dreams" (Heintz). 9.44: Boake-Smith's Palais Royal Band—"Somebody, Somewhere" (Panc). "With My Honey and Me" (Tobias). "Glad Rag Doll" (Yellen). 9.54: Harold Williams (baritone)—"Mate o' Mine" (Filliot). 9.57: Boake-Smith's Palais Royal Band—"Just Like a Melody Out of the Sky" (Donaldson). "Old-fashioned Locket." "Alabama Stomp" (Johnson). 10.6: Mollie Warden (soprano)—"The Sandman" (Brahms). 10.8: Boake-Smith's Palais Royal Band—"That Saxophone Waltz" (Sisk). "Together" (De Sylva). 10.15: General news service. British official wireless news. Meteorological information. 10.20: SCL's Sporting Service, sunfilled by "Sporting." 10.29: Boake-Smith's Palais Royal Band—"Old Man Sweeney" (Dixon). "Another, I Still Have You" (Johnson). "Pickett's Backet Cheek" (Tobias). "Giv of Lacuna" (Stuart). "I Just Roll Along" (Frent). "Mine, All Mine" (Gard). "Routure of Memories" (Aker). "Laugh, Clown, Laugh" (Lewis). "Flower of Love" (Dixon). "Blushing Girl Me a Song" (Davis). 11.0: Close down.

6WF

10.0: Tune in; gramophone and phonograph records from the studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.2: Music by the Radio Trio, from the studio. 2.0: Close down.
 3.30: Tune in. 3.35: Musical programme, relayed from the Primrose Cafe de Luxe; vocal items from the studio. 4.30: Close down.
 6.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Perth Piano Trio. 7.30: Commercial and general information. 7.45: Talk on "Racing" by the sporting editor of the "Truth" Newspaper Co., Ltd. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Musical programme; items by Mr. Pighills, baritone; the "Karoola" Instrumental Duo; and pianoforte solos by Miss Audrey Dean. 8.50: Late news items, by courtesy of the "Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcement; late weather bulletin. 8.58: "Gardening" talk by Mr. James Conary. 9.12: Programme continued from the studio. 10.30: God Save the King.
 104.5 Metre Transmission.
 Simultaneous broadcast on 104.5 metres of programme given on 1250 metres, commencing at 6.45 p.m.

7ZL

MIDDAY SESSION.

11.30: Musical selections. 11.34: Midlands weather forecast. 11.55: Tasmanian stations, 9 a.m. weather report. 12.0: Chimes. 12.1: Shipping information; ships within wireless range; mail notices; housewives' guide. 12.29: Announcements. 12.55: News service; British official wireless news; railway auction produce sales held at railway. 1.30: Close down.

AFTERNOON SESSION.

3.0: G.P.O. clock chimes the hour. 3.4: Weather information. 3.15: A programme of popular music—The Gresham Singers, "After many a Dusky Mile," "Goodnight, Beloved," pianola, "Kissing Time," Ernest McKinley, tenor, "Song of the Locust," pianola, "A Waltz Dream," Milton Hayes, monologue, "Meanings of Monty," Parts I. and II.; pianola, "Lohengrin," Malcolm McEachern, bass, "A Shaaty Ballad" (Weatherley); pianola, "Spanish Dance," Alex. Whitson, baritone, "The Adorable Outcast" (Hayes); pianola, "Polish Dance," Marie Kurenko, soprano, "Ye Who Have Yearned Alone," "Gracie Song," pianola, "Breeze," 4.15: Readings from the "Weekly Courier." 4.30: Close down.

EARLY EVENING SESSION.

6.15: Musical selections. 6.30: "The Story Lady" 6.45: Peggy Dyer will play "In Poppy Land," "Even-song." 7.0: Answers to letters and birthday greetings by "Uncle David" and "The Story Lady." 7.10: News session.

EVENING SESSION.

7.15: Sid Jones will speak on "Football." 7.30: A studio concert—Fred Heraud, baritone, "The Brown Eyes of my Dearest" (Lohr), "Throb of the Passionate Day" (Lohr). 7.37: The Francini Trio, "Menuet" (Boccherini). 7.40: Daisy Walters, soprano, "Dancing Days" (Dickson), "The Flutes of Arcady" (James). 7.47: Zonophone Operatic Party, "Faust" (Gems), 1 and 2. 7.54: Mabel Bailey, contralto, "O Flower of all the World" (Finden), "The Little Silver Ring" (Chaminade). 8.1: Harry Goss-Custard, organ solo, "Spring Song" (Dubois), "Intermezzo in D Flat." 8.9: Fred Heraud, baritone, "Love, the Jester," "Recompense." 8.16: Ketelby's Concert Orchestra, "Bells Across the Meadow." 8.20: Daisy Walters, soprano, "The Valley of Laughter" (Sanderson), "The Charm of Spring" (Clarke). 8.27: Ketelby's Concert Orchestra, "In a Fairy Realm." 8.31: Mabel Bailey, contralto, "Tears" (Cowan), "Slave Song" (Del Riego). 8.38: Mischa Elman, violin solo, "Country Dance" (Elman), "Hungarian Dance, No. 7" (Boccherini). 8.45: J. M. Counsel, an hour with the old masters, "The History and Development of Music." 9.45: News session. 10.0: Chimes. 10.1: Close down.

Organ Recital at 3AR

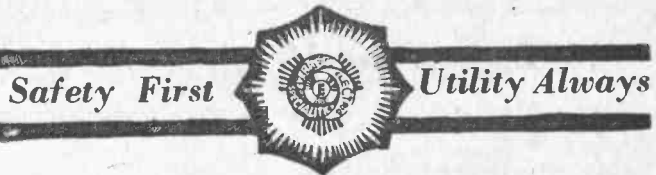
AN organ recital will be given from St. Peter's Church, Eastern Hill, by Mr. C. E. Monteath, F.R.C.O., and transmitted by 3AR, on June 22.

Description of Baseball

ON Saturday, June 22, Percy Steele will describe the baseball match between Melbourne and Carlton at the Melbourne Cricket Ground, commencing at 1.30 p.m. These two teams have always occupied a leading position on the baseball premierships table, and the game should be full of interest to lovers of the game.

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**TIPS
KERS**

Local Programmes, Saturday, June 22

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

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

MORNING SESSION.

Announcer: Eric Besseman.

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

MIDDAY AND AFTERNOON SESSIONS.

Announcers: Ewart Chapple, Laurence Halbert.

Note: Race results from Victoria Park will be given. 12.0: "Big Ben" and announcements. 12.2: Stock Exchange, first call. 12.3: Official weather forecast, rainfall. 12.5: Summary of news, "Sydney Morning Herald." 12.10: Rugby wireless news. 12.13: Studio music. 12.50: From Moorefield: Description of the races in the running. During intervals in races a musical programme by the "Idlers." 4.45: Sporting and racing resume. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man"; letters and stories; music and entertainment. 6.40: Stock Exchange information. 6.45: Weather and shipping news. 6.47: Rugby wireless news. 6.52: Late sporting news. 7.0: "Big Ben"; late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats. (a) "A Spring Morn" (Cazabon); (b) "My Mother's Eyes" (Baer); (c) "The O'Brien Girl" (Hersch); (d) "My Wonderful Garden" (Biglow); (e) Quartet, "Rigoletto" (Verdi); (f) "The Desert Song Waltz" (Romberg).

EVENING SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

Note: Favorite Item Week: Final Night, "Our Old-time Dance Night."
7.40: Popular music.
7.45: Programme announcements.
7.48: A record recital.
8.0: Studio Dance Band, conducted by Cec. Morrison.
8.12: Norman Janson, baritone—
(a) "Maggie Murphy's Home."
(b) "Sweet Belle Mahone."
8.19: Studio Dance Band, conducted by Cec. Morrison.
8.31: Willie Shine, comedian—
"Billy Boy."
8.38: Studio Dance Band, conducted by Cec. Morrison.
8.50: Alf Lawrence and Nell Crane, entertainers—
(a) "MacGregor's Gathering."
(b) "Knock 'Em in the Old Kent Road."
(c) "My Little Watercress Girl."
9.2: Weather report.
9.3: Studio Dance Band, conducted by Cec. Morrison.
9.15: Norman Janson, baritone—
(a) "Sweet Genevieve."
(b) "Maid of the Mill."
9.22: Studio Dance Band, conducted by Cec. Morrison.
9.34: Willie Shine, comedian—
(a) "Let 'Em All Come."
(b) "Kate O'Connor."
9.51: Studio Dance Band, conducted by Cec. Morrison.
10.1: Alf Lawrence and Nell Crane, entertainers—

(a) "I'm in Love With a Publican's Daughter."
(b) "Life's Dream is O'er."
(c) "When Its Moonlight on the Sil'ry Rio Grande."
10.11: To Our Grandmas: The Old v. the New.
10.28: Late weather report.
10.30: Rae Foster, popular vocalist.
10.47: Studio Dance Band, conducted by Cec. Morrison.
10.54: To-morrow's programme.
10.56: Studio Dance Band, conducted by Cec. Morrison.
11.30: National Anthem; close.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.

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

MIDDAY SESSION.

Announcer: A. C. C. Stevens.

11.0: G.P.O. chimes; women's session, conducted by Mrs. Cranfield; What's on at the Pictures and Theatres. 11.30: Advertising hints. 11.40: Talk on "Gardening" by Mr. Cooper, Park Superintendent, City Council. 12.0: G.P.O. chimes; special ocean forecast and weather report. 12.3: Studio music. 12.30: "Sun" midday news service. 12.40: Studio music. 12.50: "Sun" midday news service. 1.0: From the N.S.W. Lawn Tennis Ground, J. O. Anderson v. J. Crawford. 1.45: From the studio, popular music. 2.0: G.P.O. chimes; close down. Note.—Race results from Moorefield and Kensington will be broadcast by arrangement with the "Sun" newspapers.

AFTERNOON SESSION.

Announcers: Eric Bessemer (Studio),

Basil Kirke (Sports Ground).

Accompanist: Kathleen Roe.

Note.—Race results from Kensington and Moorefield. 2.55: Race results and announcements. 3.0: From the Sydney Sports Ground, description of the football match. 3.15: From the studio—Cliff Gane, comedian, "The Recruiting Sergeant" (Wright); race results; popular items. 3.30: From the Sydney Sports Ground, description of the football match. 3.45: From the studio, Cliff Gane, comedian, "Why Do the Men Run after Me?" (Connor); race results; popular items. 3.55: From the Sydney Sports Ground, description of the football match. 4.10: From the studio, race results, studio music. 4.25: From the Sydney Sports Ground, description of the football match. 4.45: From the studio, sporting resume, studio music. 5.0: G.P.O. chimes; close.

EARLY EVENING SESSION.

Announcer: Basil Kirke.

5.40: Children's session, conducted by Uncle Bas: music and entertainment, letters and stories. 6.30: "Sun" news service. 6.40: 2BL Dinner Quartette—(a) "Three Fours Waltz" (Coleridge-Taylor), (b) "The Faraway Bells" (Gordon). (c) "When the Right One Comes Along" (Wayne), (d) "Martha" (Plotow), (e) "I Love to Hear You Singing" (Wood), (f) "The Dansant" (Fletcher). (g) "The Barber of Seville" (Rossini). 7.7: Complete sporting and racing resume. 7.30: Mr. Pim and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: Ad Ad. Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

8.0: G.P.O. chimes; Sydney Calland, baritone.
8.7: The Troubadours.
8.17: Reg. Harrison, comedian—
(a) "My Motor Car" (Harrison).
(b) "Rough and Ready" (Lowe).
8.24: Hawaiian Trio.
8.34: Sydney Calland, baritone.

8.41: The Troubadours.
8.51: Hawaiian Trio.
9.1: Weather report; Romano's Cafe Dance Orchestra., conducted by Bennie Abrahams.
9.12: From the studio; the Troubadours.
9.22: Hawaiian Trio.
9.32: Laurel Mather, popular vocalist—
(a) "My Angeline" (Wayne).
(b) "A Night of Memories" (Yellen and Jerome).
9.39: Impression of to-night's contest at the Stadium by an eye-witness.
9.54: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.4: From the studio; Laurel Mather, popular vocalist—
(a) "The Melody that Made You Mine" (Polla).
(b) "Secrets" (Green and Creagher).
10.11: Late "Sun" news.
10.17: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.28: From the studio; late weather report.
10.30: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
10.57: From the studio; to-morrow's programme.
10.59: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.
11.30: National Anthem; close.

2GB

3.0: Musical session. 5.30: Children's session by Uncle George. 7.0: Request evening. 8.0: Instrumental and dance programme. 10.30: Close down.

2UW

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



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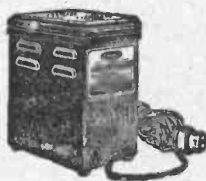
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Interstate Programmes, Saturday, June 22

3LO

EARLY MORNING SESSION.

7.15 to 8.15: See Friday.

MORNING SESSION.

11.0: The Radio Revellers—"You ought to hear Olaf Laft" (Baer), "Mexican Serenade" (Terese), "Down by the Old Front Gate" (Kassal), 11.9: Madoline Knight, contralto—Old Time Ballads, 11.16: "The Radio Revellers—"I don't know why I do it" (Vahl), "Hum and Strum" (Meyers), "Maybe I'm Wrong" (Harris), 11.25: Eric Welch will give the final selections for the V.A.T.C. races at Caulfield to-day, 11.35: The Radio Revellers—"Constantinople" (Carlton), "My Angelina" (Wayne), "There's a Rainbow round my Shoulder" (Jolson), 11.44: Bert Ray, comedian—"My Neighbors," "My Other Husbands," 11.51: The Radio Revellers—"Dada, Dada" (Dore), "Oh, is She Mad at Me" (Friend), "High upon a Hilltop" (Baer), 12: Melbourne Observatory time signal; express train information, 12.1: British official wireless news from Rugby; Reuters and the Australian Press Association cables; "Argus" news service, 12.20: The Radio Revellers: "When Love Comes Stealing" (Rapee), "Roll up the Carpets" (Nixon), "To-day, To-morrow, for Ever" (Nichols), 12.29: Wilfrid Thomas, bass: "The Gay Highway" (Drummond), "Why Eric Welch?" (Russell), 12.36: Stock Exchange Information, prices received by the Australian Mines and Metals Association from the London Stock Exchange this day, 12.45: The Radio Revellers—"Shimanki Da" (Carlton), "Who Knows" (Dixon), "Lady of the Morning" (Burton), 12.55: Skipper Francis, baritone: "On the Banks of Allan Water" (Lewis), "The Song that Reached My Heart" (Jordan), 1.2: Meteorological Information, weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecasts; river reports; rainfall, 1.7: The Radio Revellers—"I'm Crazy over You" (Lewis), "Widn' the Pan" (Baer), "Guess Who's in Town" (Razaf), 1.16: Wilfrid Thomas, bass—"Go Not, Happy Day" (Somervell), "Birds in the High Wall Garden" (Somervell), 1.25: The Radio Revellers—"That Stolen Melody" (Fisher), "Lenore" (Gilbert), 1.28: Description of the Toolambool Hurdle Race, 2 miles 65 yards, V.A.T.C. races, at Caulfield, by Eric Welch, 1.35: Description of the baseball match, Melbourne v. Carlton, at M.C.C., by Percy Steele.

AFTERNOON SESSION.

2.13: Description of the Minook Two-Year-Old race, 7 furlongs, V.A.T.C. races, at Caulfield, by Eric Welch, 2.20: Description of the baseball match, Melbourne v. Carlton, at M.C.C., by Percy Steele, 2.40: Sonora Rectal, 2.48: Description of the Richmond Handicap, 1 mile 3 furlongs, V.A.T.C. races at Caulfield, by Eric Welch, 2.55, 3.35, 4.20, 4.55: Description of the football match, Melbourne v. Carlton, at M.C.C., by Rod McGregor, 3.10, 4.10, 4.45: Description of the football match, Footscray v. South Melbourne, at Footscray, by Mel. Morris, 3.23: Description of the Wanda Steeplechase, 2 miles 3 furlongs, V.A.T.C. races, at Caulfield, 3.30: Quarter time football scores, League and Association, 3.45: Description of the football match, Footscray v. South Melbourne, at Footscray, by Mel. Morris, 3.58: Description of the Cambria Welter, 1 mile 1 furlong, V.A.T.C. races, at Caulfield, 4.5: Half-time League and Association football scores, 4.33: Description of the Rosny Plate, 6 furlongs, V.A.T.C. races, at Caulfield, 4.40: Three-quarter League and Association football scores, 5.15: News service, 5.30: Final scores.

EARLY EVENING SESSION.

5.45: All sporting results, 6.0: Birthday greetings and answers to letters by "Little Miss Kookaburra," 6.25: Captain Donald MacLean has such an exciting pirate yarn, specially for the boys, 6.40: "Little Miss Kookaburra" has a story for her little Kookaburriettes.

EVENING SESSION.

6.55: Newmarket stock sales. Official reports by the Associated Stock and Station agents, Bourke Street, Melbourne. Latest truck orderings for next week's markets. River reports; weather synopsis. Market reports by the Victorian Producers Co-operative Company, Ltd. Farm and dairy produce. Market reports of fruit by the Victorian Fruitgrowers' Association. Retail prices. Wholesale prices of fruit by the Wholesale Fruit Merchants' Association. Citrus fruits, 7.10: News session. Final scores of the football matches, 7.20: Birthday greetings, 7.24: Out of the Past, 7.25: Edward E. Percott will speak on "Australian Plants—Tree Orchids, Part 1," 7.40: A Maker of History, 7.41: Dr. J. A. Leach, D.Sc., will speak on "Tailor Birds."

NIGHT SESSION.

8.0: The Station Orchestra—Overture, "Mill in the Rocks" (Reissiger), "Serenade" (Rubinstein), 8.15: Skipper Francis, baritone—"Until" (Sanderson), "Roses" (Weatherly), 8.22: The Station Orchestra—Phantasy, "Virginia" (Haydn Wood), "Gondola Love Song" (Olsen), 8.32: The James Girls—In mirth and melody, 8.47: French Bros., banjoists—"Modern Melody," 8.54: Description of events at the Stadium, by Eric Welch, 9.10: The Station Orchestra—Selection, "The Daughter of the Regiment" (Donizetti), 9.20: Bert Ray, Dame Comedian—"Dooley's Relations" comic recitation, "Neil", 9.29: French Bros., Banjoists—"On Everyone's Lips," 9.34: Skipper Francis, baritone—"If those lips could only speak" Parody, 9.41: The Station Orchestra—"Babes in Toyland" (Isherbert); Musical Comedy Selection.

9.51: Further description of the events at the Stadium, by Eric Welch, 10.5: Late sporting results, 10.10: The Station Orchestra, Selection, "The Vagabond King" (Frini), 10.20: Bert Ray, comedian—"My Old Man," "Who I Am," 10.27: Ern. Hall's Radio Revellers with Hugh Huxham, "Shivering" (Doody), "F-onis' Me" (Van Cooth), "Ready for the River" (Boret), 10.38: The Radio Revellers—"My Stormy Weather Pal" (Plantadost), "What'll You Do" (Cohn), "Do You" (Plantadost), "Pa's Old Hat" (Guy), "Ocolomb" (Nichols), "I Fell Head over Ears in Love" (Thayer), "Sonny Boy" (Brown), "Sally of My Dreams" (Kernell), "You're a Real Sweetheart" (Friend), "The Tile Trot" (Pensol), "Where the Cot, Cot, Cotton Grows" (Klein), "Cinnamon Cake" (Bernard), "My Fleurette" (Kimbrough), "Avalon Town" (Brown), "Shake That Thing" (Jackson), "Glad Rag Doll" (Ager), "You are Wonderful" (Ash), 11.30: God Save the King.

3AR

MORNING NEWS SESSION.

10.0 to 10.50: See Friday.

MORNING MUSICAL SESSION.

11.0: The Jedral Trio (Alva Hattenbach, violin; Edna Hattenbach, cello; and John Simons, piano)—Trio, "Allegro B Flat Trio" (Beethoven), cello, "Traumerer" (Schumann), "Romance san Feroles" (Davidoff), trio, "Andante Melodique" (Danila), "Waltz Gentle" (Nevin), "Gayote" (Martini), 11.30: Beautiful ballads: news session, 11.50: British official wireless news; announcements; rates of exchange as supplied by Thomas Cook and Sons.

AFTERNOON SESSION.

3.0: The Station Orchestra, "The Evolution of Dixie" (Lake), 3.10: Wilfrid Thomas, bass—"Give a Man a Horse" (O'Hara), "The First Primrose" (Grieg), 3.17: The Station Orchestra, selection, "Madame Pompadour" (Pail), 3.27: The James Girls in a breezy budget, 3.37: The Station Orchestra, selection "Little Boy Blue" (Bevan), 3.40: Madoline Knight, old-time ballads, 3.53: The Station Orchestra, "An Arcadian Festival" (Rickett), 4.2: Wilfrid Thomas, bass—"Simon, the Cellarer" (Wallace), "My Love is Like a Red Rose" (Scotch), 4.9: The Station Orchestra, selection "Parade" (Ketyl), 4.19: The James Girls, mirth and melody, 4.29: The Station Orchestra, "Suite Romantique" (Ketyl), 4.39: Madoline Knight, contralto, old-time ballads, 4.46: The Station Orchestra, "A Musical Jig Saw" (Aston), 5.0: Close down.

EVENING SESSION.

6.0: Rhythmicl rotations, 7.10: News service: announcements, 7.20: More rhythm.

NIGHT SESSION.

8.0: All sporting results, 8.20: Did You Know That? 8.30: Brunswick City Band (conductor, Hugh Niven), Fantasia, "Alexander's Feast" (Lament), 8.40: Herold Kyn, basso cantante—Selections from his repertoire, 8.50: Brunswick City Band—"March, 'Night of the Road" (Rimmer), "Valse, 'Enchantment" (Greenwood), 9.0: "Marching Soldiers, by Harry Paul, Produced by Wilfrid Moverley, Rosalind; Winifred Moverley, Mr. Smith (the stranger), T. Bernard Lambie, Mr. William Shields, Norman E. Blackler, Scene: A room overlooking a garden drive in a house on the outskirts of Mildura, 9.20: The Jedral Trio (Alva Hattenbach, violin; Edna Hattenbach, cello; and John Simons, piano)—Trio, "Allegro Moderato" from D Minor Trio (Arensky), "Album Leaf" (Cul), "Bark, Bark, the Lark" (Schubert), "Trio, 'Largo" (Eastern EMI), 9.40: Martin La'Matt, tenor—"The Floral Dance" (Katie Moss), "Alone" (Johnson), 9.47: Brunswick City Band—Selection, "Alexander of Britain" (Rimmer), 9.57: Martin La'Matt, tenor—"Rose in the Bud" (Foster), "Mother of Pearl" (E. R. Ball), 10.7: O. E. Montfeath organist, transmission from St. Peter's Church, Eastern EMI, "A Solemn Festival" (Rheinberger), "Three Preludes in B Minor, C Minor, and A Major" (Chopin), "La Carita" (Rossini), "Fantasie, E Flat" (Saint-Saens), 10.25: News service; announcements, 10.30: God Save the King.

4QG

MORNING SESSION.

11.0: The complete morning service will be relayed from the Seventh Day Adventist Church, Buranda, 12 (noon): Close down.

NO MIDDAY TRANSMISSION.

NIGHT SESSION.

6.0: Beenleigh Ambulance Concert. The concert in aid of the Beenleigh Ambulance Brigade will be relayed from Waterford, The Orpheans—Chorus, "Dixie Land" (Emmett), Jean Naylor (contralto), "Carissima" (A. Penn), C. Rice (tenor) and The Orpheans—"Bells of St. Mary's" (Adams), Marie Dulley (mezzo-soprano)—"No, Sir" (Wakefield), F. Crane (baritone)—"If Ever I Meet the Sergeant" (Bennett), The Orpheans—"Gypsies' Laughing Chorus" (Glover), Geo. Williamson (tenor) and Marie Dulley (mezzo soprano)—Vocal duet, "Down the Vale" (Moir), Tom Muller and The Orpheans—Musical monologue, "Laugh, Clown Laugh" (Florito), Geo. Williamson (tenor)—"Love is for Ever" (Newton), Studio Orpheans (Octette)—"John Brown's Body", Ray Bruce (tenor)—"Morning" (Spzka), 9.0: Metropolitan Weather Forecast The Orpheans (octette)—"The Pump" (West), Tom Muller and The Orpheans—"Harper and the Parkies", E. Harper (baritone)—"Pals" (Squire), The Orpheans (octette)—"Soldiers' Chorus" (from "Faust," Gounod), J. P. Cornwell (bass)—"The Storm Flies" (Roedel), Jean Naylor and the Orpheans—"Lemore" (Corabon), C. Rice, F. Crane, and J. P. Cornwell—Vocal trio, "Uncle Ned" (Poster), Marie Dulley (mezzo soprano)—"The Hills o' Donegal" (Sanderson), The Orpheans (octette)—"Settin' Round the Fire" (Parkes), C. Rice (tenor)—"In an Old Fashioned Town" (Squire), The Orpheans (octette)—"Down by dat Ribber" (Scott Gatty), "Good Night," 10.0: From the Studio, News, weather information. Close down.

5CL

MORNING SESSION.

12.0: Chimes, 12.1: Special late selections for Caulfield races, by Mr. Eric Walsh, 3LO's special Sporting Commissioner, 12.3: Probable starters and selections for Morphettville races, supplied by "Silvius," 12.15: General news service, British official wireless news, 12.40: Railway information, 12.44: Musical interlude, 1.5: Caulfield race result, Toolambool Hurdle Race, 1.15: From Morphettville Racecourse, riders and positions for the Princess Welter, nine furlongs, 1.30: From Morphettville Racecourse, Description of the Princess Welter, by Mr. Arnold Treloar, 1.50: Caulfield Race result, Minook Two-year-old, 1.55: From Morphettville racecourse, riders and positions for June Hurdles, two miles and 36 yards, 2.1: Resume of previous race results, 2.10: From Morphettville racecourse, description of the June Hurdles, by Mr. Arnold Treloar, 2.25: Caulfield race result, Richmond Handicap, 2.35: From Morphettville racecourse, riders and positions for Winter Handicap, one mile and a half, 2.50: From Morphettville racecourse, description of Winter Handicap, 2.55: League football, by "Mo" Manning, 3.1: Resume of previous race results, Caulfield race result, Wanda Steeplechase, 3.3: League football, 3.15: From Morphettville racecourse, riders and positions for Sandringham Steeplechase, about two miles and 250 yards, 3.23: League football, 3.30: From Morphettville racecourse, description of Sandringham Steeplechase, 3.35: Football scores, Caulfield race result, Gambier Welter, 3.38: League football, 3.55: From Morphettville racecourse, riders and positions for Windsor Handicap, six furlongs, 4.0: Chimes, 4.1: Resume of previous race results, Football scores, 4.6: League football, 4.10: Description of Windsor Handicap, 4.15: Caulfield race result, Rosny Plate, 4.16: League football, 4.35: From Morphettville Racecourse, Riders and positions for the Closing Handicap, six furlongs, 4.40: League football, 4.55: League football, 5.0: Dividends on Closing Handicap, 5.1: League football, 5.5: Resume of race results, Final football scores, Close down.

EVENING SESSION.

6.0: Chimes, 6.1: Resume of race results and final football scores, 6.5: Birthday greetings, correspondence, songs and stories by "The Wattle Lady," 6.30: An interlude of dinner music, 7.0: Chimes, 7.1: Senior Birthday League greetings, 7.2: Stock Exchange, 7.10: Rev. G. E. Hale, B.A., will give a talk on "Utopias, Ancient and Modern," 7.25: Mr. G. Riley on "Items of Interest," 7.45: SCI's Sporting Service, supplied by "Silvius," including Tattersalls and Caulfield race results, final football scores of South Australia v. Melbourne League football, lacrosse, hockey, soccer, golf, and sundry sporting results, 7.55: News service, 8.0: Chimes, 8.1: The Classic Trio—Gwen Moss, A.M.U.A. (violin), Helena Harris (cello), Rose McCabe (piano), Selected.

8.10: Mollie Warden (soprano)—
"In Town" (Eric Coates).
"A Brown Bird Singing" (Haydn Wood).
8.17: Arthur Douglas (Scotch comedian) will entertain you.
8.23: Eric Wickens (bass)—
"When the Sergeant-Major's On Parade" (Long-staffs).
"The Floral Dance" (Katie Moss).
8.30: The Classic Trio—
Gwen Moss, A.M.U.A. (violin). Helena Harris (cello). Rose McCabe (piano). Selected.
8.40: Mollie Warden (soprano)—
"The Ships of Arcady" (M. Head).
"Flower Rain" (E. Schneider).
8.45: From Exhibition Building—
Wrestling.
10.0: From 5CL Studio—
"Nothing But Love" (C. Jacobs Bond).
"The Ringers" (Herman Lohr).
10.7: Arthur Douglas (Scotch comedian) will entertain you again.
10.13: The Classic Trio—
Gwen Moss, A.M.U.A. (violin). Helena Harris (cello). Rose McCabe (piano).
10.20: 5CL's Sporting Service, supplied by "Silvius."
10.30: Modern dance music. Parlorphone Recordings.
11.0: Close down.

6WF

10.0: Tune in; gramophone and phonograph records from the studio. 11.0: Close down. 12.0: Tune in. 12.5: Racing anticipations. 12.7: Pianoforte solos by Miss Audrey Dean. 12.44: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.2: Close down.
2.30: Tune in; sporting session: results of races and quarter-time scores of the following football matches will be broadcast during the afternoon, East Perth v. Claremont-Cottesloe, West Perth v. Perth, East Fremantle v. Subiaco.
5.30: Close down.
8.45: Tune in. 8.48: Bedtime stories by Auntie Amy. 7.12: Sports results. 7.30: Commercial and general information. 7.45: Music. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Vocal and instrumental artists, from the studio: Miss Audrey Dean, piano. 8.30: Relay from Temple Court Cabaret of dance music by Merv. Lyon and his Symphonic Orchestra. 8.50: Late news items, by courtesy of the "Daily News" Newspaper Co. Ltd.; station announcements; ships within range announcement; late weather bulletin. 9.8: Programme continued from the studio and Temple Court Cabaret. 10.30: Close down.

104.5 Metre Transmission.

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

7ZL

MIDDAY SESSION

11.30 to 1.30: See Friday. 1.30: Description of Toombul Hurdle, two miles, run at Caulfield racecourse, Caulfield, Victoria. 1.35: Close down. 2.15: Description of Minook Two-year-old, 7 furlongs, run at Caulfield Racecourse, Caulfield, Victoria. 2.20: Close down. 2.50: Description of Richmond Handicap, 1 mile 3 furlongs, run at Caulfield Racecourse, Caulfield, Victoria. 2.55: Close down.

AFTERNOON SESSION.

3.0: Chimes. 3.1: Transmission from North Hobart Oval, football match, League Second 18 v. Huon, described by Sid Jones. 3.25: Description of Wanda Steeplechase, 2 miles 3 furlongs, Caulfield, Victoria. 3.30: Football match. 4.0: Description of Cambria Welter, 9 furlongs, Caulfield, Victoria. 4.5: Football match. 4.35: Description of Roanby Plate, 6 furlongs, Caulfield, Victoria. 4.40: Football match. 5.0: All sporting results to hand. 5.10: Close down.

EARLY EVENING SESSION.

6.0: All sporting results to hand. 6.30: "Uncle David." 7.0: Answers to letters and birthday greetings. 7.15: News service; Tasmanian district weather report; announcements.

EVENING SESSION.

7.30: Roy Johnson will speak on "Manual Training." 7.45: J. M. Counsel, LL.B. will speak on "The Prince of Wales and the Empire." 8.0: Chimes. 9.30: News session. 9.45: Studio concert continued. 10.20: Close down.

Cone Distortion Eliminated by New Diaphragm Shape

FOLLOWING an exhaustive study into the causes of distortion in cone speakers, it is now known that the motor or driving unit has been responsible for some of the distortion heretofore encountered. The studies of engineers reveal that the structure of the diaphragm itself is an important factor in this connection.

As a result of these studies, prominent engineers have evolved a novel and ingenious diaphragm whose walls are formed in accordance with some of the more complex curves encountered in higher mathematics. This new diaphragm, which is made from a special aluminium alloy, has proved itself capable of eliminating cone distortion altogether or of at least reducing it to negligible proportions. Distortionless loud-speaker rendition has at last been realised in devices employing this diaphragm.

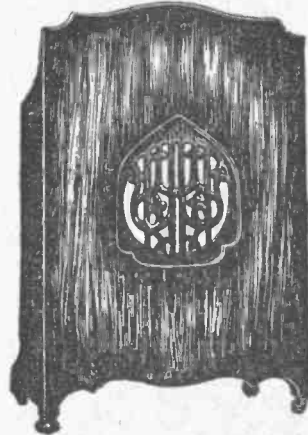
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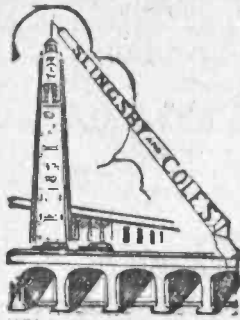
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**SUNDAY MORNING
WIRELESS TALKS
BY
VICTOR E. CROMER
ON
HEALTH
AND
MARY RIVETT
ON
PSYCHOLOGY**

**Sunday Morning, June 23rd
9 TO 10 O'CLOCK A.M.
Station 2GB—316 Metres**

Local Programmes, Sunday, June 23

2FC

MORNING SESSION.

- Announcer: A. S. Cochrane.
- 10.0: "Big Ben" and announcements.
 - 10.2: News service.
 - 10.20: The Captain to his Comrades.
 - 10.35: The Comrados' Bookshelf.
 - 10.40: Studio music.
 - 11.0: From St. John's Church of England, Balmain, Church Anniversary. Morning service conducted by Rev. A. G. Rix. Organist and Choirmaster, Herbert E. Sheppard.
 - Hymn.
 - Exhortation.
 - Confession.
 - Resolution and Lord's Prayer.
 - Responses (Tallis).
 - Venite (Crotch).
 - Psalm 84 (Heywood).
 - First Lesson.
 - Te Deum (Jackson in F).
 - Second Lesson.
 - Jubilate (Jackson in F).
 - Prayers.
 - Anthem, "I Was Glad" (Elvey).
 - Prayers.
 - Hymn.
 - Sermon, Rev. A. G. Rix.
 - Soprano solo, "O, Divine Redeemer" (Gounod), Miss Vinia de Loitte.
 - Hymn.
 - Benediction.
 - 12.15: (approx.) Close down.

AFTERNOON SESSION.

- Announcer: Eric Bessemer.
- 2.30: "Big Ben" and announcements.
 - 2.32: Children's session, conducted by the "Hello Man."
 - 3.0: From Christ Church, St. Laurence, an organ recital and vocal items. The programme arranged by Christian Hellemann.
 - 4.30: From the studio, W. F. Kay will speak on "The History of Cobb's Coaches."
 - 4.45: Popular items.
 - 5.0: "Big Ben;" close.

EVENING SESSION.

- Announcer: Laurence Halbert.
- 6.0: "Big Ben;" programme announcements.
 - 6.2: S. H. Bowden will speak on "Wells and its Cathedral."
 - 6.20: From Petersham Congregational Church, an organ recital by Ambrose Gibbs—
 - (a) "Light Cavalry" (Suppe).
 - (b) "Serenade" (Schubert).
 - (c) "Merchant of Venice," suite (Russe).
 - (d) "Negro Spirituales."
 - 7.0: The evening service, conducted by Rev. A. P. Doran—
 - Invocation and Lord's Prayer.
 - Hymn, "Eternal God."
 - Responsive and Reading.
 - 65th Psalm.
 - Hymn, "Break Thou the Bread of Life for Me."
 - Lesson, Luke VI.
 - Hymn, "Lord, when We Bend before Thy Throne."
 - Prayer.
 - Anthem.
 - Hymn, "Lead, Kindly Light."
 - Sermon.
 - Hymn, "Ere I Sleep."
 - Benediction.
 - 8.30: Organ recital from Regent Theatre.
 - 8.50: From the studio, Madame Emily Marks, soprano—
 - (a) "Drop Me a Flower" (Stanford)
 - (b) "Butterflies" (Seller).
 - (c) "Rain" (Curran).
 - 8.57: Organ recital from Regent Theatre.
 - 9.17: From the studio, Stanley Clarkson basso—
 - (a) "O, Pure and Tender, O Star of Eve" (Wagner).
 - (b) "Te Deum" (Redman).
 - 9.27: Organ recital from Regent Theatre.
 - 9.47: From the studio, Madame Emily Marks, soprano—
 - (a) "To Be Sung on the Water" (Schubert).
 - (b) Three Chines Tone-poems—

- 1. "The Odalisque" (Carpenter).
- 2. "The Highwaymen" (Carpenter).
- 3. "To a Young Gentleman" (Carpenter).

- 9.51: Stanley Clarkson, basso—
 - (a) "Shepherd, See thy Horse's Foaming Mane" (Korbay).
 - (b) "Break, Break, Break" (Lavater).
 - (c) "Verrat," Betrayal (Brahms).
- 9.58: A recital of Celebrity Records.
- 10.28: Late weather and to-morrow's programme.
- 10.30: National Anthem; close.

2BL

MORNING SESSION.

- Announcer: A. C. C. Stevens.
- 11.0: G.P.O. chimes. From Burton Street Baptist Church. Morning service, conducted by Rev. H. G. Hercus.
 - 12.15: Approx. from the Studio: "Sun" news service.
 - 12.30: Studio music.
 - 2.0: G.P.O. chimes; close down.

AFTERNOON SESSION.

- Announcer: Basil Kirke.
- 3.0: G.P.O. chimes; studio music.
 - 4.0: From the Stanmore Methodist Church—Men's Meeting.
 - 4.15: An Address by the Prime Minister (Mr. Bruce).
 - 4.45: From the Studio: Studio music.
 - 5.0: G.P.O. chimes; close down.

EVENING SESSION.

- Announcer: G. Vern Barnett.
- Accompanist: V. Vern Barnett.
- 6.0: G.P.O. chimes.
 - 6.1: Birthday calls.
 - 6.5: A programme supplied by the members of the Cheer-up Society.
 - 7.15: From Chalmers' Street Presbyterian Church—The Evening Service, conducted by Rev. D. F. Brandt.
 - 8.30: From the Studio: Carl Budden Morris, pianist—
 - (a) "Alceste de Gluck" (St. Saens).
 - (b) "Wedding March" (Budden Morris).
 - 8.42: The Sydney Harmonic Choir.
 - 8.52: Zilata Kalmikoff, cellist—
 - (a) "Air" (Bach).
 - (b) "Gavotte" (Bach).
 - 8.59: Amy Firth, soprano.
 - 9.8: Sydney Harmonic Choir.
 - 9.18: Zilata Kalmikoff, cellist—
 - (a) "Barcarole" (Tschalkowsky).
 - (b) "An Den Abendstern" (Wagner).
 - 9.25: Amy Firth, soprano.
 - 9.32: Carl Budden Morris, pianist—
 - "By the Beautiful Danube" (Strauss), transcribed by Schulz-Euler.
 - 9.44: Sydney Harmonic Choir.
 - 9.57: To-morrow's programme.
 - 10.0: National Anthem; close.

2GB

- 9.0: Address by Miss Mary Rivett.
- 9.30: Address by Mr. Victor E. Cromer.
- 10.15: Organ music from St. Alban's Church, Regent St., Sydney.
- 10.30: Morning Service, from St. Alban's Church.
- 12 noon: Music.
- 12.30: Close down.
- 3.0: Musical session.
- 5.30: Children's session, by Uncle George.
- 7.0: Lecture from Adyar House.
- 8.0: Music from Studio.
- 8.15: Concert arranged by courtesy of Messrs. Winkworth and Sons. Uebel Lech-leiter Piano solo.
- 8.23: Miss Gladys Aubin, soprano.
- 8.30: Mr. Cecil Houghton, tenor.
- 8.37: Mr. Gregory Valentine, violinist.
- 8.45: Miss Mary Neal, contralto.
- 8.52: Uebel Lech-leiter Piano.
- 9.0: Weather report.
- 9.1: Miss Gladys Aubin, soprano.
- 9.8: Mr. Gregory Valentine, violinist.
- 9.16: Mr. Cecil Houghton, tenor.
- 9.23: Uebel Lech-leiter Piano.
- 9.28: Miss Mary Neal, contralto.
- 9.35: Close down.

2UW

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

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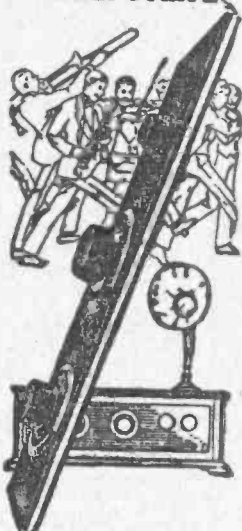
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Interstate Programmes, Sunday, June 23

3LO

MORNING SESSION

10.30: Bells from St. Paul's Cathedral. 10.45: Express train information; British Official Wireless news, from Rugby; news from yesterday's papers 11.0: Morning service from Scots' Church, Collins Street, Melbourne: Psalm (metrical version), 106 V.V., 1-5. "Give Praise and Thanks Unto the Lord"; prayer; prose Psalms, 15 and 16. "Lord, Who Shall Abide in Thy Tabernacle?"; chants; Old Testament lesson, Deuteronomy, 6 V.V., 1-9; hymn 126, "Light of the World"; prayer of intercession; New Testament lesson, St. Luke, 2 V.V., 40-52; anthem; the Lord's Prayer, the congregation, standing, will unite; sermon, "The Growing Generation," St. Luke 2 V.V., 49 and 52; prayer; intimations; offering; offertory; hymn No. 110, "Thy Kingdom Come, O God"; benediction. 12.15: Close down.

AFTERNOON SESSION

2.0: Sonora recital of the world's most famous records. 3.0: Pleasant Sunday Afternoon, from Central Mission, Wesley Church; chairman, Rev. Dr. S. J. Hoban; hymn No. 43, "Light of the World"; prayer; orchestral selection, G. M. Williams conductor; hymn No. 59, "O Love That Will Not Let Me Go"; solo, Miss Florrie Gordon; orchestra; solo, Miss Florrie Gordon; address, Mr. George Maxwell, M.H.R.; National Anthem; benediction; orchestra. 4.30: Close down.

CHILDREN'S HOUR

5.45: Shipping information. 5.47: Answers to letters and birthday greetings, by "Bobby Bluegum." 6.25: "Brother Bill's" talk this week is entitled "Love, Laugh, Lift and Lend a Hand." 6.45: Adult birthday greetings. 6.47: Bells from St. Paul's Cathedral.

EVENING SESSION

7.0: Evening Session from Scots' Church; Psalm (metrical version), 134, "Behold, Bless Ye the Lord"; prayer; prose psalm 95, "Lord, Thou Hast Been Favorable to Thy Land"; Old Testament lesson; hymn 213, "Jesus, My Lord, My God, My All"; prayer of intercession; New Testament lesson; anthem; the Lord's Prayer (the congregation, standing, will unite); address, "The Girl of To-day," by Miss Marjorie Black; prayer; hymn No. 148, "Breathe On Me, Breath of God"; intimations; offering; offertory; hymn No. 355, "Hail, Gladdening Light"; benediction.

NIGHT SESSION

8.30: Brunswick City Band. Overture, "The Scottish Lion" (Rimmer). 8.40: Dawn Harding, mezzo-soprano. "The Living God" (O'Hara). "Derbyshire Song" (Rowley).

8.47: Brunswick City Band. Suite, "The Bells" (Rimmer). 9.0: Ray Carey, tenor. "How Many Hired Servants?" (Sullivan). "A Legend" (Tschalkowsky). 9.8: Professor Bernard Heinze, violin; William G. James, piano. "Sonata in D Minor" (Brahms). 9.28: Dawn Harding, mezzo-soprano. "Lotus Flower" (Schumann). "When at Morn" (Schumann). "Jessamine" (Schumann). 9.35: Brunswick City Band. March, "The Southern Cross" (Percy Code). 9.40: Ray Carey, tenor. Two traditional songs of Ireland. "Has Sorrow Thy Young Days Shaded." "My Love's an Arbutus." 9.47: The Brunswick City Band. Hymns, "Rutherford," "Edwinstone." 9.51: "Argus" news service. Announcements. 10.0: God Save the King.

3AR

MORNING SESSION

11.0: Morning service from St. Paul's Cathedral.

AFTERNOON SESSION

3.0: The Discus Ensemble presents London Symphony Orchestra, conducted by Felix Weingartner, "Choral Symphony No. 9 D Minor" (Beechoven), Allegro ma non troppo, Molto Allegro, Adagio Molto e cantabile Finale—Presto. 4.0: Close down.

EVENING SESSION

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

NIGHT SESSION

7.0: Sonorous Symphonies, as rendered by Monsieur Seraphina. 8.0: The Strad Trio (Cecil Parkes, violin; Myra Montague, piano; and Frank Johnstone, 'cello)—"E Flat Trio, No. 11" (Haydn). Cecil Parkes, violin—"Ave Maria" (Schubert). 8.15: Herold Kyng, basso cantante—Selections from his repertoire. 8.22: The String Quartet (Cecil Parkes, Kingsley Parkes, violins; Eunice Gregory, viola; Frank Johnstone, 'cello)—"Quartette B Flat No. 15" (Mozart). Allegro Vivace assai. Menuetto. 8.32: Eddie Fitch, at the "Wurlitzer"—transmission from the Regent Theatre—Request items. 9.32: Herold Kyng, basso cantante—Selections from his repertoire. 9.40: String Quartet—"Alr de la Pentecote" (Bach). "Menuett" (Boccherini). Myra Montague, piano—"Song Without Words," Nos. 7 and 14 (Mendelssohn). 9.53: News service; announcements. 10.0: God Save the King.

4QG

MORNING

11 a.m.: The complete morning service will be relayed from the Albert Street Methodist Church. 12.15: Close down.

AFTERNOON

3.15: The concert by the Brisbane Federal Band (conductor, W. H. Davis) will be relayed from the Botanic Gardens.

EARLY EVENING SESSION

AN HOUR FOR LITTLE LISTENERS. 6.0: From the Studio: Replies to letters and greetings to little listeners.

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NIGHT SESSION.
ALBERT STREET METHODIST CHURCH. 7.0: The complete evening service will be relayed from Albert Street Methodist Church. At the conclusion of the church service, the concert by the Brisbane Municipal Concert Band (conductor, Mr. E. Jackson) will be relayed from Wickham Park. 9.30: Close down.

5CL

MORNING SESSION.

10.45: Carillon of bells from Adelaide Town Hall. 11.0: Chimes. 11.1: Divine service from Stow Memorial Church, Flinders Street. 12.10: British official wireless news. 12.15: Close down.

AFTERNOON SESSION.

3.0: Chimes. 3.1: From the Adelaide Town Hall, a sacred concert, arranged by The Christian Ministry League in aid of the Tubercular Orphans. 4.0: Close down.

EVENING SESSION.

6.0: Chimes. 6.1: Birthday greetings, correspondence, songs and stories by "Periwinkle." 6.30: "The Bird Lady" and "The Sunshine Songsters." 7.0: Chimes. 7.1: Senior Birthday League greetings. 7.2: A religious service from Black Forest Baptist Church.

NIGHT SESSION.

8.20: Announcement. 8.30: Neapolitan Trio, instrumentalists—"Herd Girl's Dream." Happy Days. 8.36: Molly Warden, soprano—"Two numbers by Schumann. "He, the Best of All." "Thou'rt Like a Lovely Flower." 8.43: Melody lectures by Sir Walford Davies. 8.45: Melody lectures by Sir Walford Davies—"Melodies of Handel." "Largo from Bernice" (Handel). 8.49: Clarence Whitehill, baritone—"Bedouin Love Song" (Pinsuti). "Mate of Mine" (Elliot). 8.55: A pianoforte recital by Jean Finlay, L.A.B. 9.10: Mollie Warden soprano—"The First Primrose" (Ed. Grieg). "Chanson de Florian" (Benjamin Godard). 9.17: Melody lectures by Sir Walford Davies—Violin by M. Hayward. "Rondo in B Flat," Part I. "Tunes Built in Wales," Part I. 9.23: Sidonie Goossens, harpist—"Spring Fancies, No. 1" (Hart). "To a Water Lily" (MacDowell). 2.20: John Turner, tenor—"In an Old-fashioned Town" (Squire). "Walk" (d'Hardelot). 1.35: Neapolitan Trio, instrumentalists—"Addio a Napoli," Farewell to Naples. "Forget Me Not." 9.40: Mr. P. H. Nicholls will give an interesting talk on "H.R.H. the Prince of Wales." 9.52: "The Advertiser" general news service. 10.0: Close down.

6WF

10.25: Tune in. 10.30: Special half-hour for the enthusiastic listener. 11.0: Morning service, relayed from the Church of Christ. 12.15: Close down. 3.30: Tune in. 3.35: Musical programme from the studio, including solos and trios by the Radio Trio, comprising, Miss Edna Waterman 'cello, Miss Leah Waterman violin, Mr. Leslie Judson piano. 4.30: Close down. 6.45: Tune in. 6.48: Bedtime stories by Mr. Robert Edmondson, assisted by the Misses Winnie and John Edmondson, 7.15: Music. 7.30: Evening service, relayed from St. George's Cathedral. 8.45: Vocal artists from the studio; Mr. L. Judson, pianist. 10.5: Close down. 10.45: Metre Transmission. Simultaneous broadcast on 104.5 metres of programme given on 1250 metres, commencing at 6.45 p.m.

7ZL

MORNING SESSION.

10.45: Bells from Trinity Church. 11.0: Transmission from Chalmers Presbyterian Church, Bathurst Street, Hobart. 12.30: Close down.

AFTERNOON SESSION.

3.15: Transmission from St. John's Church, New Town. An orchestral recital arranged by Tom Hopkins. 4.30: Close down.

EARLY EVENING SESSION.

6.15: Chorus singing (conductor, Trevor M. Morris) of Children's Special Service (Mission). 6.45: Bertha Southey Bramhall will read a parable for mothers, "Kiss Me Quick."

EVENING SESSION.

7.0: Transmission from St. David's Cathedral, Murray Street, Hobart. 8.25: From the Studio. A programme of sacred and classical music, arranged by James Counsel. 9.45: News session. 9.50: Close down.

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Local Programmes, Monday, June 24

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

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

MORNING SESSION.

Announcer: A. S. Cochrane.

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

MIDDAY SESSION.

Announcer: A. S. Cochrane.

12.0: "Big Ben" and announcements. 12.1: Stock Exchange, first call. 12.3: Official weather forecast, rainfall. 12.5: Summary of news, "Sydney Morning Herald." 12.10: Rugby wireless news. 12.13: A reading. 12.30: Studio music. 1.0: "Big Ben;" weather intelligence. 1.3: "Evening News" midday news service. 1.15: From the Aeolian Hall, Pitt Street—Lunch-hour chamber music recital by the Sverjensky Instrumental Ensemble. 1.50: From the studio, Producers' Distributing Society's report. 1.53: Stock Exchange, second call. 1.44: Popular studio music. 2.0: "Big Ben;" close.

AFTERNOON SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben;" popular music. 3.37: Peggy Armstrong, soprano. 3.45: A reading. 4.10: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.15: Bessie Smith, contralto—(a) "A Blackbird Singing" (Head), (b) "In the Time of Roses" (Richard), (c) "Home, Little Maori, Home" (Hill). 4.22: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.32: From the studio, Peggy Armstrong, soprano. 4.39: A musical item. 4.45: Stock Exchange, third call. 4.47: Bessie Smith, contralto—(a) "Memory Song" (Olliver), (b) "Slumber Boat" (Gaynor), (c) "Daffodil Gold" (Hodgson), (d) "Mighty Like a Rose" (Nevin). 4.54: Studio music. 5.0: "Big Ben;" close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The children's session, conducted by the "Hello Man," letters and stories, music and entertainment. 6.30: Dalgety's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news. 7.0: "Big Ben;" late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats; songs by Robert Scott, tenor—(a) "Cheero" (Finck), (b) three dances, "Nell Gwyn" (German), (c) "The Curtain Falls" (d'Hardelot), (d) "Full Moon" (Woolmer), (e) "Tannhauser" (Wagner).

EVENING SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.

7.40: Popular music.
7.45: Programme announcements.
7.48: A Record recital.
8.0: From King's Cross Theatre—The King's Cross Theatre Orchestra, conducted by Max Saunders.
Joseph Wayne at the Wurlitzer organ.
8.20: From the studio, Hilda Lane and Dorothy Benbow, vocal duets—
(a) "Chalita" (Scherfing), by request
(b) "Absent" (Metcalf), by request.
(c) "Mammy's Lullaby" (Thompson), by request.

8.30: Debate by the Sydney School of Arts Debating Society.

9.0: "Big Ben;" weather report.

9.10: Frank McEachern, basso—
(a) "The Lute Player" (Allitsen).
(b) "Myself when Young" (Lehmann).

9.17: Cyril Monk, violinist—
(a) "Wlegentli" (Brahms, arr. Monk)
(b) "Carnavalesque" (Arthur Benjamin).
(c) "Widmung" (Schumann, arr. Monk).

9.27: Brunton Gibb continues his series of topical talks, "Oh, by the Way."

9.39: Hilda Lane and Dorothy Benbow, vocal duets—
(a) "Lifes Dream is O'er" (Ascher).
(b) "Venetian Boat Song" (Blumenthal).

9.49: Dagmar Roberts, pianist—
(a) "Preambule" Excerpts from
(b) "Arlequin" "Carnival"
(c) "Valse Noble" (Schumann).
(d) "Aveu"
(e) "Cracovienne Fantastique" (Paderewski).

9.59: Frank McEachern, basso—
(a) "Le Cor" (Flegier).
(b) "Nut Brown Ale" (Tennant).

10.6: Cyril Monk, violinist—
(a) "Vision" (Drdla).
(b) "Duet for Violin alone" (Leonard)

10.16: From King's Cross Theatre—The King's Cross Theatre Orchestra, conducted by Max Saunders.

10.28: Late weather and to-morrow's programme.

10.30: National Anthem; close.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.

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

MIDDAY SESSION.

Announcer: A. C. C. Stevens.

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

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.

Accompanist: Kathleen Roe.

3.45: G.P.O. chimes; popular music. 4.0: G.P.O. chimes. Gladys Carlisle, soprano: (a) "The Crying of Water" (Tinton); (b) "Wake Up" (Phillips); (c) "Before You Came" (Wilson). 4.7: Captain Fred Aarons will give a sketch of Sydney 100 years ago. 4.22: Studio music. 4.30: Hazel McPherson, contralto: (a) "Whatever Is Best" (Lohr); (b) "A Slumber Song of the Madonna" (Head). 4.37: Popular items. 4.44: "Sun" news service. 4.50: Gladys Carlisle, soprano: (a) "Magdalen at Michael's Gate" (Lehmann); (b) "A Brown Bird Singing" (Wood). 4.57: "Sun" news service. 5.1: Popular music. 5.6: Hazel McPherson, contralto: (a) "My Dear Soul" (Sanderson); (b) "Two Eyes of Grey" (McGeoch). 5.12: Pianoforte reproduction. 5.22: Racing programme. 5.27: Features of the evening's programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.

5.30: Children's session, conducted by Uncle Bas. Music and entertainment; letters and stories. 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette. Song by Rob-

ert Scott, tenor. (a) "Verschmate Liebe" (Lincke); (b) "Cavalleria Rusticana" (Mascagni); (c) "Camel Bells" (Lohr); (d) "Serenade" (Drigo). 7.7: Australian Mercantile, Land, and Finance Co.'s report; weather report and forecast by courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market report; grain and fodder report ("Sun"); dairy produce report ("Sun"). 7.25: Mr. Pim and Miss Pam in Advertising Talks, Handy Hints, and Nonsense. 7.53: An Ad. Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

8.0: G.P.O. chimes. A concert programme arranged by Madame Emily Marks and Harry Sherlock. Assisting artists: Norman Frances, tenor; G. Armstrong, bass; 2BL Light Orchestra.

8.45: S. H. Bowden will give his topical talk week by week.

9.0: G.P.O. chimes; weather report; studio production of Gounod's "Faust," specially adapted for broadcasting by Madame Emily Marks and Harry Sherlock.

10.0: G.P.O. chimes; Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams.

10.12: From the Studio: Late "Sun" news.

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

10.28: From the Studio: Late weather report.

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

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

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

11.30: National Anthem; close.

2GB

10.0: Music. 10.10: Happiness talk, by A. E. Bennett. 10.20: Music. 10.30: Women's session, by Miss Helen J. Beegling. 11.30: Music. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service, by Mrs. Dorothy Jordan. 2.50: Music. 3.30: Close down. 5.30: Children's session, by Uncle George. 7.0: Music. 7.30: Short talk by Mrs. Jordan. 8.0: Miss Molly Long, contralto. 8.7: Symphony Orchestra. 8.15: Mr. Austin Punch. 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 Molly Long, contralto. 9.23: Mr. Heath Burdock. Shakespearean recital. 9.33: Instrumental trio. 9.40: Mr. Austin Punch. 9.50: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.55: Miss Elsie Peerless, soprano. 10.5: Instrumental music. 10.30: Close down.

2UW

MID-DAY SESSION.

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

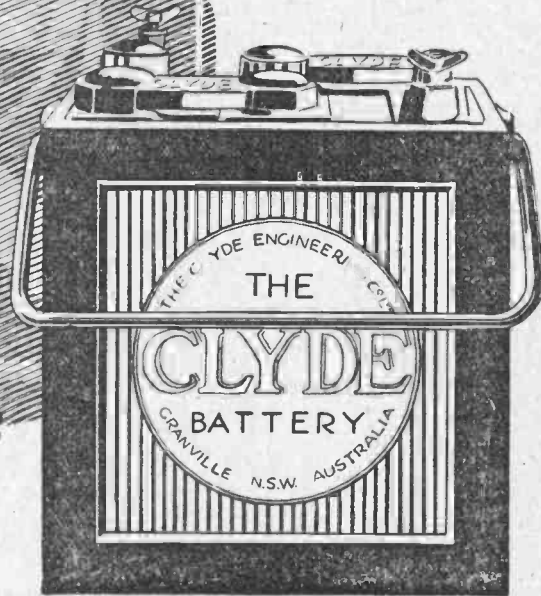
EVENING SESSION.

5.30: Children's Hour, conducted by Uncle Jack. 6.30: Close down. 7.0: G.P.O. clock and chimes; request numbers. 7.35: Radio Talks, Hints, and Advice, by Mr. E. Homfray. 8.0: Music. 9.0: G.P.O. clock and chimes. Comments on Foreign Affairs, by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.

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Interstate Programmes, Monday, June 24

3LO

EARLY MORNING SESSION

7.15 to 8.15: See Friday.

MORNING SESSION

11.0: 3LO's breakfast surprise, rissoles. 11.5: Miss Olga Parker, stories to tell the children, some hero stories. 11.25: Miss Doreen Berry will continue her series of travel talks. "A Corner of Spain," describing Barcelona and Spanish customs. 11.45: Under the auspices of the National Safety Council of Australia, H. J. Book will speak on "Some Aspects of Safety."

MIDDAY NEWS SESSION

12.0: Melbourne Observatory time signal. 12.1: British Official Wireless news from Rugby. Reuter's and the Australian Press Association cables. "Argus" news service. 12.15: Newmarket stock sales; entries for the market for Tuesday, Wednesday, and Thursday by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.30: General programme: weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports: rainfall.

AFTERNOON SESSION

2.15: General programme. 3.2: The Station Orchestra, selection. "L'Enfant Prodiges" (Wormser). 3.14: Wilfrid Thomas, bass, "Ye Twice Ten Hundred Delights" (Purcell). "I Would I Were a King" (Sullivan). 3.21: The Station Orchestra, selection of songs (arr. Roberts). 3.31: Myrtle Walscott, contralto, "Life There, My Love" (MacCunn). "Lament of Isis" (Bantock). 3.37: The Station Orchestra, phantasy, "The Selfish Giant" (Coates). 3.45: Linda Wald, soprano, "One Little Hour" (Evelyn Sharp). "Four Ducks on a Pond" (Needham). 4.0: Joseph Barrile, flute. "Romance" (Langey). 4.0: The Station Orchestra, intermezzo, "Poppies" (Fredk. Hall). "Venetian Reverie" (Fredk. Hall). 4.5: Wilfrid Thomas, bass, "Simon, the Colliere" (Wallace). "My Love is Like a Red, Red Rose" (Scottish). 4.10: The Station Orchestra, "Gondoliers" (Moszkowski). 4.14: Myrtle Walscott, contralto, "Great as the Sea" (Herbert Oliver). "When the Ships Come Home" (Herbert Oliver). 4.21: Anderson, clarinet, "Ugo Conte di Parigi" (Donizetti). "The Station Orchestra, fantase "Haydn" (arr. Urbach). 4.50: News service; Stock Exchange information; acceptances and barrier positions for the Melbourne Hunt Club races at Sandown Park. 5.0: Close down.

CHILDREN'S HOUR

5.45: "Billy Bunny" is starting with the stories again, just to please the little ones whose birthdays it isn't. 6.15: Now, birthday greetings for those whose birthdays it is. 6.45: Simple strains for small persons. 6.50: Captain Donald MacLean will continue his series of adventure stories.

EVENING SESSION

7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.45: Birthday greetings. 7.45: "Out of the Past." 7.46: Under the auspices of the Department of Agriculture, A. J. Gill, senior herd tester, will speak on "Young Farmers' Clubs" 8.0: "A Maker of Young Men."

NIGHT SESSION

Master of ceremonies, Robt. H. Spaven.
8.1: Programme announcements.
8.2: Hoffman's Dance Band.
Waltz, "Supplication."
8.10: Syd. Ekton, tenor.
"My Queen" (Blumenthal).
8.13: Hoffman's Dance Band.
"Society."
8.21: Old-time choruses, Graham Burgin and the Boys of the Village. Mrs. Campbell at the piano.
8.27: Hoffman's Dance Band.
Quadrilles, "Welcome Home."
8.45: Linda Wald, soprano.
"Love's Young Dream" (Thomas Moore).
8.48: Hoffman's Dance Band.
Valette, "Mellow Cello."
8.55: Jack Barty, comedian.
"Chestnuts."
8.58: Hoffman's Dance Band.
Schottische, "Handy Jane."
9.5: Old-time choruses, Graham Burgin and the Boys of the Village.
9.11: Hoffman's Dance Band.
Lancers, "Cosmopolitan."
9.29: Syd. Ekton, tenor.
"Ben Bolt."
9.32: Hoffman's Dance Band.
Waltz, "Sales of Hoffmann."
9.40: Announcements and greetings to all "Old-timers."
9.45: Linda Wald, soprano.
"Mab Lindy Lee" (Strickland).
9.48: Old-time choruses, Graham Burgin and the Boys of the Village.
9.54: Hoffman's Dance Band.
Albert's "Popular Medley."
10.12: News service; British Official Wireless news; from Rugby; Reuter's and the Australian Press Association cables; "Argus" news service; announcements.
10.22: Hoffman's Dance Band.
Waltz, "The Merry Widow."
10.30: Jack Barty, comedian.
More chestnuts.
10.33: Hoffman's Dance Band.
Polka, "Polka Pops."
10.39: Linda Wald, soprano.
"Villa" from "The Merry Widow" (Lehar).
10.42: Hoffman's Dance Band.
The Royal Irish.
11.1: The Radio Revelers, under the baton of Ern. Hall; vocal refrains by Hugh Huxham.
"Shivering" (Duddy).
"Promise Me" (Van Boeth).
"Read for the River" (Moret).
"My Humour Weather Put" (Piantadosi).
"What'll You Do?" (Cohn).
Selected.
11.30: God Save the King.

3AR

MORNING NEWS SESSION

10.0 to 10.58: See Friday.

MORNING MUSICAL SESSION

11.0: Recordings.
12.20: British Official Wireless News: announcements.
12.30: Close down.

AFTERNOON SESSION

3.0: Sweet Singers. 3.30: Felix Weingartner conducting the Royal Philharmonic Orchestra, "Symphony No. 6 in F Major" (Beethoven); "The Pastoral Symphony." 4.10: Ballads. 4.30: Close down.

EVENING SESSION

6.0: Strains from the Serephina.
NEWS SESSION
7.10: News service; announcements; acceptances and barrier positions for the Melbourne Hunt Club races to be held at Sandown Park on Wednesday, 26th instant. 7.20: More recordings.

NIGHT SESSION

8.0, E. C. H. Taylor will speak on "School Life and School Sport."
8.15: Under the auspices of the League of Nations
Tristan Buesst will speak on—
"The Present Relation of Great Britain to the United States of America."
8.30: Miss Kathleen Lascelles will speak on—
"The Art of Dancing."
8.29: Did You Know That.
8.40: The Station Orchestra—
"Allegro Moderato" (Schubert).
8.50: Wilfrid Thomas, bass—
"The Winter Journey Cycle."
"Good-Night" (Schubert).
"The Raven" (Schubert).
"The Hurdy Gurdy Man" (Schubert).
"Courage" (Schubert).
9.1: The Station Orchestra—
"Fantasia" (Schubert).
9.10: The Royal Victorian Liedertafel, transmission from the Upper Hall, Athenaeum—
Part Songs:
"The Wanderer" (Elgar).
Unaccompanied Part Songs:
"O Sanctissima" (Traditional).
"O Peaceful Night" (German).
Cavalier Tunes:
"Boot, Saddle, to Horse, and Away."
"Marching Along."
"Give a Rouse."
Part Songs:
"Night in the Forest" (Schubert).
"Gondoliers' Serenade" (Schubert).
March Song:
"Zut Zut" (Elgar).
9.40: The Jedral Trio Alva Hattenbach, violin; Edna Hattenbach, cello; John Simons, piano—
Trio:
"Elegie from D Minor Trio" (Arensky).
"Scherzo" (Arensky).
Violin:
"Waltz in A" (Brahms).
"Tambourin" (Remeau-Kreiser).
Trio:
"Serenade" (Schubert).
"The Palms" (Faure).
10.10: Wilfrid Thomas, bass—
"Hear Me, Ye Winds and Waves" (Handel).
"Five Eyes" (Armstrong Gibbs).
10.14: The Station Orchestra—
"Ballet Suite—Henry VIII" (Saint-Saens).
10.20: News service; announcements.
10.30: God Save the King.

4QG
For early morning, morning, mid-day, afternoon, and early evening sessions, see Friday.
7.45: Lecture, "Talk on Pig Raising," by Mr. E. J. Shelton, Senior Instructor in Pig Raising.
NIGHT SESSION
8.0: The Studio Orchestra—
Overture, "Romeo and Juliet" (Bellini).
Blanche Currow (soprano)—
"Pass Everyman" (Sanderson).
Tom Muller (elocutionist)—
"The 11.69 Express" (Williams).
Mrs. W. Wilkinson (pianist)—
"La Cathessey."
The Studio Orchestra—
Valse, "Rose of Youth" (Maggs).
Mrs. S. M. Fitzgerald (contralto)—
"The Flight of Ages" (Wetherley).
B. F. Kelly (flautist)—
"La Delicatess" (G. C. Percival).
Blanche Currow (soprano)—
"So Little Time" (Lohr).
The Studio Orchestra—
"Serenade" (Toselli-Schmid).
Dulcie Dunlop (elocutionist)—
"Burglars."
Mrs. W. Wilkinson (pianist)—
"Romance" (Salmon).
The Studio Orchestra—
"Hungarian Rag" (Lenzberg).
Tom Muller (elocutionist)—
"I Slept, I Looked, I Listened."
9.0: Metropolitan Weather Forecast.
B. F. Kelly (flautist)—
"Piccolato Polka" (from "Sylvia") (Delibes).
"La Serenata" (Braga).
Mrs. S. M. Fitzgerald (contralto)—
"Absent."
The Studio Orchestra—
Air de Ballet, "Language of the Roses" (Kretschmer).
Dulcie Dunlop (elocutionist)—
"Flirtation."

The Studio Orchestra—
March, "The Dictator" (Holmes).
9.30: Federal Band Recital—
March, "Dunroon" (Code).
Suite, "Senta" (Raymond).
Selection, "The Lightening Switch" (Alford).
Fox Trot, "Let a Smile be Your Umbrella" (Pain).
Song Waltz, "Was it a Dream" (Castow).
Hymn, "Deep Harmony" (Parke).
10.0: Weather Information.
Close down.

5CL

MORNING SESSION.

11.0 to 2.0: See Friday.

AFTERNOON SESSION.

3.0: Chimes. 3.1: Programme review and announcements. 3.10: Mollie Warden, soprano—"A Red, Red Rose" (Schumann). "Moonlight" (Schumann); His Master's Voice in moments merry and musical; Arthur Douglas, Scotch comedian, will entertain you; His Master's Voice in moments merry and musical; Mollie Warden, soprano—"When at Morn" (Schumann). "A Robin Sing" (Ed. McDowell); Arthur Douglas, Scotch comedian, will entertain you again. 4.45: An educational talk on "Refrigeration—South Africa's Modern Methods of Fruit Refrigeration." 4.55: Stock Exchange. 5.0: Close down.

EVENING SESSION.

6.0: Chimes. 6.1: Children's happy moments. 6.30: Dinner music. 7.0: Chimes. 7.1: Senior Birthday League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: Under the auspices of the South Australian Agricultural Department, Mr. A. H. Coddington (Wool Inspector School of Mines) will speak. 7.30: 5CL Twinkler Boys' Club.

NIGHT SESSION.

8.0: Chimes.
8.10: Jean Finlay pianist—
"Prelude" (Schutt).
Mollie Warden, soprano—
"An Old Romance" (Guy d'Hardelot).
"Morning, O, So Early" (Scott Gatty).
Oly Oakley, banjoist—
"Oakleigh Quickstep."
"Whistling Rufus."
Arthur Douglas, Scotch comedian, will entertain you.
Jean Finlay, pianist—
"Rhapsodie, No. 2" (Liszt).
Mollie Warden, soprano—
"Mignon" (Guy d'Hardelot).
"The Trou" (Franz Schubert).
Oly Oakley, banjoist—
"Camptown Carnival."
"Queen of the Burlesque."
Arthur Douglas, Scotch comedian, will entertain you.
9.1: Meteorological information, including Semaphore tides.
9.2: Overseas grain report.
9.3: An old-time dance night from 3LO, Melbourne.
9.30: General news service.
British official wireless news.
Meteorological information.
Results of championship billiards trials.
Announcements.
9.45: Continuation of old-time dance night.
11.0: Close down.

6WF

10.0: Tune in; gramophone and phonograph records from the studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.3: Panatrophe hour, relayed from Lyric House, Perth. 2.0: Close down.
3.30: Tune in. 3.35: Musical programme, relayed from the Carlton Cafe; vocal items from the studio. 4.30: Close down.
6.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Radio Trio. 7.30: Commercial and general information. 7.45: Talk on "Animals," by Lieut.-Colonel Le Souef, Director, Zoological Gardens, South Perth. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Concert by the R.S.L. Band, conducted by Mr. George Mellor. 8.20: Talk, "Mystic Java," by Mr. J. Cowie, of the Orient Touring Company. 8.50: Late news items, by courtesy of the "Daily News" Newspaper Co. Ltd.; station announcements; ships within range announcement; late weather bulletin. 9.5: Band concert 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

MIDDAY SESSION

11.30 to 1.30: See Friday.

AFTERNOON SESSION

3.0: Chimes. 3.4: Weather information. 4.15: "Aunt Edna" on "Home Decorations." 4.30: Close down.

EARLY EVENING SESSION

6.15 to 7.10: See Friday.

EVENING SESSION.

7.30: Under the auspices of the Tasmanian University, Geo. Limb will speak on "Negro Spirituals." 7.45: Geo. Collis will speak on "Physical Culture." 8.0: Chimes. 8.1: Fifty Years Ago To-day. 8.6: Mile, Columbia broadcasts. 8.15: A concert programme arranged by Madame Helen George and Monsieur Sonora. Mid-winter Night Concert. Memories of the Past. 9.0: "Ghosts" "Barbara Storey" will tell a ghost story. 9.15: Concert programme (continued). 9.45: News session. 10.0: Chimes. 10.1: Close down.

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Local Programmes, Tuesday, June 25

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.
7.0: "Big Ben" and announcements. 7.2: Official weather forecast, rainfall, river reports, temperature, astronomical memoranda. 7.7: "Sydney Morning Herald" summary. 7.10: Shipping intelligence; mail services. 7.15: Studio music. 7.25: Investment market, mining sharemarkets, metal quotations, wool sales, breadstuffs markets; inter-State markets, produce markets. 7.40: Studio music. 8.0: "Big Ben." Close.

MORNING SESSION.

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

MIDDAY SESSION.

Announcer: A. S. Cochrane.
Note: Race results from Menangle will be given as received. 12.0: "Big Ben" and announcements. 12.2: Stock Exchange, first call. 12.3: Official weather forecast, rainfall. 12.5: Summary of news, "Sydney Morning Herald." 12.10: Rugby Wireless news. 12.13: A reading. 12.30: Studio music. 1.0: "Big Ben." Weather intelligence. 1.3: "Evening News" midday news service. Producers' Distributing Society's report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular Studio music. 2.0: "Big Ben" Close.

AFTERNOON SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.
2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben." Popular music. 3.37: Florence Yates, contralto. 3.45: A reading. 4.10: Popular music. 4.23: Florence Yates, contralto. 4.30: J. G. Lockley will speak on "Redfern in the Old Days." 4.45: Stock Exchange, third call. 4.47: Studio items. 5.0: "Big Ben." Close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.
5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man" assisted by Aunt Eily. Letters and stories. Music and entertainment. 6.30: Dalgety's market reports (wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby Wireless news. 6.55: Late sporting news. 7.0: "Big Ben." Late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats. Song by Robert Scott, tenor—(a) "Melodie" (Tschalkowsky), (b) "Gipsy Love" (Lehar), (c) "Liebestraum" (Von Blon), (d) "The Londonderry Air" (arr. Kreisler).

EVENING SESSION.

Announcer: Laurence Halbert.
Accompanist: Ewart Chapple.
7.40: Popular music.
7.45: Programme announcements.
7.48: A Record Recital.
8.0: "Big Ben." The Westmead Boys' Home Band—
(a) "Gems of Italian Opera" (Rimmer).
(b) "Lasses and Lads."
8.20: Vera Tasma, soprano.
8.27: Zena and James Kendall in a sketch.
8.30: The Westmead Boys' Home Band—
"Musical Switch" (Alford).
8.54: R. A. Bartleman, baritone—
(a) "A Riding Song" (Drakeford).
(b) "The Crown" (Rae).
9.1: Weather report.
9.2: The Westmead Boys' Home Band—
"Maritana" (Wallace).
9.17: Zena and James Kendall, in a sketch.
9.29: Vera Tasma, soprano.
9.36: The Westmead Boys' Home Band—
(a) "Recollections of Ireland" (Rimmer).
(b) "The Desert Song."
9.51: R. A. Bartleman, baritone—
(a) "Lasses of Scotland" (Old Melody).
(b) "Time to Go" (Sanderson).
9.58: From the Palais Royal: Dance music by Billy Romaine's Orchestra. A description of the Movie Ball.

10.10: From the Studio: Late "Evening News" service. 10.15: From the Palais Royal: Dance music by Billy Romaine's Orchestra.
10.28: From the Studio: Late weather report.
10.30: From the Palais Royal: Dance music by Billy Romaine's Orchestra.
10.57: From the Studio: To-morrow's programme.
10.59: From the Palais Royal: Dance music by Billy Romaine's Orchestra.
11.30: National Anthem. Close.

2BL

MORNING SESSION.

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

MIDDAY SESSION.

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

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.
Accompanist: Kathleen Roe.
3.45: G.P.O. chimes. Popular music. 4.0: G.P.O. chimes. Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams 4.15: From the Studio: Frederick Todd, basso. 4.22: A studio item. 4.25: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.35: From the Studio: Esther Gunther, soprano—(a) "Mellsande in the Wood" (Goetz), (b) "April is a Lady" (Phillips). 4.42: Popular music. 4.50: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 5.0: G.P.O. chimes. Frederick Todd, basso 5.7: Popular items. 5.12: Esther Gunton, soprano—(a) "Ma Curly Headed Babby" (Clutsam), (b) "I Love the Moon" (Reubens). 5.19: Popular music. 5.21: Producers' Distributing Society's poultry report. 5.24: Racing resume. 5.27: Features of the evening programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.
5.30: Children's Session, conducted by Uncle Bas. Music and entertainment. Letters and stories. 6.0: Mr. Norman talks to the "Bigger Boys." 6.45: "Sun" news and late sporting. 6.55: The 2BL Dinner Quartette—songs by Robert Scott, tenor—(a) "La Patronille de Nui" (Martelli), (b) "Marinah" (Carton), (c) "The Gondoliers" (Sullivan), (d) Meditation, "Thais" (Massenet). 7.7: Australian Mercantile, Land, and Finance Co.'s report. Weather report and forecast, by courtesy of Government Meteorologist. Producers' Distributing Society's fruit and vegetable market report. Grain and fodder report. ("Sun"). Dairy produce report ("Sun"). 7.25: Mr. Pim and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Ad. Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.
Accompanist: G. Vern Barnett.
8.0: G.P.O. chimes. Cyril Monk, violinist. 8.10: Leonore Gotsch, soprano. 8.17: Kathleen Roe, pianoforte solos. 8.27: Charles Nicis, tenor—
(a) "Leidermann" (Schubert).
(b) "Serenata" (Toselli).
8.34: Cyril Monk, violinist;
8.44: Vera Keogh, in "Memories of Famous Plays."

8.59: Weather report.
9.0: G.P.O. chimes. Leonore Gotsch, soprano.
9.7: Kathleen Roe, pianoforte solos.
9.17: Charles Nicis, tenor—
(a) Aria from Opera, "Eugen Onegin" (Tschalkowsky).
(b) "At the Ball" (Tschalkowsky).
9.24: Foreword to the latter half of our programme.
9.25: Wendling and Molloy, vocal and instrumental.
9.35: Graham and Manning, entertainers.
9.45: Frank Ryan, entertainer.
9.55: Wendling and Molloy, vocal and instrumental.
10.5: Graham and Manning, entertainers.
10.15: Frank Ryan, entertainer.
10.25: Late weather report. To-morrow's programme.
10.30: National Anthem. Close.

2GB

10.0: Music. 10.10: Happiness talk, by A. E. Bennett. 10.20: Music. 10.30: Women's session, by Miss Helen J. Beegling. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service, by Mrs. Dorothy Jordan. 2.50: Movie Know All. 3.0: Address. 3.30: Close down. 5.30: Children's session, by Uncle George. 7.0: Music. 7.30: Talk from the Radio Service Department by Mr. Stan Crittenden. 8.0: Miss Florence Gordon, contralto. 8.7: Band music. 8.15: Mr. William Green, tenor. 8.22: Instrumental quartette. 8.30: Humorous interlude, by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Hilda Boyle, soprano. 8.45: Symphony Orchestra. 8.50: Miss Florence Gordon, contralto. 9.0: Weather report. 9.3: Address. 9.15: Band music. 9.25: Mr. William Green, tenor. 9.35: Instrumental quartette. 9.45: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.50: Miss Hilda Boyle, soprano. 10.0: Instrumental music. 10.30: Close down.

2UW

MID-DAY SESSION.

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

EVENING SESSION.

5.30: Children's Hour, conducted by Uncle Jack. 6.30: Close down. 7.0: G.P.O. clock and chimes; request numbers. 8.0: Music. 9.0: G.P.O. clock and chimes. Comments on Foreign Affairs, by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.

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THE MASTER VALVE

Interstate Programmes, Tuesday, June 25

3LO

EARLY MORNING SESSION

7.15 to 8.15: See Friday.

MORNING SESSION

11.0: 3LO's luncheon dish recipe, toad in a hole.
11.5: Miss E. Noble will speak on "Gas Cookery."
11.25: Mrs. Dorothy Silk will speak on "Homemcrafts."
11.45: Miss Rose Bawn will continue her series, "Recollections of Rolf Boldrewood."

MIDDAY NEWS SESSION

12.0: Melbourne Observatory time signal. 12.1: British Official Wireless news, from Rugby; Reuter's and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; official report of the sheep market by the Associated Stock and Station Agents, Bourke Street, Melbourne.

LUNCHEON MUSIC

12.20: The Station Orchestra, overture, "Princess Jaune" (Saint-Saens). 12.27: Wilfrid Thomas, bass, "The Victor" (Kahn). "When the King Went Forth" (Keonemann). 12.34: Stock Exchange information; metal prices, received by the Australian Mines and Metals Association from the London Stock Exchange this day. 12.40: The Station Orchestra, selection, "Philemon and Baucis" (Gounod). 12.52: Linda Wald, soprano, "Tes Yeux" (Rene Rabey). "Romance" (Debussy). 1.0: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, Tasmania; ocean forecasts; river reports; rainfall. 1.8: The Station Orchestra, ballet, "Henry VIII." (Saint-Saens). 1.18: Wilfrid Thomas, bass, "Silent Noon" (Vaughan Williams). "Passing By" (Purcell). 1.23: The Station Orchestra, "Atonement" (Ligeti), parts I and II (Hadley). 1.35: Linda Wald, soprano, "Songs My Mother Taught Me" (Dvorak). "Caprice" (Purcell). 1.42: Announcements. 1.45: Close down.

AFTERNOON SESSION

2.15: The Radio Revellers, "Dada" (Dore). "Oh, Is She Mad at Me" (Friend). "High Upon a Hilltop" (Baer). "When Love Comes Sicking" (Rapee). "Roll Up the Carpets" (Nixon). 2.30: Jack Barty, comedian. "Funiosities." 2.37: The Radio Revellers, "Today, To-morrow, For Ever" (Nichols). "Shinaniki Da" (Carlton). "Who Knows?" (Dixon). "Lady of the Morning" (Barton). "I'm Crazy Over You" (Lewis). 2.50: Gwen Hart, soprano, "Lackaday" (Crampton). "Love Sends a Little Gift of Roses" (Openshaw). 2.57: The Radio Revellers, "Old Man Sunshine" (Dixon). "Wipin' the Pan" (Baer). "Guess Who's in Town" (Razall). "That Stolen Melody" (Fisher). "Lenora" (Gilbert). 3.10: Tom Masters, tenor, "Ah, Tho' the Silver Moon Were Mine" (Lohr). "The Star" (Rogers). 3.17: The Radio Revellers, "Japanese Mammy" (Donaldson). "There's a Ricketty Ricketty Shack" (Tuck). "That's What You Mean to Me" (Davis). "All By Yourself in the Moonlight" (Wallis). "She's Got a Great Big Army of Friends" (Nelson). 3.32: Gwen Hart, soprano, "Down in the Forest" (Landon Ronald), by request. 3.35: The Radio Revellers, "Querida" (Simon). "Falling in Love With You" (Mayne). "I Love to Dunk a Hunk of Spongecake" (Castill). "Sweet Sue, Just You" (Harris). "Roses of Yesterday" (Berlin). 3.50: Tom Masters, tenor, "The Old Sweet Song" (Kreiser). "The Little Hills" (Gleason). 3.57: The Radio Revellers, "The Voice of the Southland" (Austin). "My Heaven is Home" (Collin). "Pickin' Cotton" (Henderson). "I'm on the Crest of a Wave" (Henderson). "Mother, I Still Have You" (Jolson). 4.12: Gwen Hart, soprano, "Orace" (Carroll). 4.15: The Radio Revellers, "Out of the Dawn" (Donaldson). "Paradise and You" (Pacay). "The Prune Song" (Crumit). "Sincerely, I Do" (Davis). "Sally Rose" (Friend). 4.30: Jack Barty, comedian, begging the blues. 4.37: The Radio Revellers, "It All Comes Out in the Wash" (Trent). "Rio Rita" (Tierney). "The Kink a Jou" (Tierney). "My Mother's Eyes" (Baer). Selected. 4.50: News service; Stock Exchange information. 5.0: Close down.

5.45: "Bobby Bluegum" answers to letters and birthday greetings. 6.15: "Little Miss Kookaburra" has a story for the little ones. 6.30: "Bobby Bluegum," "Ector and Orace are at it again. 6.50: Captain Donald Maclean will continue his series of adventure stories for boys.

EVENING SESSION

7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.43: Birthday greetings. 7.45: The Order of the Star of India was instituted on June 25, 1861. 7.46: Under the auspices of the University of Melbourne Extension Board, Wm. C. Groves, B.A. Dip.Ed., lecturer, will speak on "Mother Earth: Geography and Philosophy." 8.0: A Maker of History.

NIGHT SESSION

8.1: Programme announcements.
8.2: The Station Orchestra.
8.3: Selection, "Tannhauser" (Wagner).
8.12: Wilfrid Thomas, bass.
"Reuben Ranzo." "Shenandoah," "Whisky Johnny" (traditional songs).
8.20: The Station Orchestra.
8.25: Selection, "Lohengrin" (Wagner).
8.30: Linda Wald, soprano.
"Elizabeth's Prayer," from "Tannhauser" (Wagner).
8.35: Tasma Tierney, cello.
"Romance d'Automne" (Fredk. Hall).
8.40: Wilfrid Thomas, bass.
"Serenade" (Strauss).
"The Island" (Rachmaninoff).
8.46: The Station Orchestra.
"Scenes Poetiques" (Godard).
8.53: J. Bowlett Ross.
"The Apparition at the White Gate"
8.18: Transmission from Auburn Methodist Church. Organ, "Andante in G" (Wesley). J. Sutton Crow. Violin, "Grave" (Fr. Bach-Kreisler), Hermia Barton.

Soprano, "O Divine Redeemer" (Gounod), Stella Dredge.
Organ, "Study" (Baptiste Calkin), J. Sutton Crow.
Violin, "Meditation" (Massenet), Hermia Barton
Soprano, "Am Meer" (Schubert), Stella Dredge.
Organ, "Andante" in D Flat" (Chauvet-Gull-mant), J. Sutton Crow.
Violin, "Gavotte" (Rameau), Hermia Barton
Soprano, "Slave Song" (Del Riego), Stella Dredge
Organ, "Evensong" (Easthope Martin), J. Sutton Crow.

10.15: Linda Wald, soprano.
"Water Boy" (Robinson).
"I Heard De Angels Singin'" (Herbert).
10.25: The Station Orchestra.
Selection, "Oh, Frank Lady" (Kern).
10.36: Ern. Hall's Radio Revellers, with Hugh Huxham.
"Stars Are the Windows of Heaven" (Mallé).
"Only a Rose" (Fr. Agér).
"That's Her Now" (Ager).
10.48: Jack Hocking, "The Sighing Serenader."
Ballads of the moment.
10.53: Ern. Hall's Radio Revellers.
"Song of the Jagabonds" (Prinli).
"Japanese" (Lennans).
"Constantinople" (Carlton).
11.2: Jack Hocking, "The Sighing Serenader."
More modern numbers.
11.10: Ern. Hall's Radio Revellers.
"Minneltonka" (Frank Johnsonstone).
"Fireworks" (Williams).
"Roses of Yesterday" (Berlin).
"Jo-Anne" (Ward).
"Gypsy" (Gilbert).
Selected.
11.30: God Save the King.

3AR

MORNING NEWS SESSION

10.0 to 10.59: See Friday.

MORNING MUSICAL SESSION

11.0: Recordings. 11.30: The Jedral Trio—Trio. "Finale from D Minor Trio" (Mendelssohn); piano solo. "Allemande" (Rameau). "Rigaudon and Musette" (Rameau). Trio, "Belerude orientale" (Rimsky-Korsakov). "Valse Gentile" (Nevin). "Mazurka Russe" (Glinka). 12.20: British official wireless news; announcements. 12.30: Close down.

AFTERNOON SESSION

3.0: The Strad Trio (Cecil Parkes violin, Myra Monague piano, Frank Johnsonstone cello)—Trio. "Op. 49 D Minor" (Mendelssohn). Molto Allegro ed Agitato. Andante con moto, Scherzo. 3.20: Beautiful ballads. 3.40: Cecil Parkes, violin—"Morceau de Salon" (Bowden). "Gavotte" (Gossec). "Ober-tass" (Wienlawski). 3.50: Beautiful ballads. 4.0: Frank Johnsonstone, cello—"Aria from Nina" (Pergolesi). "Scherzo" (Van Goens). 4.6: Beautiful ballads. 4.20: The Strad Trio—"Drink to me Only" (Arr. Cecil Parkes). "Orientale" (Cui-Parkes). "Menuetto" (Bocherini-Parkes). 4.30: Close down.

EVENING SESSION

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

NIGHT SESSION

8.0: Under the auspices of the Royal Automobile Club of Victoria, C. J. P. Hodges will speak on "Trivling Art of a Foreign Part 3."
8.15: Charles Nuttall will speak on "Scrap the Rubbish."
8.28: Did you know that?
8.30: 57th Battalion Band—
March, "Naworth Castle" (Ord Hume).
Intermezzo, "Love Bell" (Darel).
8.40: Herold Kyng, basso cantante—
Selections from his repertoire
8.47: 57th Battalion Band—
Waltz, "Vill's of the Way" (Bourne).
March, "Men of To-day" (Savory).
9.0: Herold Kyng, basso cantante—
Selections from his repertoire
9.7: George Findlay, piano—
"Minuetto from Sonata E Flat" (Mozart).
"Grillon" (Schumann).
"Warum" (Schumann).
"Ende von lied" (End of the Song) (Schumann).
"Waltz in G Sharp Minor" (Chopin).
"Arabesque" (George Findlay).
9.27: 57th Battalion Band
Fantasia, "Fair Rowena" (Rimmer).
9.37: Jack Barty, comedian—
"Funiosities."
9.44: 57th Battalion Band
Waltz, "Fleurs d'Australe" (Lastré).
10.7: 57th Battalion Band—
Descriptive sketch, "Down on the Mississippi" (Rimmer).
March, "Steadfast and True" (Teeke).
10.20: News service; announcements.
10.30: God Save the King.

4QG

For early morning, morning, midday, afternoon, and early evening sessions, see Friday.
8.5 p.m. Lecture by An Astronomy Talk—Mid-winter, by A. K. Chapman, 7.48: Lecture by "Talk on Sheep and Wool," by Mr. J. Carey, tenor instructor in sheep and wool.

NIGHT SESSION

8.0: Eileen Crow (Soprano)—
"Break Dawn of Delight" (Gerald Maundrell).
E. S. Madgett (Tenor) (Cadman).
Een Cloirec (Tenor) (Cadman).
"A Hunting Song" (Mayhew).
"Slumber On" (Jackson).
Edith Barry.
Honolulu Serenaders—
Hawalian music.

Ruby Massey (Elocutionist)—
Monologue, "Sunshine Annie."
L. Collings (Bass)—
"Farewell in the Desert" (Allan).
"Echo" (Somerset).
Honolulu Serenaders—
Selected Hawaiian Numbers.
9.0: Metropolitan weather forecast.
Mrs. Phil Stewart (Mezzo Soprano)—
"Thoughts Have Wings" (Lehmann).
"For You a Rose—for me a Memory" (Nichols).

(Ruby Massey (Elocutionist)—
Humorous Monologue—"Roadside Gossip."
N. Quinn (Descriptive Vocalist)—
In items specially chosen for broadcasting.
Mrs. Percy Knott (Soprano)—
"The Dance on the Lawn" (Monty Phillips).
P.H.D. "My Violet" (Jack Thompson)
Honolulu Serenaders—
Honolulu Melodies.
A. N. Falk (Baritone)—
"Twas in a Land" (Chaminade).
"Didst Thou But Know" (Ellen Wright).

10.0: Weather information; close down.

5CL

MORNING SESSION

11.0 to 2.0: See Friday.

AFTERNOON SESSION

3.0 to 5.0: General programme.

EVENING SESSION

6.0: Chimes. 6.11: Birthday greetings, correspondence, songs and stories by "The Wattle Lady." 6.30: Dinner Music. 6.45: 5CL's sporting service, supplied by "Silvius." 7.0: Chimes. 7.1: Senior Birthday League Greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: Under the auspices of the Workers' Educational Association, Dr. Eleanor A. Allen will speak. 7.25: Mr. R. C. Bald, Ph.D. (Lecturer in English at Adelaide University) will talk to you. 7.40: Dr. H. Basedow in another of his interesting Australian talks.

NIGHT SESSION

8.0: Chimes.
8.10: A presentation of the famous opera, "La Traviata." Characters: Violetta, Marcello Berardi; Alfredo, Dino Pelardi; Germont, Malcolm Jones; Marquese Gastone, Barone Doctore, Bert Woolley; Annina Flora, Ann Young, and chorus.
10.15: General news service, British Official wireless news; meteorological information; results of championship billiards trials.
10.20: 5CL's sporting service, supplied by "Silvius."
10.30: Modern Dance Music.
11.0: Close down.

6WF

10.0: Tune in; gramophone and phonograph records from the studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: First weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.3: Luncheon music, relayed from the Primrose Cafe. 2.0: Close down.

3.30: Tune in. 3.35: Musical programme from the studio; heroic solos by Miss Audrey; violin solos by Mr. Frank Romaine. 4.30: Close down.
6.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Radio Trio. 7.30: Commercial and general information. 7.45: Talk by Dr. E. B. Adams. 8.0: Time signal. 8.1: First weather bulletin, supplied by the Meteorological Bureau of West Australia. 8.3: A relay from Messrs Morris Bros. music warehouse, of a musical programme. 8.50: Late news items, by courtesy of the "Daily News." 9.0: Mid.; station announcements; ships within range announcement; late weather bulletin. 9.5: Programme continued from Messrs Morris Bros. 10.30: Close down.
10.4: 5 Metre Transmission.
Simultaneous broadcast on 104.5 metres of programme given on 1250 metres, commencing at 6.45 p.m.

7ZL

EARLY EVENING SESSION

6.15: Selections. 6.30: "The Story Lady" 6.45: Selections. 7.0: Answers to letters and birthday greetings by "Uncle David" and "The Story Lady." 7.5: Selections. 7.15: News session.

EVENING SESSION

7.30: Under the auspices of the Department of Agriculture, R. B. Steele, District Agricultural Organizer, will speak on "Shelter Belts." 7.45: W. E. Fuller will speak on "Literary Lapses and Library Lists." 8.0: Chimes. 8.6: Musical selections. 8.15: A programme of dance music by Reg. Jones and his orchestra (interspersed with Gramophone records). Reg. Jones and his orchestra, "I'm Sorry, Sally" (Kahn). "I'm Homesom" in the Moonlight" (De Siva). "Rose of Flanders" (O'Hagan). Seger Ellis (baritone). "Was It a Dream?" (Coslow). Reg. Jones and his orchestra, "There's a Rainbow Round My Shoulder." "Out of the Dawn" (Donaldson). "Be-loved" (Kahn). Duet, Geo. Rose (baritone), Gerald Adams (tenor). "Plenty Sunshine" (De Siva). "Send for Me" (Bibe). Reg. Jones and his orchestra, "One Alone" (Romberg). "Glad Rag Doll" (Agar). "I Fell Head Over Heels in Love." Belle Forbes (soprano). "Mighty Lak" a Rose (Nevin). "Bonnie Sweet Bessie" (Gilbert). Reg. Jones and his orchestra. "Promise Me" (Cooth). "I Loved You Then" (Mendoza). "Me and the Map in the Moon" (Monaco). Seger Ellis (baritone). "Sally of My Dreams" (Kunze). "Sonny Boy" (Jolson). Reg. Jones and his orchestra. "Mother, I Still Love You" (Jolson). "Blackbirds are Bluebirds Now." "Desert Song" (Romberg). De Reske Singers. "Adoration" (Bethoven). 9.45: News session. 10.0: Chimes. 10.1: God Save the King.



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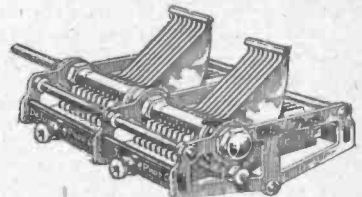
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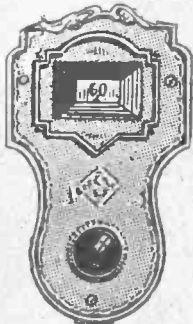


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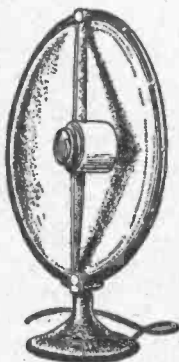
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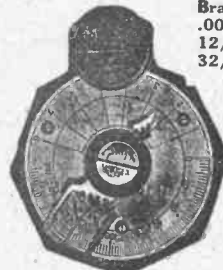
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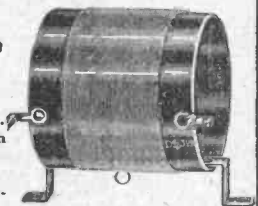
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Local Programmes, Wednesday, June 26

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

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

MORNING SESSION.

Announcer: A. S. Cochrane.

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

MIDDAY SESSION.

Announcer: A. S. Cochrane.

Note: Race results from Rosebery will be given. 12.0: "Big Ben" and announcements. 12.1: Stock Exchange, first call. 12.3: Official weather forecast, rainfall. 12.5: Summary of news, "Sydney Morning Herald." 12.10: Rugby wireless news. 12.13: A Reading. 12.30: Studio music. 1.0: "Big Ben"; weather intelligence. 1.3: "Evening News" midday news service; Producers' Distributing Society's report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular studio music. 2.0: "Big Ben"; close.

AFTERNOON SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A record recital. 3.0: "Big Ben"; popular music. 3.35: James Walker, pianist; (a) "Sonata in C Major" (Scarlatti); (b) "Prelude and Fugue in B Flat Major," No. 21, Vol. 1 (Bach). 3.45: A Reading. 4.10: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.15: Studio items. 4.20: James Walker, pianist; "First Movement from Sonata in C Major," Op. 53 (Beethoven). 4.30: O. S. Yarwood will speak on "Batman and the Bushrangers of Tasmania." 4.45: Stock Exchange, third call. 4.47: Romano's Cafe Dance orchestra, conducted by Bennie Abrahams. 5.0: "Big Ben"; close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man," assisted by Uncle Ted and "Sandy." Letters and stories. Music and entertainment. 6.30: Dalgety's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby wireless news. 6.55: Late sporting news. 7.0: "Big Ben"; late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats. Songs by Robert Scott, tenor. (a) "Marche Militaire" (Schubert); (b) "L'Extase" (Thome); (c) "The Golden Moth" (Novello); (d) "The Island King" (Garston); (e) "Humoresque" (Dvorak).

EVENING SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

7.40: Popular music. 7.45: Programme announcements. 7.48: A record recital. 8.0: Modern plays and music arranged by Ewart Chapple in association with Don Finley. Assisting artists: Ida Turnbull and Jules Van der Klei. 10.15: Late "Evening News" service. 10.28: Late weather and to-morrow's programme. 10.30: National Anthem; close.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.

8.0: G.P.O. chimes. Weather report—State and metropolitan. 8.3: Studio music. 8.15:

G.P.O. chimes. News and information service from the "Daily Telegraph Pictorial." 8.45: Studio music. 9.30: G.P.O. chimes. Half an hour with silent friends. 10.0: G.P.O. chimes. Close down.

MIDDAY SESSION

Announcer: A. C. C. Stevens.

11.0: G.P.O. chimes. 2BL Women's Sports Association Session, conducted by Miss Gwen Varley. 11.30: Advertising hints.

11.40: Women's Session, conducted by Mrs. Cranfield. 12.0: G.P.O. chimes. Special ocean forecast and weather report. 12.30: Shipping and mails. 12.35: Market reports. 12.48: "Sun" midday news service. 1.30: Talk to children and special entertainment for children in hospital, by Uncle Steve. 2.0: G.P.O. chimes. Close down. Note: Race results from Rosebery will be broadcast by arrangement with the "Sun" Newspapers.

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.

Accompanist: Kathleen Roe.

3.45: G.P.O. chimes. Popular music. 4.0: G.P.O. chimes. Nellie Ferguson, songs at the piano—(a) "Nini Ninette, Ninon" (Weatherby and Monckton), (b) "My Little Chimney Sweep" (Greenbank and Monckton). 4.7: Basil Kirke will speak on "Pacific Problems, Puzzling and Perplexing." 4.22: Les Busse, Melo Accordeon—(a) "Love Dreams" (Mendoza), (b) "All by Yourself" (Wallis), (c) "Il Bacia" (Ardidi). 4.29: "Sun" news service. 4.34: Nellie Ferguson, songs at the piano—(a) "Catch Me" (Humblecrofts and Cooper), (b) "Daddy and Babsy" (Levey). 4.41: Popular items. 4.52: Les Busse, Melo Accordeon—(a) "Chalita" (Schertzing), (b) "You should see my Neighbor's Daughter" (Tobias), (c) "Blaze Away" (march) (Holzman). 5.0: G.P.O. chimes. Pianoforte reproduction. 5.15: Popular music. 5.22: Racing resume. 5.27: Features of the evening programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.

5.30: Children's Session, conducted by Uncle Bas. Music and entertainment. Letters and stories. 6.10: The Aero Club, conducted by "The Pilot" in conjunction with "Wireless Weekly." 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette—a song by Robert Scott, tenor—(a) "Marche Tzigane" (Lacombe), (b) "Kisses in the Dark" (Micheli), (c) "Love in Arcady" (Wood), (d) "Tolanthe" (Sullivan), (e) "Lotus Blossoms" (Ohlsen). 7.7: Australian Mercantile, Land, and Finance Co.'s report. Weather report and forecast, by courtesy of Government Meteorologist. Producers' Distributing Society's fruit and vegetable market report. Grain and fodder report ("Sun"). Dairy produce report ("Sun"). 7.25: Mr. Pim and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Ad. Special. 7.55: Programme and other announcements.

EVENING SESSION.

Announcer: Basil Kirke.

Announcer: G. Vern Barnett.

8.0: G.P.O. chimes. From the Capitol Theatre—Overture by the Capitol Unit Entertainment.

8.7: From David Jones' Auditorium: The Smith Family Meeting.

9.7: From the Capitol Theatre: Fred Scholl at the Wurlitzer Organ.

9.17: From the Studio: Claude Corbett will talk on General Sporting.

9.32: From the Town Hall: Dance music and description of the Fire Brigades Ball.

9.47: From the Studio: Leo Rowan, tenor—

(a) "June Music" (Trent).

(b) "Parted" (Tosti).

9.54: From the Town Hall: Dance music and description of the Fire Brigades Ball.

10.6: From the Studio: Late "Sun" news.

10.14: From the Town Hall: Dance music and description of the Fire Brigades Ball.

10.28: From the Studio: Late weather report.

10.30: From the Town Hall: Dance music and description of the Fire Brigades Ball.

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

10.59: From the Town Hall: Dance music and description of the Fire Brigades Ball.

11.30: National Anthem. Close.

2GB

10.0: Music. 10.10: Happiness talk by A. E. Bennett. 10.20: Music. 10.30: Women's session, by Miss Helen J. Beegling. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service, by Mrs. Dorothy Jordan. 2.50: Music. 3.0: Labor Saving Demonstration. From Nock and Kirby. 4.0: Close down. 5.30: Children's session by Uncle George. 7.0: Music. 7.45: Feature story. 8.0: The New Male Voice party. 8.15: Symphony Orchestra. 8.22: Mr. Jack Win and Miss Nora Windle, in a dramatic sketch. 8.35: Miss Gladys Verona, soprano. 8.45: Address. 9.0: Weather report. 9.3: Symphony Orchestra. 9.13: The New Male Voice party. 9.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.35: Instrumental trio. 9.40: Mr. Jack Win and Miss Nora Windle in a humorous sketch. 9.50: Miss Gladys Verona, soprano. 10.0: Instrumental music. 10.30: Close down.

2UW

MID-DAY SESSION.

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

EVENING SESSION.

5.30: Children's Hour, conducted by Uncle Jack. 6.30: Close down. 7.0: G.P.O. clock and chimes; request numbers. 8.0: Music. 9.0: G.P.O. clock and chimes. Comments on Foreign Affairs, by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.



JULES VAN DER KLEI, 'cellist, who will assist Mr. Ewart Chapple in to-night's classical programme from 2FC.

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Interstate Programmes, Wednesday, June 26

3LO

EARLY MORNING SESSION

7.15 to 8.15: See Friday. 10.50: Sporting final selections for the Melbourne Hunt Club's races at Sandown Park, by Eric Welch; an hour of interest to women. 11.0: Afternoon tea trifles, Ada cakes. 11.5: Miss E. M. Hinder, B.Sc., will continue her series, "The Melbourne Girl"; this final talk is called "The Melbourne Girl Looks on the World." 11.25: Mrs. M. Callaway Mahood will speak on "The Art of Decoration." 11.45: Mrs. Clarence Weber will speak on "Physical Culture for Women."

MIDDAY NEWS SESSION

12.0: Melbourne Observatory time signal. 12.1: British Official Wireless news from Rugby; Reuters and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; cattle sales reports, bullocks and calves, by the Associated Stock and Station Agents, Bourke St., Melbourne.

LUNCHEON MUSIC

12.20: The Radio Revellers "Wear a Hat With a Silver Lining" (Sherman), "One Alone" (Romberg), "Just Give the Southland to Me" (Sissel). 12.29: Jack Bartly, comedian, "A Few Smiles." 12.36: Stock Exchange information; prices received by the Australian Mines and Metals Association from the London Stock Exchange this day. 12.42: The Radio Revellers, "The Desert Song" (Romberg), "A Room With a View" (Coward), "What Girls" (Sanders). 12.50: Linda Wald, soprano, "The Dance on the Lawn" (Phillips), "Good Morning, Brother Sunshine" (Lehmann). 12.57: The Radio Revellers, "Dynamite" (Henderson), "The Dance of the Blue Danube" (Fisher), "Rose Time" (Hall). 1.6: Meteorological information; weather forecast for Victoria, New South Wales, South Australia, and Tasmania; ocean forecast; river reports; rainfall. 1.12: Jack Bartly, comedian, "Have You Heard This?" 1.19: The Radio Revellers, "Me and the Man in the Moon" (Monaco), "When You Said Good-night" (Donaldson), "Dookey Dookey" (Sherwin). 1.30: Transmission from the Freemasons' Hall, Collins Street, Melbourne, speeches from the Rotary Club luncheon. 2.0: Close down.

AFTERNOON SESSION

2.13: Description of Clayton Hurdle Race, two miles, at Sandown Park races, by Eric Welch. 2.20: The Station Orchestra, overture, "Maid of Orleans" (Ravinsnon). 2.30: Linda Wald, soprano, "Sing, Sing, Blackbird" (Phillips), "The Night Has a Thousand Eyes" (Del Rio); 2.37: Myrtle Robertson, violin, selected. 2.43: Description of Lyndhurst, Colinthian, one mile and a quarter, Sandown Park races. 2.50: The Station Orchestra, "Silhouettes" (Hachley). 3.0: Wilfrid Thomas, bass, "Toreador's Song" (Bizet), "Traveller's Joy" (Brahm). 3.7: The Station Orchestra, "Brahmsiana." 3.13: Description of Tally-Ho Handicap, six furlongs, Sandown Park races. 3.20: The Jedral Trio (Alva Hattenbach violin, Edna Hattenbach, cello, John Simons (piano), "Andante" from "C Minor Trio" (Mendelssohn), "Scherzo": John Simons, piano, "Scherzo in B Minor" (Chopin); the trio, "Adagio" (Bizet), "Menuetto" (Boccherini). 3.43: Description of Hunt Steeplechase, two miles and a quarter, Sandown Park races. 3.50: Linda Wald, soprano, "Caddy, the Fiddler" (Haydn Wood), "Nightfall at Sea" (Phillips). 3.57: The Station Orchestra, "Petite Suite de Concert" (Coelridge-Taylor), "Romance" (Karganoff). 4.13: Description of Langley Steeplechase, two miles and a quarter, Sandown Park races. 4.20: The Station Quartette, first movement of "Quartette" (Haydn). 4.30: Wilfrid Thomas, bass, "The Post" (Schubert), "Murmuring Breezes" (Jensen). 4.37: The Station Orchestra, "Suite Gracieuse" (German). 4.43: Description of Oakleigh Welter, six furlongs, Sandown Park races. 4.50: News service; Stock Exchange information.

CHILDREN'S HOUR

5.45: Birthday greetings and answers to letters, by "John, the Piper's Son." 6.30: Under the auspices of the National Safety Council of Australia, H. J. Book will tell the children some more about "Roller Bears and the Safeway Tribe." 6.45: "John, the Piper's Son," will give some more of his famous impersonations.

EVENING SESSION

7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.43: Birthday greetings. 7.45: Out of the Past. 7.46: Under the auspices of the Department of Agriculture, E. Crowe, exporte superintendent, will speak on "Marketing Methods." 8.0: A Maker of History.

NIGHT SESSION

8.1: Programme announcements. 3LO's weekly Tasmanian letter from the "Mercury" and "Illustrated Mail," Hobart. 8.2: The Prahran City Band (conductor, Percy Code). March, "Duntron" (Code). Overture, "Light Cavalry" (Suppe). 8.12: Opening Chorus, "Come to the Show," Sunbeam Singers. Song, "Sonny Boy," Thelma Watt. Solo, "What a Wonderful World It Would Be," Edna Harley. Recitation, "A Modern Version of Romeo and Juliet," Mavis Yeomans. Solo, "Absent," Eileen Pascoe-Webb. Vocal duet, "April is a Lady," Edna Harley and Connie Webster. Song, "God's Messenger," Thelma Stabb. Recitation, "The Vicar's Recital," Connie Webster. Solo, "The Sweetest Call," Edna Harley. Recitation, "Grandmamma," Mavis Yeomans. Song, "Ol' Man River," Connie Webster. Solo, "The Lotus Flower," Eileen Pascoe-Webb. Duet, selected, Thelma Stabb and Lorna Ralston. Final, "Spring Flowers," Eileen Pascoe-Webb and Sunbeam Singers. 8.12: The Prahran City Band.

Selection, "Souvenir of the Opera" (Rimmer). 9.22: The Postal Institute Choir (conductor, Geo. English). "Inflammatus" from "Stabat Mater" (Rossini). "Bring Us in Good Ale" (Holsti). "Bow Thine Ear" (Bard). "King Arthur" (Robinson). "My Soul There is a Country" (Parry). "Girtila Aginus" (Bach). "Into the Woods" (Noble). 9.50: Prahran City Band. "Prelude" (Rachmaninoff). Intermezzo, "Evening Bells" (Rimmer). "March Militaire" (Schubert). 10.5: News service; British Official Wireless news from Rugby; meteorological information; announcements. 10.15: French Bros. banjosts. Modern melodies. 10.22: Jack Bartly, comedian. "Vaudevillainies." 10.29: Prahran City Band. March, "Machine-gun Guards." 10.34: Jack Bartly, comedian. "More Vaudevillainies." 10.41: French Bros. banjosts. Latest numbers. 10.49: The Radio Revellers, under the baton of Ern. Hal, vocal refrains, by Hugh Huxham. "Counting the Milestones" (Tilsley). "My Starlight" (Rose). "Daybreak" (Evans). "Silvering" (Doody). "Promise Me" (Van Bootli). "Ready for the River" (Moret). "My Stormy Weather" (Plantadosi). "What'll You Do" (Cohn). Selected. 11.30: God Save the King.

3AR

MORNING NEWS SESSION

10.0 to 10.59: See Friday.

MORNING MUSICAL SESSION

11.0: Recordings, 11.30: The Discus Ensemble presents—William Murdoch, piano "Sonata" ("Pathe-tique") O Minor" (Beethoven); Grave—Molto Allegro e con brio; Adagio Cantabile; Rondo Allegro. 11.48: Recordings, 11.58: William Murdoch, piano, "Sonata" (Appassionata); F Minor (Beethoven); Allegro Assai; Andante con moto; Allegro ma non troppo. 12.20: British Official Wireless news; announcements. 12.30: Close down.

AFTERNOON SESSION

3.0: Recordings. 4.30: Close down.

EVENING SESSION

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

NIGHT SESSION.

7.30: A Firmán will speak on—"Books of To-day, To-morrow, and Yesterday." 7.45: Under the auspices of the Health Association of Victoria, Sister Peck will speak on "Mothercraft." 7.58: Did You Know That? 8.0: Dorothy Taylor, violin; Vida Lugg, piano, and Robert May, cello—"Gipsy Love" (Lehar). Lila Watt, soprano, and John Storrock, baritone—"Your Eyes have told me so" (Hardy). Vida Lugg, piano—"Allegro E Major" (Beethoven). Alexander M'Lennan—"Dickens Recital." Trio—"Trio in E Flat Major." First Movement (Beethoven). Robert May, cello—Selected. Julia Russell, soprano—"Ave Maria" (Mascheroni). Alexander M'Lennan—Selections from his Repertoire. Dorothy Taylor violin—"Bolero" (Bohm). Half an Hour of Lilac Time: Trio—"Overture, "Lilac Time" (Schubert). Julia Russell and Strings—"Hark, Hark the Lark." "Under the Lilac Bough." Trio—Selected. Vida Lugg and Strings—"The Golden Song." "Serenade." Trio—"Cradle Song." Julia Russell and Strings—"The Flowers." "Yours Is My Heart." 10.10: Wilfrid Thomas, bass—A Zoological Programme: "The Monkey Carol" (Stanford). "Lone Dog" (Erlbach). "The Skewball Black" (Lehmann). "Kangaroo and Dingo" (German). "Tally Ho" (Leon). 10.25: News service; announcements. 10.30: God Save the King.

4QC

For early morning, morning, midday, afternoon and early evening sessions, see Friday. 7.45: Lecture arranged by the Queensland Agriculture High School and College.

NIGHT SESSION

8.0: The Studio Synchronizers—Paraphrase, "Il Trovatore" (arr Lange). "Russian Fantasy" (arr. Lange).

Phyllis Verney (Soprano)—"The Swallows." "Homing" (Riego). The Studio Synchronizers—Fox-trots—"In on the Crest of a Wave (De Sylva)" "Pickin' Cotton" (De Sylva). Monium and Harrow, in Humorosity. The Studio Synchronizers—"Rosette" (Lombardo). Annie Adams (Soprano)—"Sink, Sink, Red Sun" (Reigel). 9.0: Metropolitan forces—Lighthouse steamer movements. The Studio Synchronizers—Fox-trots—"Sweet Sue, Just You" (Harris). "Roses of Yesterday" (Berlin). The Albert Trio, ten minutes' diversion. B. F. Kelly (Flautist)—"By the Brook" (Witzger). The Studio Synchronizers—Old-time Novelty—"The Sunshine Girl" (Rubens) Annie Adams (Soprano)—Selected. B. F. Kelly (Flautist)—"Humoreske" (Dvorak). "Ave Maria" (Schubert). The Studio Synchronizers—Fox-trot—"I Fell Head Over Heels in Love" (Thayer). "You're Wonderful" (Fields). 10.0: Weather information. 10.15: Forty-five minutes' dance items by the Studio Synchronizers. 11.0: Close down.

5CL

MORNING SESSION.

11.0 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 5.0: General programme.

EVENING SESSION.

6.0: Chimes. 6.1: Children's Happy Moments. 6.30: Dinner Music. 6.45: 5CL's sporting service supplied by "Silvius." 7.0: Chimes. 7.1: Senior Birthday League Greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: Rev. E. S. Kiek, M.A. B.D., will talk. 7.25: An address to Boy Scouts. 7.40: 5CL Bluebird Girls' Club. An entertainment by "The Bird Lady."

NIGHT SESSION.

8.0: Chimes. 8.1: 90 Years ago To-day. "Was it as long ago as that?" 8.5: A Special Programme from 3LO Melbourne. 10.15: General news service, British Official wireless news, meteorological information, results of billiards championship trials; announcements. 10.20: 5CL's sporting service, supplied by "Silvius." 10.30: On with the Dance. 11.0: Close down.

6WF

10.0: Tune in; gramophone and phonograph records, from the studio. 11.0: Close down. 12.30: Tune in. 12.35: Market news, etc. 1.0: Time signal. 1.1: Weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.3: Talk, "Care of the Sick," by Dr. Winifred Holloway. 1.20: Music. 1.30: Close down. 1.30: Tune in. 3.35: Musica programme, relayed from the Primrose Cafe de Luxe; vocal artists from the studio. 4.30: Close down. 6.45: Tune in. 6.48: Bedtime stories by Uncle Duffy. 7.5: Light music by the Radio Trio. 7.30: Commercial and general information. 7.45: Talk on a popular science, by Mr. Esai McKail. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Ned Taylor's Entertainers, from the studio. 8.50: Late news items, by courtesy of the "Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcement; weather bulletin. 9.5: Programme continued from the studio. 10.30: Close down. 104.5 Metre Transmission.

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7ZL

AFTERNOON SESSION.

3.0: Chimes. 3.4: Weather information. 3.15: Description of Tally-ho Handicap, six furlongs, run at Sandown Park Racecourse, Sandown, Melbourne, Victoria. 3.45: Description of Hunt Steeplechase, 2 1/4 miles, run at Sandown Park Racecourse, Sandown Park, Melbourne, Victoria. 4.15: Description of Langley Steeplechase, 2 1/4 miles, run at Sandown Park Racecourse, Sandown Park, Melbourne, Victoria. 4.20: Readings from the "Illustrated Tasmanian Mail." 4.30: Close down. 4.45: Description of Oakleigh Welter, six furlongs, run at Sandown Park Racecourse, Sandown Park, Melbourne, Victoria. 4.50: Close down.

EARLY EVENING SESSION.

6.0: Sandown Park race results. 6.10 to 7.15: See Friday.

EVENING SESSION.

7.30: Alderman H. H. Pacy will speak on "Rat Extermination." 7.45: V. C. Webb will speak on "Driving Hints and Road Troubles." 8.0: Chimes. 8.6: Recital of instrumental and vocal items by leading international artists specially arranged by Findlay's Music Warehouse. 9.45: News session. 10.0: Chimes. 10.1: Close down.

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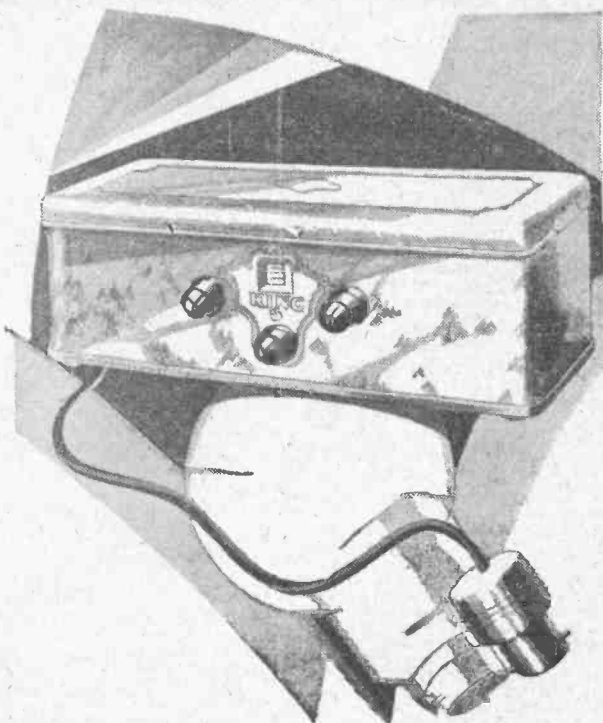
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Local Programmes, Thursday, June 27

2FC

EARLY MORNING SESSION.

Announcer: A. S. Cochrane.

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

MORNING SESSION.

Announcer: A. S. Cochrane.

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

MIDDAY SESSION.

Announcer: A. S. Cochrane.

12.0: "Big Ben" and announcements. 12.1: Stock Exchange, first call. 12.3: Official weather forecast; rainfall. 12.5: Summary of news, "Sydney Morning Herald." 12.10: Rugby Wireless News. 12.13: A reading. 12.30: Studio music. 1.0: "Big Ben." Weather intelligence. 1.3: "Evening News" midday news service. Producers' Distributing Society's report. 1.20: Studio music. 1.28: Stock Exchange, second call. 1.30: Popular Studio music. 1.50: Last minute sporting information by the 2FC Racing Commissioner. 2.0: "Big Ben." Close.

AFTERNOON SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

2.30: Programme announcements. 2.32: A Record recital. 3.0: "Big Ben." Popular music. 3.33: Gwen Gillard, soprano—(a) "The Wind's in the South" (Scott), (b) "The Pickler of Jung" (Elliot). 3.45: A reading. 4.10: Popular music. 4.23: Gwen Gillard, soprano—1. Songs for Children—Schumann. (a) "To a Buttery." (b) "Ladylady." 2. "A Bowl of Roses" (Clarke). 4.30: Vera Keogh will continue "A Tale of Two Cities." 4.45: Stock Exchange, third call. 4.47: Popular music. 5.0: "Big Ben." Close.

EARLY EVENING SESSION.

Announcer: A. S. Cochrane.

5.30: The chimes of 2FC. 5.35: The Children's Session, conducted by the "Hello Man." Letters and stories. Music and entertainment. 6.30: Dalgety's market reports (wool, wheat, and stock). 6.40: Fruit and vegetable markets. 6.43: Stock Exchange information. 6.48: Weather and shipping news. 6.50: Rugby Wireless news. 6.55: Late sporting news. 7.0: "Big Ben." Late news service. 7.10: The 2FC Dinner Quartette, conducted by Horace Keats, song by Robert Scott—(a) "A Song Remembered" (Coates), (b) "Valse" (Levitski), (c) "You Lovely Thing" (Anderson), (d) "The Student Prince" (Romberg), (e) "Full Moon" (Woolmer).

EVENING SESSION.

Announcer: Laurence Halbert.

Accompanist: Ewart Chapple.

7.40: Popular music.
7.45: Programme announcements.
7.48: A Record Recital.
8.0: "Big Ben." From the State Theatre, by arrangement with Union Theatres, Limited—the State Theatre Orchestra, conducted by Will Prior.
8.20: From the Studio: The Denning Lee Quartet—
(a) "Four Jolly Smiths" (Sample-Leslie).
(b) "In this Hour of Softened Splendour" (Pinsuti).
(c) "A Red, Red Rose" (Schumann).
8.30: C. N. Baeyerly will continue his series "Great Writers I Have Met"—H. L. McKen.
8.45: Haagen Holenburgh, pianoforte recital.
8.57: Weather report.

8.58: Charles Lawrence and Florence Bentley.

9.10: From the State Theatre: Stage Presentation.

9.30: From the Studio: The Denning Lee Quartet—

- (a) "Absence" (Hatton).
- (b) "Laughing Chorus" (Root).
- (c) "Mice in Council" (Filby).
- (d) "Rosary" (Nevin).

9.40: Haagen Holenburgh, pianoforte recital.

9.52: Charles Lawrence and Florence Bentley.

10.4: From the Hotel Australia: Cec. Morrison's Dance Band.

10.19: From the Studio: Late "Evening News" service.

10.22: Late weather report.

10.30: From the Hotel Australia: Cec. Morrison's Dance Band.

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

10.59: From the Hotel Australia: Cec. Morrison's Dance Band.

11.30: National Anthem. Close.

2BL

MORNING SESSION.

Announcer: A. C. C. Stevens.

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

MIDDAY SESSION.

Announcer: A. C. C. Stevens.

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

AFTERNOON SESSION.

Announcer: A. C. C. Stevens.

Accompanist: Kathleen Roe.

3.45: G.P.O. chimes; popular music. 4.0: G.P.O. chimes; Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.15: From the studio: Gordon Hele, baritone: (a) "Old Barty" (Grant); (b) "Roses" (Adams). 4.22: A musical item. 4.28: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 4.35: Hilda Walter, soprano. 4.42: "Sun" news service. 4.47: A musical item. 4.50: Romano's Cafe Dance Orchestra, conducted by Bennie Abrahams. 5.0: Gordon Hele, baritone: (a) "The Lowland Sea" (Branscombe); (b) "Sincerity" (Clarke). 5.7: Popular music. 5.15: Hilda Walter, soprano. 5.22: Studio items. 5.27: Features of the evening's programme.

EARLY EVENING SESSION.

Announcer: Basil Kirke.

5.30: Children's session, conducted by Uncle Bas. Music and entertainment. Letters and stories. 6.30: "Sun" news and late sporting. 6.40: 2BL Dinner Quartette: Songs by Robert Scott, tenor: (a) "Brown Eyes I Love" (Coates); (b) "The Desert Song" (Romberg); (c) "A Dream Garden" (Benyon); (d) "Everywhere I Look" (Carew). 7.7: Australian Mercantile, Land, and Finance Co.'s report; weather report and forecast by courtesy of Government Meteorologist; Producers' Distributing Society's fruit and vegetable market report; grain and fodder report ("Sun"); dairy produce report ("Sun"); weekly traffic bulletin. 7.25: Mr. Pim and Miss Pam in advertising talks, handy hints, and nonsense. 7.53: An Ad. special. 7.55: Programme and other announcements. Note: During the afternoon description of the principal events of the polo match held at Kensington.

EVENING SESSION.

Announcer: Basil Kirke.

Accompanist: G. Vern Barnett.

8.0: G.P.O. chimes. The New South Wales Tramway Band—

- (a) March, "Duntroun" (Code).
- (b) Valse, "Birds of Paradise" (Rimmer).
- (c) Polka, "The Triplet" (Reynolds).

8.20: Raymond Beatty, basso—

- (a) "Go Lovely Rose" (Quilter).
- (b) "As Ever I Saw" (Warlock).
- (c) "The Self Banished" (Blow).

8.27: The N.S.W. Tramway Band—

- (a) Selection, "H.M.S. Pinafore" (Sullivan).
- (b) Foxtrot, "Me and the Man in the Moon" (Leslie).

8.42: F. D. Maunsell and Gwen Sherwood in a sketch.

8.54: The N.S.W. Tramway Band—

- (a) Serenade, "Amina" (Linke).
- (b) March, "Allendale" (Greenwood).

9.9: Frederick Todd, basso.

9.16: 2BL interviews to-night's personality.

9.18: The N.S.W. Tramway Band—

- Selection, "A Trip to Blackpool" (Raymond).

9.32: Raymond Beatty, basso—

- (a) "Shenandoah" (Sea Chanties, arr. by Terry).
- (b) "Billy Boy" (Sea Chanties, arr. Terry).
- (c) "Hulla-Baloo-Belay" (Sea Chanties, arr. by Terry).

9.39: F. D. Maunsell and Gwen Sherwood in a sketch.

9.51: Studio Dance Band, conducted by Cec. Morrison.

10.0: G.P.O. chimes. Frederick Todd, basso.

10.7: Studio Dance Band, conducted by Cec. Morrison.

10.22: Late "Sun" news service.

10.28: Late weather and to-morrow's programme.

10.30: National Anthem; close.

2GB

10.0: Music. 10.10: Happiness talk by A. E. Bennett. 10.20: Music. 10.30: Women's session by Miss Helen J. Beezling. 11.45: Close down. 2.0: Music. 2.5: Women's Radio Service, by Mrs. Dorothy Jordan. 2.50: Music. 3.30: Close down. 5.30: Children's session, by Uncle George. 7.0: Music. 7.45: Feature story. 8.0: Miss Heather Kinnaird, contralto. 8.7: Instrumental trio. 8.15: Mr. Cecil Chaseling, baritone. 8.22: Symphony Orchestra. 8.30: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 8.35: Miss Elsie Brown, soprano. 8.45: Violin solos. 8.50: Miss Heather Kinnaird, contralto. 9.0: Weather report. 9.3: Address. 9.15: Instrumental trio. 9.25: Mr. Cecil Chaseling, baritone. 9.35: Symphony Orchestra. 9.45: Humorous interlude by Mr. Jack Win and Mr. Heath Burdock. 9.50: Miss Elsie Brown, soprano. 10.0: Instrumental music. 10.30: Close down.

2UW

MID-DAY SESSION.

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

EVENING SESSION.

5.30: Children's Hour, conducted by Uncle Jack. 6.30: Close down. 7.0: G.P.O. clock and chimes; request numbers. 8.0: Music. 8.15: Garden Talk, by Mr. S. H. Hunt. 8.30: Request items. 9.0: G.P.O. clock and chimes. Comments on Foreign Affairs by Mr. J. M. Prentice. 9.10: Music and request numbers. 10.30: Close down.

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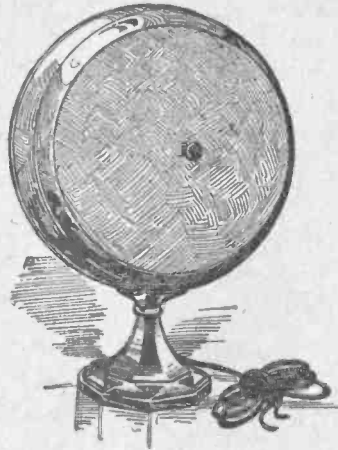
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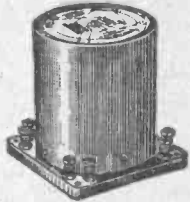
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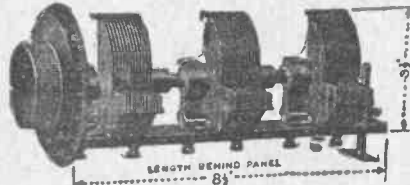


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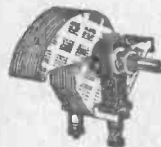


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Interstate Programmes, Thursday, June 27

3LO

EARLY MORNING SESSION

7.15 to 8.15: See Friday.

MORNING SESSION

11.0: 3LO's different dainties for the daily dinner
11.5: Captain Donald MacLean will continue his series, "Famous Women of History." 11.25: Miss D. Macaulay will summarise her four previous talks on "The Temperaments," "The Revisions of Type and What They Teach," 11.45: Sister Purcell will speak on "Infant Welfare."

MIDDAY MEDICAL SESSION

12.0: Melbourne Observatory time signal. 12.1. British official wireless news from Rugby; Reuter's and the Australian Press Association cables; "Argus" news service. 12.15: Newmarket stock sales; cattle sales report—bullocks and calves—by the Associated Stock and Station Agents, Bourke Street, Melbourne. 12.20: Community singing, conductor Frank Hatherley. 12.40: Stock Exchange information, prices received from the London Stock Exchange this day by the Australian Mines and Metals Association. 12.43: Community singing resumed. 1.45: Meteorological information; weather forecast for Victoria, New South Wales, Australia, and Tasmania; ocean forecasts; river reports; rainfall. 1.55: Close down.

AFTERNOON SESSION.

2.15: The Strad Trio (Cecil Parkes violin, Myra Montague piano, Frank Johnson cello). "Trio, Op. 70, D Major" (Beethoven). Allegro con brio, Largo assai, Prestissimo. 2.33: Linda Wald, soprano, "Yearning" (Sanderson). "Break o' Day" (Sanderson). 2.40: Cecil Parkes, violin, "Romance in G" (Beethoven). "Menuet" (Paderewski). "Valse Bluetee" (Drigo). 2.53: Wilfrid Thomas, bass, "Still is the Night" (Aht). "Young Tom o' Devon" (Russell). 3.0: The Strad Trio, "Andante Cantabile" (Tartini). "Bourree" (Bach). "Melody" (Gluck). "Spanish Dances, Nos. 2 and 1" (Moszkowski). 3.13: Dr. Loftus Ross, "Comeos from the Classics." 4.0: The Station Orchestra, overture, "The Carnival" (Dvorak). 4.8: Linda Wald, soprano, "Sing, Joyous Bird" (Phillips). "Your Kiss" (Hubert Bath). 4.15: The Station Orchestra, "Deuxieme Suite" (Michell). 4.30: Wilfrid Thomas, bass, "When the Flame of Love's Desire" (Bizet). "When the Sergeant Major's on Parade" (Longstaffe). 4.7: "Herald" news service; Stock Exchange information. 4.45: Evenson, transmitted from St. Paul's Cathedral, Melbourne. 5.30: Acceptances and barrier positions for the Moonee Valley races. 5.35: Close down. 5.45: Answers to letters and birthday greetings by "Bobby Bluegum." 6.30: Captain Donald MacLean, some more adventure yarns. 6.45: "Bobby Bluegum" and your old friends "Ector and Orace."

EVENING SESSION

7.5: Stock Exchange information. 7.15: Market reports. 7.30: News session. 7.43: Birthday greetings. 7.45: Out of the Past. 7.46: A dressing-room talk.

NIGHT SESSION

8.0: Programme announcements.
8.1: Rod M'Gregor will speak on "Football"
8.15: The Radio Revellers.
"Va Comin' Up To-night, Huh" (Lewis).
"Forty-seven Ginger-headed Sailors" (Sarony).
"High Tension Harmony" (Sarony).
8.24: Dawn Harding, mezzo-soprano.
"Song of the Clock" (Burchall).
8.27: The Radio Revellers.
"A Bungalow, a Radio, and You" (Dempsey).
"My Heart Stands Still" (Rodgers).
"Give Your Baby Lots of Lovin'" (Burke).
8.38: Ray Carey, tenor.
"Charming Chloe" (German).
8.39: The Radio Revellers.
"When You Know Me" (Baden).
"I'm Thirsty for Kisses" (Davis).
"I'm Sorry, Sally" (Kahn).
8.48: Bob Brookshaw, piano.
"Lapelians" (Alter).
8.51: The Radio Revellers.
"My Blackbirds are Bluebirds Now" (Friend).
"Casablanca" (Evans).
"Cradle of Love" (Wayne).
9.0: Dawn Harding, mezzo-soprano.
"A Merry Little Song" (Raymond).
9.3: The Radio Revellers.
"Oh, Isabella" (Schuster).
"Sweet Forget-me-not" (Lorenzo).
"Fancies" (Nichols).
9.12: Ray Carey, tenor.
"I Kiss Your Hand, Madame" (Erwin).
9.15: The Radio Revellers.
"You Ought to Hear Olaf Laff" (Baer).
"Mexican Serenade" (Terese).
"Down by the Old Paris Gate" (Kassal).
9.24: Dawn Harding, mezzo-soprano.
"Keep On Hopin'" (Maxwell).
9.27: The Radio Revellers.
"I Don't Know Why I Do It" (Val).
"Hum and Strum" (Meyers).
"Maybe I'm Wrong" (Harris).
9.36: Peter M'Carthy, banjo.
"Marche Militaire" (Colby).
9.39: The Radio Revellers.
"Constantinople" (Carlton).
"My Angelina" (Wayne).
"There's a Rainbow Round My Shoulder" (Jolson).
9.48: Jack Barly, comedian.
"Something New".
9.51: The Radio Revellers.
"Dada, Dada" (Dore).
"Oh, Is She Mad at Me" (Friend).
"High Upon a Hilltop" (Baer).
10.0: News service; meteorological information;

British Official Wireless news from Rugby; announcements.

10.15: The Radio Revellers.
"When Love Comes Stealing" (Rapeet).
"Roll up the Carpets" (Nixon).
"To-day, To-morrow, For Ever" (Nichols).
10.24: Ray Carey, tenor.
"Fole Moon" (Lisan).
10.27: The Radio Revellers.
"Shinaniki Da" (Carlton).
"Who Knows?" (Dixon).
"Lady of the Morning" (Burton).
10.36: Jack Barly, comedian.
"Humorosity".
10.39: The Radio Revellers.
"I'm Crazy Over You" (Lewis).
"Old Man Sunshine" (Dixon).
"Wipin' the Fan" (Baer).
10.48: Jack Barly, comedian.
Will make you laugh till your sides ache.
10.51: The Radio Revellers.
"Guess Who's in Town" (Razali).
"That Stolen Melody" (Fisher).
"Lenora" (Gilbert).
11.1: The Radio Revellers.
"Japanese Mammy" (Donaldson).
"There's a Ricketty Racketty Shack" (Turk).
"That's What You Mean to Me" (Davis).
"All By Yourself in the Moonlight" (Walls).
"She's Got a Great Big Army of Friends" (Nelson).
"Querida" (Simon).
"Falling in Love With You" (Mayne).
"I Love to Dunk a Hunk of Spongecake" (Castill).
"Sweet Sue, Just You" (Harris).
11.30: God Save the King.

3AR

MORNING NEWS SESSION

10.0 to 10.59: See Friday last.

MORNING MUSICAL SESSION

11.0: Recordings. 12.20: British official wireless news; announcements. 12.30: Close down.

AFTERNOON SESSION

3.0: Recordings. 3.30: The Jedral Trio (Alva Hattenbach violin, Edna Hattenbach cello, and John Simons piano). Trio—"Romance" (Glinka). "Serenata" (Moszkowski). "Standchen" (Pache). Violin—"Slavonic Dance" (Dvorak-Kreisler). "Andante" (Schubert). Trio—"Pierrette" (Chaminade). 4.0: Recordings. 4.30: Close down.

EVENING SESSION

6.0: Recordings. 7.10: News service; announcements; acceptances and barrier positions for the Moonee Valley races to be held on Saturday, 27th instant. 7.25: Recordings.

NIGHT SESSION

8.0: Dr. Loftus Ellis—
"Life's Facts and Fancies."
8.15: Clarence Weber will speak on—
"Exercise for Vigorous Health."
8.29: Did you know that?
8.30: The Station Orchestra—
Overture—"Princess Jeune" (Saint-Saens).
8.40: Linda Wald, soprano—
"Butterfly Kings" (Phillips).
"Sing Merrily To-day" (Phillips).
8.47: The Station Orchestra—
Suite, "The Attonement of Pan" (Hadley).
9.0: Wilfrid Thomas, bass—
"On the Road to Mandalay" (Speaks).
"Mother o' Mine" (Tours).
"The Hanging of Danny Deever" (Damosch).
9.15: The Station Orchestra—
Selection, "Song of the Flame" (Stohart).
9.25: The Melody Makers—
in twenty minutes of harmony.
9.45: The Jedral Trio (Alva Hattenbach violin, Edna Hattenbach cello, and John Simons piano)—
Trio, "Siesta" (Cul).
"Told at Twilight" (Moszkowski).
Piano, "Romance F Sharp" (Schumann).
Trio, "Andante Melodique" (Danda).
"Hungarian Dance" (Brahms).
10.10: Linda Wald, soprano—
"Slave Song" (Del Riego).
"Tiptoe" (Molly Carew).
10.47: The Station Orchestra—
"Gondoliera" (Moszkowski).
10.22: Announcements.
10.30: God Save the King.

4QG

For early morning, morning, midday, afternoon, and early evening sessions, see Friday.
7.45: A talk on books by Mr. J. Doyle (M'Leods).

NIGHT SESSION.

8.0: A recital by the Brisbane Municipal Concert Band, from the Band Room.
Overture—"King of the Night" (Barnard).
George Williamson (Tenor)—
"Adieu, Marie."
The Band—
Selections, "Lucia di Lammermoor" (Donizetti).
Edgar Rogers (Saxophonist)—
"Valse Erica."
Eileen M'Lennan (Soprano)—
"Guzmana" (Lane Wilson).
The Band—
Descriptive Number, "A Southern Wedding" (Lincke).
Jean Naylor (Contralto)—
"Wind in the Trees" (Goring Thomas).

The Band—
In Selected Popular Numbers.
George Williamson (Tenor)—
"Nirvana"
H. Calkavan (Xylophone)—
"Cocobola."
9.0: Metropolitan weather forecast.
The Band—
Walks, "The Blue Danube" (Strauss).
E. T. Selby, Jun. and T. Tipper (Trombonists)—
Duet, "Massa in de Cold, Cold Ground."
The Band—
Selection, "A Country Girl" (Monekton).
Eileen M'Lennan (Soprano)—
"Indian Love Call" (Prilm).
E. T. Selby, Jun. (Trombonist)—
Trombone solo, "In Cellar Cool."
The Band—
Hymn, "Rock of Ages."
The Band—
Selection, "The Geisha" (Sydney Jones).
Jean Naylor (Contralto)—
"Ye Banks and Braes."
"Advice" (Carew).
D. Drouyn, C. C. Veal, E. Rogers—
Saxophone Trio—"Bubble and Speak."
The Band—
Selection, "Florodora" (Stuart).
10.0: News. Weather information. Close down.

5CL

MORNING SESSION.

11.0 to 2.0: See Friday.

AFTERNOON SESSION.

3.0 to 5.0: See Friday.

EVENING SESSION.

6.0: Chimes. 6.1: Children's happy moments.
6.30: Tours for the little people—Miss Bessie Francis will entertain the children. 6.45: Dinner music.
7.1: Senior Birthday League greetings. 7.2: Stock Exchange. 7.6: General market reports. 7.10: Dr. G. H. Wright, M.A., will continue his series of talks. 7.25: J. D. Elder, secretary, South Australian Hockey Association, will speak. 7.40: Mr. A. M. Whittenbury, hints to poultry breeders.

NIGHT SESSION.

8.0: Chimes.
8.1: From the Adelaide Town Hall—Third annual demonstration of the 5CL Twinkler Boys' Club. A Breezy Boys' Night (programme arranged by The Twinkler, Mr. F. Mills). "The Twinkler" cheerios and greetings.
8.5: Community singing by "Twinklerites" (leader, senior member, W. Brett).
8.10: Twinklerite Orchestra—Breezy bits.
8.15: Comedy sketch, "Crayfish and Tripe" (written by The Twinkler).
8.25: Twinklerite Stan Watson—Baritone selection.
8.30: Twinklerites Jack and Reg. Green—Duet pianoforte and banjo mandolin.
8.35: The Twinkler—Original stories.
8.45: Twinklerite Orchestra—Sweet Junes.
8.50: A Surprise Packet.
8.55: Twinklerite Beresford Lewis—Flute solo
9.0: C.P.O. chimes.
9.1: Meteorological information, including Semaphore tides.
9.2: Oversea grain report.
9.3: Report and finance statements.
9.15: Four Twinklerites—Sweetness on the mouth organ.
9.30: The Chairman—Remarks.
9.30: Twinklerites Cliff Howe and Jimmy Buzzwig—Ventrioloquism.
9.37: Twinklerites Ron and Eric Gaylor—Pianoforte duet.
9.42: Comedy Sketch—"Mr. Popkins and Mr. Sniggies go Fishing" (written by The Twinkler).
9.52: Twinklerite Orchestra—More sweet tunes.
9.57: Humorous patter.
10.1: Twinklerites and Mr. Brett—Some rousing cources.
10.6: Vice-president H. G. Hobbs—A few cheery remarks.
10.11. Goodnightsities—News session.
10.15: From 5CL Studio.
10.20: Results of S.A. and Suburban Amateur Billiards league tournament.
10.31: On with the dance.
11.0: Close down.

6WF

10.0: Tune in; gramophone and phonograph records from the studio. 11.0: Close down. 12.30: Tune in. 12.35: Markets, news, etc. 1.0: Time signal. 1.1: Weather bulletin, supplied by the Meteorological Bureau of West Australia. 1.3: Panatpore hour, relayed from Lyric House, Perth. 2.0: Close down. 3.30: Tune in. 3.35: Musical programme, relayed from the Carlton Cafe. 4.30: Close down. 6.45: Tune in. 6.48: Bedtime stories, by Uncle Duffy. 7.5: Light music by the Radio Trio. 7.30: Commercial and general information. 7.45: Talk by Professor Cameron. 8.0: Time signal. 8.1: First weather bulletin. 8.3: Variety programme, from the studio. 8.50: Late news items, by courtesy of the "Daily News" Newspaper Co., Ltd.; station announcements; ships within range announcements. 9.5: Programme continued from the studio. 10.30: Close down.

104.5 Metre Transmission.
Simultaneous broadcast on 104.5 metres of programme given on 1250 metres, commencing at 6.45 p.m.

7ZL

MIDDAY SESSION.

11.30 to 1.30: See Friday.

AFTERNOON SESSION.

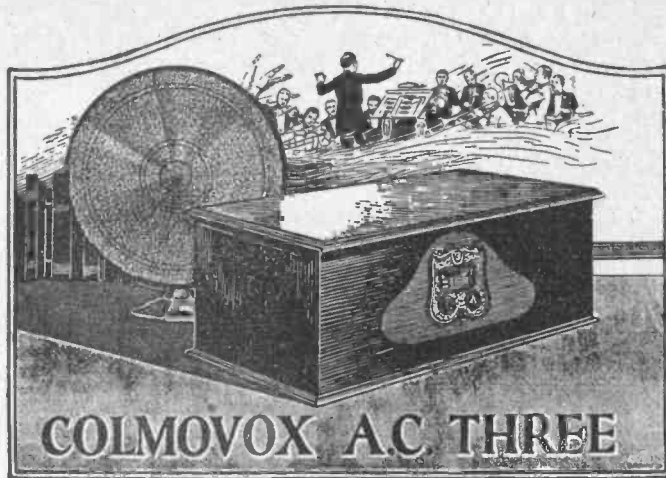
3.0: Chimes. 3.1: Selections. 3.4: Weather report. 4.15: A representative of the Old People's Welfare Association will speak on "Catching Cold." 4.30: Close down.

EARLY EVENING SESSION.

6.15: Selections. 6.30: Peggy Dyer will play for us some folk "Melodie d'Amour" (Engelmann); "Melody in F" (Rubinstein). 6.45: "The Story Lady" will tell the little ones a story. 7.0: Answers to letters and birthday greetings by "Uncle David" and "The Story Lady." 7.15: News session.

EVENING SESSION.

7.30: Under the auspices of the "Come to Tasmania" organisation, Hon. L. M. Shobridge will speak on "West Coast Road." 7.45: W. H. Cumjine will speak on "Soccer." 8.0: Chimes. 8.6: Selections. 8.15: Community singing. 8.15: All. "Desert Song." "One Alone." 8.22: Harry Foster, tenor, Selected. 8.25: All. "Jeannie." "Ramona." 8.32: Cliffe Hughes, baritone, Selected. 8.35: All. "All by yourself in the Moonlight." "Beloved." 8.42: Mrs. Cliffe Hughes, contralto, Selected. 8.45: Vivian Elliston will give a reading from "Tennessee's Partner." 9.0: All. "Annie Laurie." "Moonlight and Roses." 9.7: Trevor Trappes, tenor, Selected. 9.10: All. "Good Night, Ladies." "The Last Rose of Summer." 9.17: Mrs. H. Hurst, contralto, Selected. 9.20: All. "Mother Machree." "Auld Lang Syne." 9.30: News session. 9.45: M'le Columbia broadcasts. 10.0: Chimes. 10.1: Close down.



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What is Slumber Music?

LISTENERS to 2FC on a recent Monday night were introduced to a new note in radio. At about 10 o'clock Mr. Halbert, who was announcing, spoke somewhat on the lines of the following:—

"Now, listeners, the time is just 10 o'clock, and we have half an hour before closing down at 10.30 p.m. Instead of playing the usual programme of dance music, we intend giving you an opportunity of hearing what we choose to call "slumber music." At this time of night, listeners are divided into two classes—those who definitely want lively, bright music (which will be available through 2BL until 11.30 p.m.), and another section of listeners who appreciate music of a soothing nature before they retire for the night. So, for the next half-hour I am going to play you continuous instrumental music, which we have endeavored to choose, so as to give you music which will have a satisfying and soothing influence. No announcement will be made until we close down at 10.30 p.m.

"Radio music can be effectively used as a background for whatever you happen to be doing at the present moment. If you are reading, just tune your set down so that it will not come between you and your thoughts. If you are playing cards, the music need not be sufficiently prominent to interfere with your bidding, and if you are of the gentler sex, and are sewing or knitting, there will be no syncope in this music to make you drop a stitch.

"We hope you will enjoy this music, and go to your couch to-night feeling that the worries of the day have, to a certain extent, been soothed away."

Instead of listeners going to bed with their troubles smoothed away, they insisted on ringing the studios, and telling how much they enjoyed the first half-hour of "Slumber Music." As it was so much appreciated, 2FC has decided to include this novelty in its programmes every Sunday evening.

Harringtons' Radio Sale

IN the advertisement of Messrs. Harrington Ltd. in our issue of June 14, Emmco, Bal-kite, and Acme Eliminators were advertised at reduced prices. Harringtons Ltd. advise that these were included inadvertently and they cannot accept any contractual obligation, on account of the advertisement, to sell the items specified at less than ruling prices.

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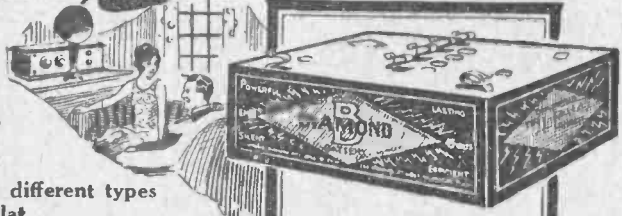
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The WIRELESS WEEKLY RADIO INFORMATION SERVICE

Under the direction of Ross A. HULL

K.W.S. (Parramatta).—Inexpensive "B" Eliminator Magnets and bobbins from old earphone N.G. for your requirements. Will work, but poor volume will result, and probably distortion will be present.

A.R. (Drummoyne).—Go-Getter. Coils O.K. for adaptor.

W.C.L. (Crockwell).—Weco valves. Re ratio of R.F. transformers, yes. Have not seen these transformers. Western Electric Co. can advise.

L.B. (Potts Point).—A.W.A. can supply.

TELEPHOTO (North Hobart).—G. E. Co.'s Telephoto is a 42-line picture.

V.C. (Yeovil).—Re S.G., yes. Circuit appeared in article by Percy Graffam. List of radio books published in these columns recently. No choke should be required in aerial. Place it in series with plate of detector valve. 30 Henry, R.F. choke.

F.S. (Brisbane).—Re .0003 condenser, yes. See below.

E. STOKES, Lutwyche Street, Woollowin, Brisbane, Queensland, asks if any reader can supply him with copies of "Wireless Weekly" containing the KUG crystal receiver and the Aberdonian Three.

M.T. (Mt. Brook).—Eighty feet overall—i.e., including lead-in. Result of too long aerial: broad tuning with consequent interference.

H.A.S. (Stammore).—Reinartz Three.

H.S.M. (no address).—Circuit O.K.

W.E.H. (Newcastle).—Instead of screening all set, merely place aluminium milk shakers over the coils, and connect these shakers to the earth terminal of your set.

J.C.S. (West Coast).—Daylight reception is always inferior to night reception. Try adding another stage of R.F.

GO-GETTER (Marrar).—Idea O.K.

Mr. R. ABIGAIL, c/o Post Office, Exeter, inquires if any reader can supply him with a copy of "Wireless Weekly" containing the Harkness Reflex receiver. He is quite willing to pay for the copy, and also for postage.

W.H.C. (Mosman).—Add the R.F. amplifier as per Marco Four. Your receiver will then be a Marco Four.

W.H.C. (Mosman).—Amplion conc.

INTERESTED READER (Hurstville).—Go-getter, re-published recently.

W.C. (no address).—.01 to .006 condensers are O.K. for resistance coupling. A415 detector. B406 first amplifier. A409 last stage. Anode Bend is merely a different method of rectification. Method usually used is grid rectification.

L.D. (Stockton).—Sorry; no room for circuit. Same as Marco Four. Coils same also as far as R.F. stage is concerned.

A.G. (Mullaburra).—Even then (as mentioned once before in answer to a query of yours) the system would be too bulky. Compare your idea with valve base coils. It is only a second's work to change the coils which can be marked, and a list made showing what stations may be heard with each coil, or the wave bands covered.

GENERAL.—Mr. R. Wheat, "Brookside," Avoca Road, Canley Vale, N.S.W., writes: "I shall be glad to supply any reader with back numbers of WIRELESS WEEKLY from March, 1928, on application to above address."

E.G. (Kurri Kurri).—Don't interfere with your set. Advise agents.

GENERAL.—J. Boyd, Athol, Harriet Street, Waratah, N.S.W., offers to pay postage and cost of copy of WIRELESS WEEKLY containing the Renown Three, if any reader will be good enough to send him a spare copy.

GENERAL.—T. H. Reeves wishes to know if any reader can supply him with a back number of WIRELESS WEEKLY containing a Four Valve Browning Drake.

W.K. (Marbango).—That's exactly how the receiver should be. Read building instructions again.

J.B.C. (Armidale).—Yes; the All-Empire. Better than a booster unit. Amplification percentage increase 50-60 per cent. 130 volts.

S.W.B.C.L. (Armidale).—Your letter passed on to me. As you, no doubt, guessed, the letter was too late.

W.H.H. (Inglewood).—1929 Neutrodyne.

R.E.T. (Sans Souci).—As per Marco Four, which is a Reinartz with Radio stage added. Reception of stations mentioned under good conditions if your locality is favorable. 210A valves O.K. You will have to use a special rectifying valve in the eliminator if you use it on a valve receiver. 12/6 extra. See Economic Radio Stores.

GENERAL.—Can any reader please supply Mr. J. O'Brien, c/o Horsburgs, Kent Street, Maryborough, Queensland, with a copy of WIRELESS WEEKLY containing the Pentavox.

A.C.R. (Toowoomba).—License used to be £5 per annum, but think this has been dropped now. P.M.G.'s Department.

"RADIOBUG" (Brisbane).—See circuit published in these columns.

E.C. (Hume Weir).—You state you are 300 miles from Sydney, and you wish to build a crystal set that will receive 2FC on a good cone speaker. If it was possible to give you such a circuit the writer would be manufacturing sealed sets, and selling them at £100 each. They'd be worth it. Build the KUG Crystal receiver, and add three stages of resistance coupled amplification. That's the nearest you can get to your requirements.

STARKS (Coogee).—KDKA sending messages to Byrd Antarctic Expedition.

R.H.M. (Surry Hills).—All are Reinartz receivers. A Reinartz proper is only in the first (detector) stage. The other two stages are audio frequency amplifiers, and no matter how they are arranged the circuit still remains a Reinartz. You did not send stamped addressed envelope so will hang on to your circuit for a week.

E.E. (Wahroonga).—Try the National Portable from S. Segal and Co., York Street, Sydney.

J.R.B. (Boonah).—Aerial probably too long. Cannot advise further without additional details.

GENERAL.—Can any reader please supply Mr. Gordon C. Edwards, 98 Mitchell Street, Mewether, with a copy of WIRELESS WEEKLY containing the Browning Drake circuit.

W.D. (Deniliquin).—Poor contact somewhere. Look to battery connections, particularly accumulator terminals.

G.S. (Wahroonga).—August 26, 1927. Sorry, title now chosen.

M.W.B. (Bondi Beach).—No additional fees provided set operated by licensed owner. Idea O.K. Speaker O.K. Volume will be diminished slightly, use heavy gauge wire—less resistance. It will be necessary to use chokes, etc., as mentioned.

A.E.C. (Whale Beach).—Not sufficient details for me to indicate which station you hear. There are hundreds of transmitters in that region.

A.W.M. (Manly).—Place a jack on the panel, and connect the leads to the detector valve, i.e., one to the grid and the other to the filament. Yes, an article on an A.C. superhet. will be published shortly. A.C. valves could be used on Solodyne. E442 A.C. S.G. valve will be an improvement for R.F. stages, but it will be necessary to alter wiring.

GENERAL.—Mr. P. Cullen, "Braxton," Cumberland Avenue, Merrylands, writes: "I have a large pile of back copies of 'Wireless Weekly,' dating from August 31, 1928, right to date, all in good order. They are for disposal at 3d per copy, and I will pay postage anywhere. I notice every week numerous inquiries for back numbers, so this may relieve the situation somewhat. I think that if readers were to scan the queries each week you would not get one-tenth of the queries you do." Your assumption is correct, Mr. Cullen. Thanks.

D.S.L. (via Lismore).—Valves have probably lost their emission, and need replacing. Thanks for the copies; see below.

GENERAL.—Mr. D. S. Lynch, "Bona Vista," McKee's Hill, via Lismore, writes: "I have a lot of back numbers of 'Wireless Weekly' for disposal. If any reader writes to me I will supply him any number, if available."

L.E. (Pulltop).—Have forwarded stamps to Nauen, as requested. Please enclose letters next time—this is not a free stamp and stationery bureau. Twenty metres does not seem to be very satisfactory lately. Sixty metres is excellent, and 80 metres fair. The station you hear near 70 metres, with a man, and then a woman, announcer, is almost certainly RFN Yes, transformers O.K., but the other type mentioned probably would be better.

ROSE (Greenfell).—First audio valve or transformer trouble.

O.J.D. (Tuena).—Components O.K. It would not be necessary to screen the A442 S.G. valve, as described in the article, if the Radiocos aluminium screening-box were used for the whole first R.F. stage.

C.L. (Sydney).—Undoubtedly a flat "B" or "C" battery.

F.C.D. (Singleton).—There is, as yet, no known remedy for fading. However, your trouble may be due to a run-down accumulator.

W.A.S. (Yanco).—Battery should be charged before it reaches half-discharge. The curve of an accumulator is very smooth for a certain period, after which it drops suddenly. In dry batteries the curve falls gradually.

COORABAH (Queensland).—Not enough turns on primary. Use 20-25 turns. With the screen grid as an R.F. amplifier, it is often necessary to increase size of primary. Couple primary and secondary of R.F. close together. This will make tuning a little broader, and at the same time give you a step-up in volume. Try a .00025 condenser for regeneration control. Glad you like "Proving Radio."

A.E.B. (Ashfield).—As the interference from other stations is only intermittent, I think you will find that a neighbor's aerial is running close on parallel to yours, and that his set is re-radiating. Remedy is to change aerial direction, or use another type aerial, which will not be affected.

T.W. (Temut).—Connect headphones to primary of first transformer. They may be used as microphone, but are very inefficient. Reproduction is mushy and distorted. The crackling noise is probably a faulty transformer. Primary more likely to show open circuit than secondary.

H.W. (Homebush).—You are using the wrong valve combination. It would be better to use all 201As, with a UX112 in the last stage.

E.D. (West Kogarah).—Fumes are given off, but these are not detrimental to furniture, carpets, etc. The electrode, however, must not be spilled, as this will soon burn holes in carpets.

M.D. (Waterfall).—The plate terminal of the transformer connects to the plate of the previous valve. The B plus connection should be taken to a "B" plus tapping of 50 volts. The grid terminal of the transformer connects to the grid terminal of the following valve socket, and the filament contact of the transformer is connected to A negative. If no C bias is being used, if bias is to be used however, the F negative terminal should be taken to C minus.

S.A. (Christchurch).—The maximum voltage obtainable from such an arrangement would be just over 200 volts.

H.D. (Maroubra).—Kind of you to sympathise! Glad you like "Proving Radio." The whistle is probably caused through R.F. getting into the audio from your S.G. S.W. adaptor. Try phasing the chokes in series with the S.G. plate lead and the S.G. lead. Keep grid and plate leads short, and well apart from each other. Do not let these leads run parallel to one another for any appreciable distance. If your set is wired exactly as shown on your diagram, this will probably be the cause of your trouble.

QUERY COUPON

If you are in difficulties about reception or set-construction let us know, and we will endeavor to get you right. Make your questions brief to the point, and where possible, show lay-out and wiring design. Under no circumstances will answers to queries be made by letter or by telephone. All answers will appear in the columns of this department in the order in which they are received.

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Wireless,
21/6/29.

NAME
ADDRESS

Y.W. (Solomon Islands).—No, your theory is incorrect. You are correct in your statement that the electrons are forced away from the filament at a terrific pace, but it is not this that causes the electrons to flow to the plate of the valve. The positive nuclei of each atom tends to draw back its electrons, but by placing a positive potential on the plate of the valve the electrons are attracted and a plate current flows—the reason being that unlike kinds of electricity attract. I have fully discussed this in "Proving Radio," particularly in Part 15.

U.R. (Banksstown).—There are about 300,000 licensed listeners in Australia at the present time. Of these, New South Wales has a ratio to 100 of population of about 3.72. Victoria's ratio is 8.19. Sorry I cannot give you the other figures. They have not been published for some considerable time. Figures given here are approximate. New South Wales is now showing a greater increase in licenses than Victoria. Other States have a very small ratio. New South Wales led the list when broadcasting in Australia commenced, but Victoria bounded ahead at the beginning of 1926.

C.W.O. (Hornsby).—Philips B and C eliminator. A.C. valves would have to be used on filaments of audios with slight hum.

HAMLET (Manning River).—You will find that by reversing the primary connections of the last transformer the howl you complain of when plugging in last audio stage will entirely disappear. This is because the two different makes of transformers are wound in different directions, so that actually one primary is reversed. There is no need to alter any other leads, but a .002 fixed condenser across secondary of last transformer will often help.

O.K.L. (Cessnock).—Eight volts is too high voltage for a 201A, which is rated at five volts. Insert a rheostat in series with one of the filament leads to the valve. The secondary of a cheap transformer makes a very poor choke for a B eliminator.

E.W. (Sydney).—When using an ordinary receiving valve as a rectifier in a home-made B eliminator, the grid and plate should be connected together.

J.S.F. (Turramurra).—The Radio Exhibition opened on May 1, and closed May 11, 1929.

G.E. (Dulwich Hill).—Frequency is measured in cycles per second.

H.E. (Tweed Heads).—The idea of the output transformer is to protect the windings of the speaker by letting the plate current pass through the primary of the transformer. The secondary picks up the magnetic lines of force which are assisted by the iron core, and thus pulsating current circulates through the secondary windings. The idea is that if an overload occurs, the primary of the transformer will be damaged, and a transformer is easier to replace from a financial point of view than a good speaker. Re microphone connect it to primary of first audio transformer, and listen with earphones in place of speaker. Thanks for your kind remarks.

T.E. (Wagga Wagga).—A times K times N, minus one over: 4 times pi times 9 times 10 times 10 to fifth power, where A equals area of one side of one plate, K equals the specific inductive capacity of the dielectric, n equals number of plates, d equals distance of dielectric, i.e., distance between plates, and pi equals three and one-seventh. See my articles on "Proving Radio."

I.W.S. (Sydney).—Place a .001 fixed condenser across the primary of the first transformer. This will assist your receiver to oscillate. Also try increasing detector plate voltage to 30 volts. If this does not remedy the trouble, it will be necessary to do one of these things—i.e., increase number of turns on reaction coil, increase capacity of condenser, or cut away insulating material between tapper and secondary, so that coupling between the two coils may be reduced.

GENERAL.—S.O.S. Will some kind reader, who has complete set of back numbers from December 23, 1928, incorporate "Proving Radio" set of the book, forward to Mr. Edward Madden, 546 Old South Head Road, Rose Bay?

A.S. (Elwood).—0-1 milliamper meter correct. Measured in tenths of milliamp. Your reasoning quite in order.

GENERAL.—Can any reader please supply Mr. K. Weddell, 50 York Street, Sydney, with copy of All-Empire circuit.

L.K.P. (Eastwood).—Countryman's One Valve. Plenty of one-valve S.W. circuits have appeared in these columns recently. Do not use formers, use heavy-gauge wire, say 16 gauge, and make coils self-supporting. Wire specified must be used or number of turns altered. R.F. choke 150 turns 30-gauge D.S.O. on 1/4in. former.

GENERAL.—Can any reader please supply J. Duckworth, Wolgan Street, Portland, with copy of "Wireless Weekly" containing the Harkness Reflex Three?

GENERAL.—Can any reader please supply L. Phillips, 54 Oxford Street, City, with copy of "Wireless Weekly" dated February 8, 1929?

E.W.C. (Gordon).—State whole set. Yes, fading.

L.A.C. (Peterborough).—Glad you liked the pun answers to queries. Sorry, but too busy with queries now to think of pun answers.

N.Z. (Haberfeld).—All O.K.

W.R. (Stammore).—Emeco Eliminator O.K. Cossor valves quite in order.

F.W. (Richmond).—A.M. of 27 Bennett Street, Nth. Fitzroy, Melbourne, wishes to get in touch with you.

A.R.C. (Farina Sd.).—No queries were attached to your letter.

J.D.G. (South Australia).—Certainly; see next par. Trouble is in capacity of condensers. You are using the old-style B.D., in which .0003 condensers were specified. This would be O.K. if you used the correct coils, but if you use the modern coils with .0003 condenser, you will not be able to tune up much above 500 metres. Change to .0005 condensers. Coil data for Browning-Drake has appeared in these columns many times recently. Both condensers should be of same capacity. That in S.F. should be changed to .0005 instead of .0003. In the detector stage remove the .0001 fixed condenser from the .0005, as these

two in series, constitute a capacity of .0000981. Add S.G. R.F. stage, as per Marrock Five or S.G. Solo-Sync. Approximately three weeks. Accumulator should be used, or, if this impracticable, use several banks of cells in parallel. Yes, Go-Getter could be made as a S.W. adaptor in the usual manner. Valves mentioned O.K. Do not advise use of eliminator on S.W. though it can be done. No such stations in Australia. Glad you like "Proving Radio." You have been enrolled as a member of the "P.R. Club," and your letter has been forwarded to the country organiser, Mr. Simmonds. Please shorten your letters.

P.B. (Enmore).—Faulty detector valve or flat "B" battery.

J.F. (Gladesville).—Rectifier of charger has probably lost its emission. Have rectifier tested, and, if O.K., have battery examined by competent battery man. Perhaps paste has fallen from plates, and is shorting at bottom of cell.

J.H. (Wollongong).—Distortion may be caused through using too much reaction, which latter can be caused through using too high capacity reaction condenser, too much plate voltage on detector valve, faulty detector valve, wrong grid bias, unsuitable valve or valves, flat batteries, incorrect ratio transformers, using smaller ratio transformer in first or in second stage, faulty grid condenser or leak, speaker out of adjustment, etc. Suggest for R.F. stage A425, detector A415, first audio B406, last audio B405 (power) or A405. Sveravox cone speaker excellent. Eliminator mentioned cannot supply enough current for more than three valves, unless special rectifier is obtained from makers of set. This extra rectifier costs about 12/6. Yes, Viking transformers would be better.

Inquirer (Bathurst).—Standard kit N.G. for screen grid version of this receiver. Radiokes market a special kit. When making own coils for S.G. sets, note that the primary coil is a little larger than usual.

P.M.E. (no address).—You will find that your "A" battery is flat. Dry cells will not last long, as "A" supply with a four-valve receiver using 201A's, which draw .25 amp. each. Four valves will draw one amp. Capacity of dry cell you mention is only about 25 amps, which means that the receiver would only function for about 24 hours continuous, and probably 30 hours intermittent. Use a 60 actual amp hour accumulator.

W.D.S. (Croydon).—Reason why your valves blow when eliminator connected is that one side of mains is earthed—and one side of filament in set is earthed. Remedy is to place a 1 mfd. condenser, tested 500 volts, in series with the earth lead. When this is done, hum will probably be reduced. However, this latter annoyance may be caused through having eliminator too near set, open grid circuit, or direct pick-up from some nearby electrical machine.

A.C.W. (Guyra).—Wrong valve in R.F. stage. Use A425 or B406.

MELROSE (West Wyalong).—By means of voltage resistance dividers. Set cannot be used whilst battery is being charged.

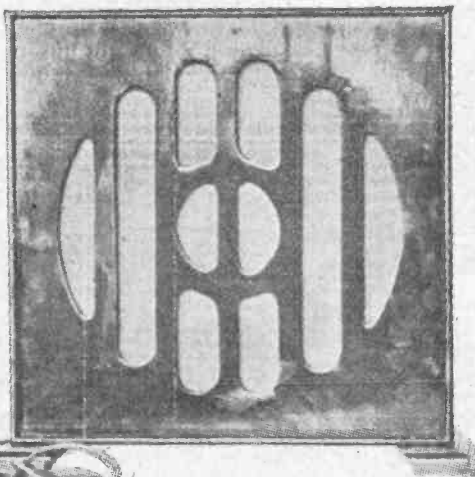
J.D.G. (Ayr).—Try changing grid return. If this does not stop fringe howl, place a 100,000 ohm variable resistance across secondary of last transformer. Understand you have experimented with different value grid leaks? Glad to hear you think of "Wireless Weekly" as the "Bushman's Friend."

F.H. (Waterloo).—No alterations will be necessary to your Reimartz if you desire to change over to a six-volt accumulator and six-volt valves, with the exception that if filament ballasts are used, these must be changed for the six-volt type.

K.H. (Enfield).—No, the carbon rods from old cells cannot be used because these carbons must be porous. Carbon rods can be bought from B.G.E. Sheet zinc can be used in place of rod zinc, providing the same area is presented to the action of the electrolyte. Three cells should be connected in series. This will give you 4½ volts. Another three cells should be connected in series, and the two banks placed in parallel. Sorry, but for obvious reasons, cannot compare one firm's product with another's. Your valves are quite O.K.



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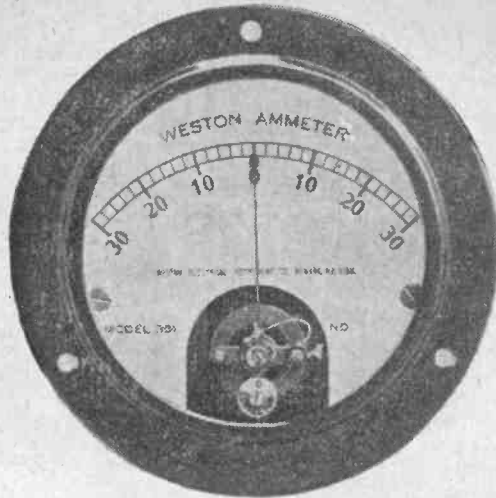
Studio Audiences

(By RAY DIO.)

BROADCASTING methods have undergone many changes since 1924, particularly in the studio. The methods of arranging studios for best acoustic effects have not yet reached any standard. Draping the studio walls is still popular in some countries, and complicated methods of mixing or superimposing "effects" are practised in England and Germany.

Australian listeners can feel proud of the fact that experiments and bold attempts in standardising were carried out here before they were begun in other countries. In studio technique, for instance, the heavy drapings and carpets were discarded by B.L.O. Melbourne, in pursuance of a desire to improve the musical effects. Such a radical departure was deprecated by the experts, and frankly doomed to failure by some of them.

Nevertheless the results were very satisfying, and a more "natural" effect or color was given to the music when some echo was permitted. The subject of reverberation in



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THE New 1000 ohms per volt meters, Models 301, 489, and 506, are designed primarily for checking the voltage delivered by battery eliminators and similar devices where an ordinary low resistance meter cannot be used. They are also invaluable for use with transmitting sets and other purposes where high accuracy is desired.

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studios became a much debated one later on, and incidentally proved the wisdom of 3LO's change.

Another experiment was tried in the Melbourne studio: That of having an audience in the studio. Here again the experts tied to the tenets of current practice objected and predicted failure. The results have been satisfying enough for 3LO to continue with the practice ever since.

Now it is becoming a practice in English and American studios to have an audience. It is argued that the presence of an audience to an artist accustomed to concert or theatre performances is almost essential. The artist needs the reaction he receives from his audience to enable him to give of his best.

This is particularly evident in the case of comedians. One prominent artist recently described his feelings on the matter. He said: "In broadcasting my lines atmosphere is absent. I write a gag, some patter, or a song, and form some sort of idea of how it ought to go. But when I start my performance in the studio I keep my eye on the audience, and not once in twenty times do I find my own idea the right one. The studio crowd helps me to feel the pulse of the larger crowd. It also helps me to time my laughs. You can never tell just when a laugh is coming, or how long the audience wants for this purpose. Yet there is nothing more annoying to a listener, or, so I imagine, than to be constrained to laugh and so cut himself off for a word or two." He concludes that the presence of the studio audience is of great assistance to the artist.

Speed—and Still More Speed

FOR years, on account of the great interest taken in Australia in the result of the English Derby, there has been great competition between the cable companies in connection with the speedy transmission of the result to the Antipodes.

With the advent of the Beam Wireless Service, however, a new element has entered the picture, and it seems that time has now been reduced to what might be called a negligible quantity.

A few seconds after the instant the winning horse dashed past the post on the English course the news was received at all the big newspaper offices throughout the Commonwealth. This was accomplished by a remarkable scheme of co-ordination of the Beam staffs in Great Britain and Australia, and also between the Australian end of the Beam and the Postmaster-General's Department.

A direct wire from the racecourse was linked with the big Beam Transmitting Station at Grimsby, England, and the next link of 14,000 miles to the Rock Bank Receiving Station in Victoria was by wireless. From there a land line to Melbourne Beam office of Amalgamated Wireless created the next link. Here a relay was installed, linking the Beam Wireless office with the land lines operated by the Postmaster-General's Department. Connected to that relay were lines proceeding to Sydney, Adelaide, Brisbane, Hobart, and Perth.

As soon as the operator on the racecourse depressed the key the signal was received simultaneously in every capital city in Australia. Although these distances in miles amount to an enormous number, the actual time of the transmission of each signal from the racecourse to each one of the points mentioned above was only about one-fiftieth of a second.

In the Sydney Beam office, which was one of the points connected by land line with Melbourne, the arrangements made were fully complete. One official stood by the telegraph sounder, while five others hung on the telephone to each of the big daily papers. The instant the name of the first horse came

through on the sounder information was passed over the telephone to the paper offices. Allowing the actual few seconds required to write the names of the placed horses, and a further few seconds for the passing of the information over the telephone, this meant that it required less than half a minute for the news of the big race to reach the point of publication. A minute or two after the receipt of the news by telephone Beam Wireless messengers arrived at each of the newspaper offices to confirm the message which had already gone to press.

It seems almost incredible that a comparatively slight impulse originated on the race-course in England should, without any relays whatever—one direct transmission—actuate an ordinary sounder in the telegraph office in Perth, West Australia, and in the other capital cities. It is certainly a triumph of this new and speedy system of communication.

WIRELESS AND AVIATION

THE Southern Cross disaster and the subsequent inquiries that are now being carried on have, amongst other things, brought prominently before the public mind the importance of wireless as an adjunct to aviation. And that importance is none the less striking in its actual usefulness in the particular instance was not of great value.

The position of wireless assistance to aviation to-day is something equivalent to that existing in connection with shipping about twenty-five years ago. Then the new method of communication without wires was beginning to prove its efficacy as an aid to navigation, particularly in connection with the safety of life. The wireless authorities and enthusiasts had no doubts as to the part wireless should play, but the shipping people were sceptical or partly convinced. As all the world knows, it was not many years ago that the very necessity of wireless on ships came to be recognised, and international agreements were made rendering it obligatory for shipowners to fit wireless equipment on their vessels. A few disasters like that of the Titanic where wireless signalling conspicuously proved its value were sufficient to focus attention on the subject.

Similarly it would appear that the tragedy of the Kookaburra and the accidents of the Southern Cross and the Vickers Vellore are compelling people in responsible positions to consider the use of wireless on aeroplanes more seriously. It is being considered whether more reliable arrangements cannot be made for installations of wireless, and for the operating of the equipment. The two things are essential; reliable equipment and reliable operators.

What is likely to happen is the institution of more rigorous procedure for the inspection of the equipments and the operators, so that a pilot will have no doubts as to the importance he may attach to the signalling system. And it is only by a system of Government inspectors that such guarantees can be obtained.

There can be no doubt that some experiment and investigation is still necessary before the full value can be expected from wireless equipments on aeroplanes. The existing state of the methods of utilising wireless in the air is not very definite, and experiments are well worth undertaking. Some time ago the broadcasting station 3LO, Melbourne assisted in aircraft wireless tests, and a little more assistance of that type would be useful. The Aero Club in Sydney is arranging for tests, and if some officially co-ordinated tests are carried out, there should be a definite promise of developing equipment and methods suitable for the needs of aircraft in Australia.

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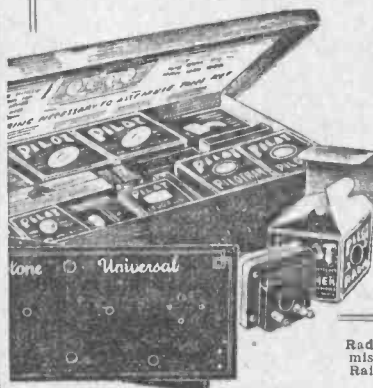
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The Right Valves

THE average set constructor invariably sticks to the one type of valve, not because he thinks it is a better type, but because his first receiver (which was so successful) seemed to give good results. He reasons that the same valves should suit other receivers, also.

As an instance, there are countless fans who never, under any circumstances, use anything but an A415 for a detector. Those who build the Air King soon found, however, that a special detector, or even a general purpose valve, would not function properly as a detector in this receiver. It became necessary to experiment (on the original receiver) in order to find the valve that had characteristics most suited to the job. After some varying results, it was eventually found that no other valve than a power amplifier would carry out the job properly.

Again, the constructor, as he progresses, gets his own ideas in connection with audio-frequency amplifiers. If his first receiver was a simple detector with two stages of transformer coupling, he will be satisfied with this for some time, until he desires greater volume or purer output.

Then the trouble starts. The valves he has been using as amplifiers in conjunction with transformers do not seem so satisfactory with a resistance coupled amplifier. The constructor blames the resistances, or the method of amplification, and reverts back to transformers.

It should be the aim of every constructor to use the resistance-couple-type valves with resistance-coupled amplifiers, to experiment with different types of valves in each stage until the best combination is obtained.

It will often be found that three general-purpose valves, say the 201A, may give only fair results when first plugged in, but if their positions are changed, there will often be a big improvement. In some cases this may be due to loss of emission in one or more of the valves, but it may also be due to slightly different characteristics in the valves themselves, which make them more suited to certain positions in a receiver.

It is impossible to make all valves—and, in fact, transformers—with characteristics stringently correct. As an instance of this, the man who builds a superheterodyne receiver will sometimes find that, though his transformers were of good make, it is necessary to have them matched after the receiver is built before anything like perfect results are obtained.

So remember that it is always advisable to try a change of valves if results are not normal in your receiver. If you remember this, often you will be able to bring your receiver up to scratch again after a poor period of reception, merely by changing the valves around.

Broadcast From Melbourne

LISTENERS to 2FC recently experienced what is described as the most remarkable land-line transmission carrying a programme of music that has yet been heard in New South Wales. The occasion was the eighth concert in the Melbourne Town Hall, by the famous Australians, who are now touring the Commonwealth. William Murdoch, pianist, and Harold Williams, baritone.

At the last moment arrangements were made through Messrs. J. and N. Tait, and 3LO, Melbourne, for a relay of this concert, which was being given in association with the University Symphony Orchestra. The relay commenced at 8.30, when William Murdoch was heard, in association with the orchestra, in Chopin's "Concerto in F Minor." The reception throughout was note perfect. Mr. Harold Williams was heard, in association with the orchestra, in "Star of Eve" (Wagner), "Prologue from Pagliacci," and "Charming Chloe." This brought the concert to a conclusion at 10.30 p.m.



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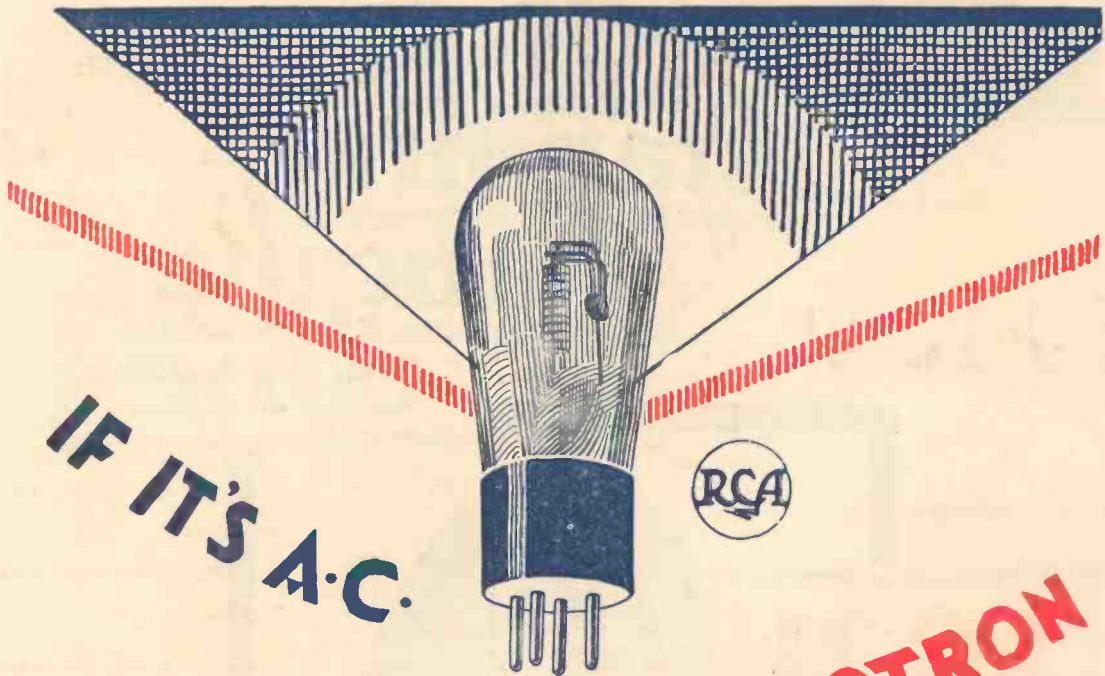
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