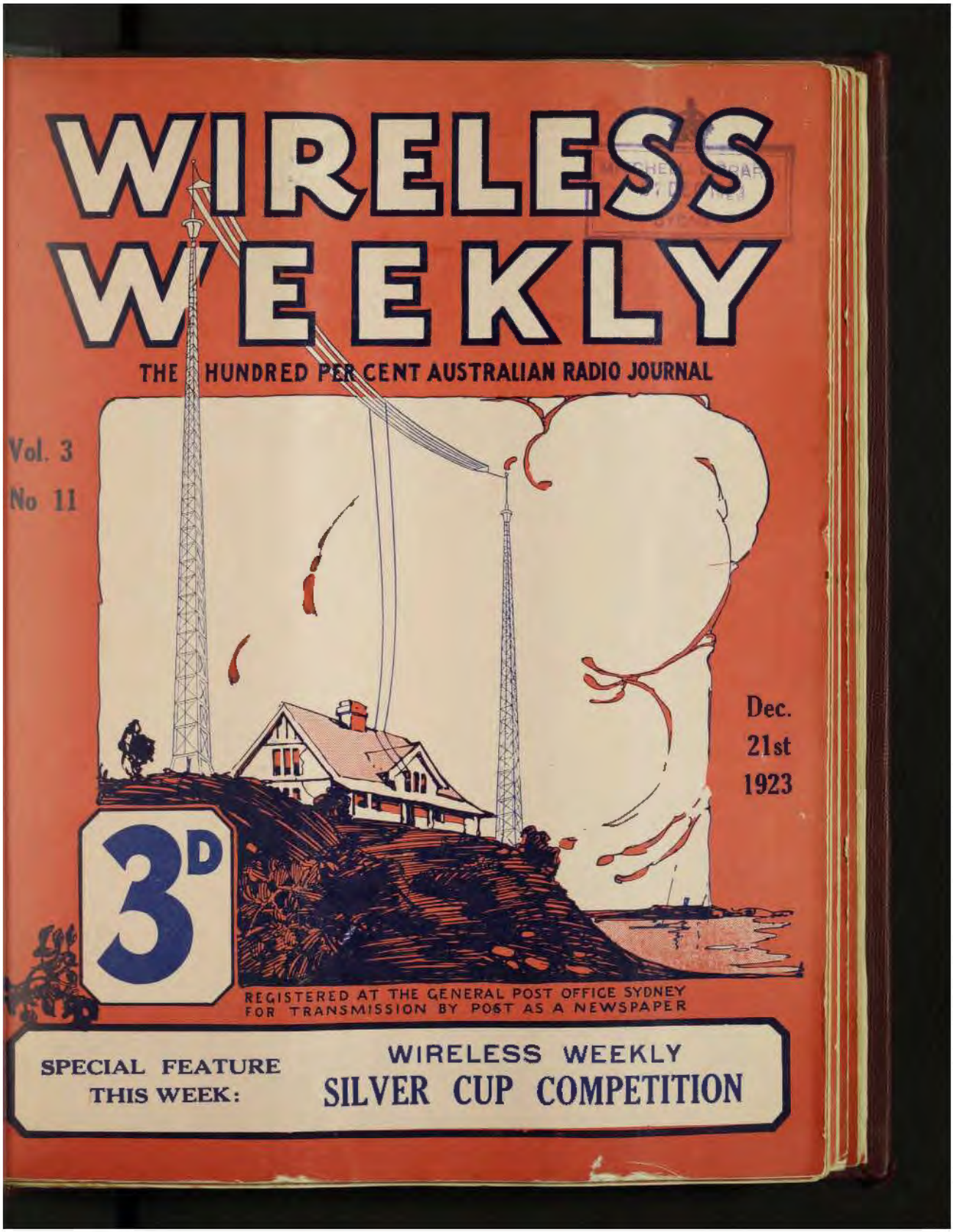
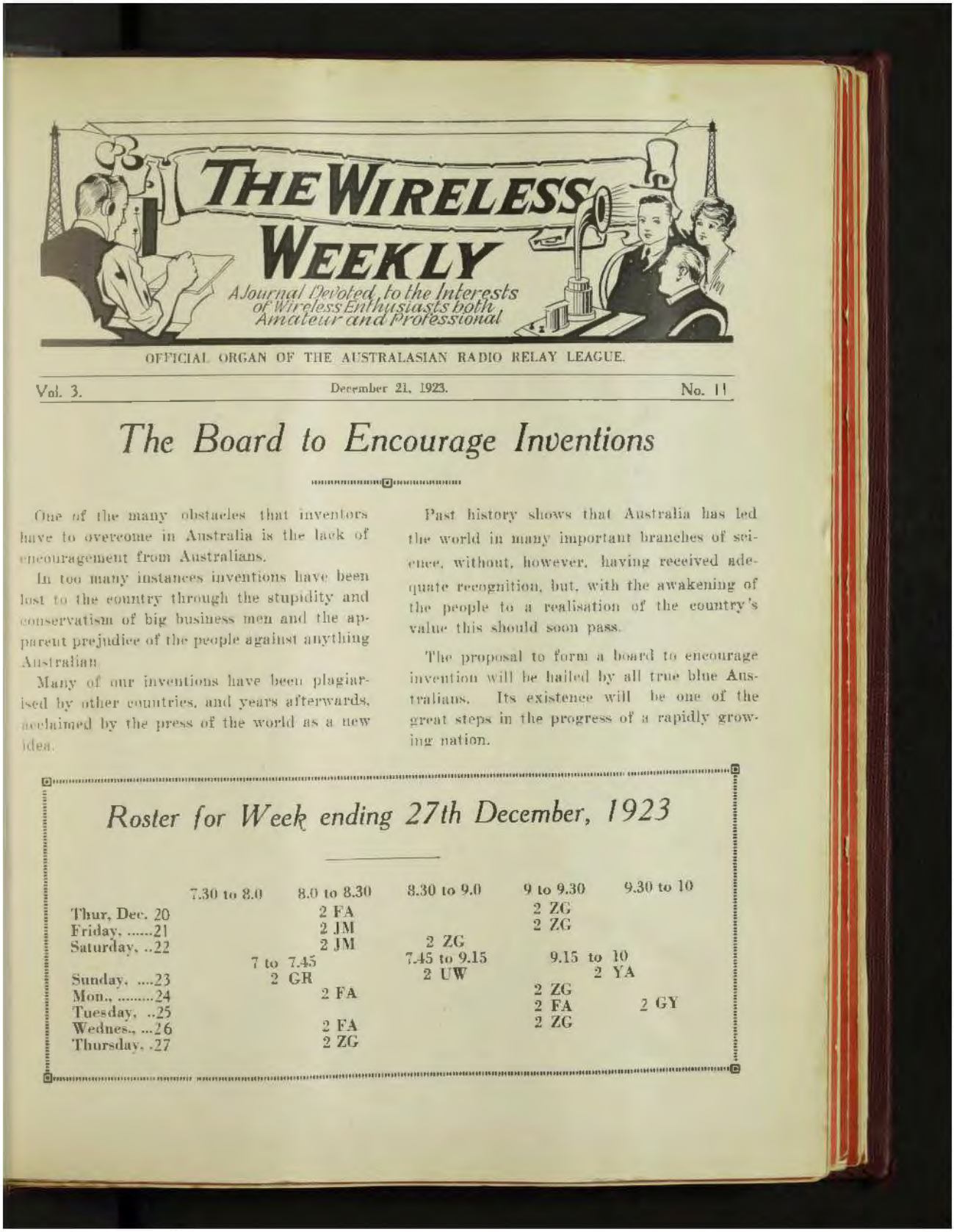




THE WIRELESS WEEKLY

A Journal Devoted to the Interests of Wireless Enthusiasts both Amateur and Professional

OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 3. December 21, 1923. No. 11

The Board to Encourage Inventions

One of the many obstacles that inventors have to overcome in Australia is the lack of encouragement from Australians.

In too many instances inventions have been lost to the country through the stupidity and conservatism of big business men and the apparent prejudice of the people against anything Australian.

Many of our inventions have been plagiarised by other countries, and years afterwards, acclaimed by the press of the world as a new idea.

Past history shows that Australia has led the world in many important branches of science, without, however, having received adequate recognition, but, with the awakening of the people to a realisation of the country's value this should soon pass.

The proposal to form a board to encourage invention will be hailed by all true blue Australians. Its existence will be one of the great steps in the progress of a rapidly growing nation.

Roster for Week ending 27th December, 1923

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9 to 9.30	9.30 to 10
Thur, Dec. 20		2 FA		2 ZG	
Friday, ...21		2 JM		2 ZG	
Saturday, ..22		2 JM	2 ZG		
	7 to 7.45		7.45 to 9.15	9.15 to 10	
Sunday, ...23		2 GR	2 UW	2 YA	
Mon., ...24		2 FA		2 ZG	
Tuesday, ..25				2 FA	2 GY
Wednes., ...26		2 FA		2 ZG	
Thursday, .27		2 ZG			

"A Merry Xmas"

Say it with wireless

C.Q., C.Q., C.Q.

TO every wireless enthusiast throughout the length and breadth of this great land, Wireless Weekly sends fraternal greetings.

A Merry Christmas to you, good friends!

May the New Year be filled with happiness and prosperity and bring about peace on earth and goodwill to all men.

The Season's Compliments from Wireless Weekly

V.E., V.E., V.E.

To Clear Debt

SCHOOL ENTERTAINMENT.

With the object of raising funds to clear the debt on the Unley District High School Oval, South Australia, a bazaar and continental was held in the school grounds recently.

Besides the usual features, a wireless demonstration was given during each of the two sessions. A charge of threepence was made for 10 minutes' entertainment.

A three valve receiving set was installed, working on a double wire aerial with a Magnavox loud speaker. The set was operated by Leslie McKenzie, who was assisted by Masters G. Smith, N. Watts and R. Anthony.

Excellent gramophone music was received from Station 5BQ. Mr. L. C. Jones, of Westbourne Park.

The demonstration was given by the permission of Mr. J. Malone, Chief Manager of Telegraphs and Wireless, Adelaide.

Sealed Sets

NOT FOR NEW ZEALAND.

RADIO dealers in all parts of New Zealand attended a conference in Wellington to formulate a scheme for the formation of a company consisting of radio traders, to operate 500 watt transmitting stations, one each in Auckland, Wellington, Christchurch, and Dunedin, the service to be practically continuous.

The scheme is similar in the main principles to the British scheme. The Government will collect an increased license fee from listeners-in, a portion of the revenue to be handed to the controlling company.

The sealed set system as used in Australia was regarded as obnoxious and not entertained.

Wireless in Australia

SCHEME NEARING FINALITY

The Postmaster-General (Mr. Gibson) said on Wednesday that the Department's scheme for the use of wireless to secure communication for the isolated regions of Australia was nearing finality. He expected to have some work going on very soon. The first stations would be established in Western Australia.

KING GEORGE AND WIRELESS

The wireless message, with which Australian Broadcasting was inaugurated, and which was heard by the late Sir Walter Davidson, has been placed before King George. In a letter to the Lieutenant Governor, the Secretary for State said that His Majesty had been interested to read it.

WIRELESS WEEKLY CUP

IN order to encourage the work of experimenters in this country, the publishers of "Wireless Weekly" have decided to donate two handsome Silver Cups for the Best Valve and Crystal Sets.

The competition will be open to any amateur in Australia and New Zealand, and will be decided by the vote of our readers.

Full details will be published early in January.

THE ROSTER.

Wireless Weekly will be glad if transmitters will kindly ring up and book their times.

It is desired, if suitable to transmitters, to book times from Wednesday to Wednesday. Ring Redfern 964.

Farmer's Station

SUCCESSFUL TESTS.

The first transmission from Farmer and Co's. big station at Willoughby, N.S.W., was highly praised by Mr. Chas. D. Maclurcan, President, and Mr. Phil Renshaw, Hon. Secretary of the Wireless Institute, the other night.

Throughout the whole of the test which was transmitted as purely experimental, there was not a fluctuation in modulation, strength or wave length.

Reports received from various parts of the State indicate that the telephony was received over a large area.

During the course of the programme, Mr. E. T. Fisk, managing director of Amalgamated Wireless (Australasia) Ltd., delivered the opening address on behalf of the directors of Farmers and Company, Ltd. In his speech, Mr. Fisk gave some particulars of the construction of the big station at Willoughby, the construction of the studios and of the manner in which the studio work is to be carried out. He explained that only one-tenth of the maximum power, and only small portions of the aerial and earth systems were being used at present.

Broadcaster's Daily Time Table

At the request of listeners-in, we publish the daily news and entertainment schedule of Broadcasters (Sydney) Ltd.

The station opens at noon each day. News items are sent at every half-hour up to 6.30 p.m. At night they are sent at intervals in the concert programme or the dance music.

Noon—Sporting news, fish, fruit and vegetable market reports; Alexandria produce market report; morning Exchange calls.

1-2—Orchestra.

2 p.m.—Weather forecasts; noon calls on Stock Exchange.

3.30—Chats to women.

3.45 to 4.45—Orchestra.

4.45 p.m.—Sussex Street markets.

6.30 p.m.—Final Stock Exchange reports.

6.45-7.30.—Bedtime stories.

7-30-8—Orchestra.

8.10 p.m.—Concert or dance music.

Monday and Thursday nights are radio dance nights, when an orchestra plays dance music for a couple of hours.

BROADCASTERS (Sydney) LTD.

Official Opening

P.M.G.'s Views

"The day when technical knowledge was necessary on the part of those engaged in both the reception and the transmission of radio messages is past. Wireless apparatus has been so simplified as to present little difficulty to those desiring to listen-in."
Thus did Mr. W. C. Gibson, Postmaster-General of Australia, speaking at the official opening of Broadcasters Ltd., on Thursday, sum up the standard of Wireless to-day.

Elaborate arrangements were made in the city for free entertainment, and at the Poster King's show at Coogee, thousands were present to listen-in.

The Tivoli, Fullers' vaudeville, King's Cross, and a large number of picture theatres installed sets for the occasion. An open air entertainment was provided in Martin Place and attracted a large crowd.

A Large Audience.

"So widespread is the service that, as I speak, I am addressing an audience which is scattered all over the State," said the Postmaster-General. "I am speaking to people in Martin Place, to others on sands at Coogee, to still others in the Sydney theatres, and again to people in neighbouring towns; possibly to people as far remote as Brisbane and Hobart.

"The broadcasting service affords a medium through which the statesman, the vocalist, the instrumentalist, can reach the very hearths of the people. To these in the isolated districts, it provides a ready means of breaking down that isolation that cuts them off from the sources of information and entertainment, and makes accessible to them matters of interest and of vital importance.

If Baldwin came to Sydney.

"If Mr. Baldwin, Mr. Lloyd George, or some other of Britain's great statesmen were to visit Australia to-morrow, there is hardly a man or a woman who would not wish to hear what he had to say. Yet how few, comparatively, would have the opportunity of listening to an actual speech by such a distinguished visitor in the absence of the facilities that broadcasting offers. With the aid of radio transmission, it would be possible, however, for Australians in every town of the State to listen to a speech made by the eminent vsiitor in the city of Sydney.

"To-morrow, listeners-in all over the State will be receiving from this station their regular service of news and entertainment.

"I fancy the initiation of this service must have demanded some courage. Only men strongly imbued with the spirit of their age—a spirit extremely extraordinarily successful; and as I declare this station open, I offer my hearty congratulations to the founders, and express the hope that the public will avail themselves of this most up-to-date and speedy means of communication that will henceforth be offered."

The Programme:

The following concert programme was broadcast:

Madame Goossens-Viceroy (soprano):
"Yesterday."
"To-day" (Spross).
"Chanson Indoue" (Rimsky-Korsakof).

Miss Phyllis Hazel (contralto):
"Softly Awakes My Heart."
From "Samson and Delilah."

Miss Daisy Richards (violinist):
"Seranade (d'Ambrosio).

Miss Violet Rogers (soprano):
"Gentle Shepherd" (Pergolesi).
"Elegie." (Massenet).

Mr. Frederick Newton (solo pianist):
"Nocturne in F Sharp" (Chopin).
"Waltz in C Sharp" (Chopin).

Mr. Norman Wright (tenor):
"Wondrous and Kind" (Brahms)
"Ah, Moon of My Delight" (Lehmann).

Mr. Arthur J. le Lante (flautist):
"Gipsy Dance" (Edward German)

Madame Goossens-Viceroy is a member of the staff at the State Conservatorium of music. Mr. Frederick Newton is organist and director of the Sydney Madrigal Society.

Wireless Institute

SOUTH AUSTRALIAN DIVISION.

The monthly general meeting of the South Australian Division of the Wireless Institute of Australia was held in the Prince of Wales Lecture Room at the Adelaide University, on Wednesday, December 5th.

Mr. Caldwell (President) presided over a large attendance. The minutes of the previous meeting were read and confirmed.

A letter was received from the Victorian Division asking us to agree to the formation of a Federal Council.

Further correspondence on the same subject was received from Mr. Malone, Chief Manager, Telegraphs and Wireless, and also from the Secretary of N.S.W. The meeting decided to leave the matter in the hands of the Council.

A very interesting lecture on "Radio Control" was given by Mr. Barker, a new member of this Division, who has had two years' experience as receiving engineer in that station at New York. Mr. Barker described the aerial system with its various tuning inductances, how different messages on a slightly different wave length were received simultaneously, and the different methods for elimination of interference.

Mr. Barker gave a number of diagrams of circuits used by the American amateurs, stating that the variometer tuned plate circuit was the most popular among the hams.

Those Sealed Sets.

Broadcasting was also touched upon. Mr. Barker stated that the chaos so often credited to American broadcasting in this country was a myth, as any one station can easily be tuned in at any time to the exclusion of all others.

Asked what was his opinion of the sealed sets as is proposed to be adopted here, Mr. Barker said that the sealed set is a farce, and showed how it was possible to tune it to other stations by means of external connections.

A demonstration with a Federal DX 58 broadcasting receiver had been arranged, Mr. H. C. MacKenzie having brought along his set, but owing to a failure in one of the batteries, the music was not received at anything like full strength; however, small items were tuned in from 5AG, Mr. Bland's station at Adelaide.

Sulphating in Small Accumulators

It may be confidently stated that the lead storage cell, so long as it is treated with even the slightest semblance of care and consideration, is one of the least troublesome of all accessories.

The writer has known of small —sometimes "home-made" accumulator sets, intelligently cared for, which have given every satisfaction—highly efficient service and practically no trouble—for years.

One may not safely treat a battery of lead cells as one treats a set of Leclanche or set of dry cells; that is by placing them in some out-of-the-way corner and leading them to look after themselves. A lead storage battery, if it is to be maintained in an efficient and proper working order, must be given a certain amount of active supervision and attention. Where this is not forthcoming, there is almost always sure to be trouble, as lead storage cells are exceedingly liable to a number of more or less serious and sometimes quite irremediable complaints.

How Detected and Caused.

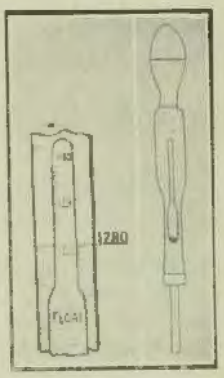
The more important of these, and certainly the most frequently met with, is symptomised by the appearance of a hard, white and insoluble sulphate upon the positive that is of course the brown) plate. At first this will be manifested and noticeable in only a few isolated spots, but once given a hold, it is surprising with what rapidity the affection will spread itself over the entire area of the plates.

The immediate result of this deleterious suphating is in the increased resistance which plates offer to the passage of current in either direction and in the reduction of the cells' effectual ampere-hour capacity. It is found that when on charge the plates begin to "gas" before the usual time, and also that on discharge they become prematurely exhausted. The eventual result where no prompt remedial measures are adopted is in the complete "choking-up" of the affected cell, and as often as not, in its speedy and permanent incapacitation.

Roughly speaking, sulphating is generally attributable to one or more of the following causes:—

(1) Charging or discharging at excessive rates.

(2) Discharging beyond the point at which the voltage begins to fall rapidly, i.e., at about 1.8 volts per individual cell.



Type of Hydrometer for testing the gravity

(3) Wilful or accidental short-circuiting.

(4) Allowing cells to remain uncharged for any length of time, after having been in use.

(5) Allowing the acid solution to become either too weak or too strong.

Buckling.

An accumulator that has been allowed to sulphate to any extent is also extremely liable to a further disablement known as "buckling." This is readily distinguishable by a warping and distortion and a general increase in the size of the brown plate. Taken by itself, sulphating, if it has not gone too far, is usually amenable to a little patient and persuasive treatment, but when this doubly complicated stage has set in, the case becomes a rather hopeless one, and it usually means that the positive plate at least—if not the entire cell itself—will have to be "scrapped." Internal short-circuits are set up, the paste falls out of the grids, and in some instances the containing cases are burst open.

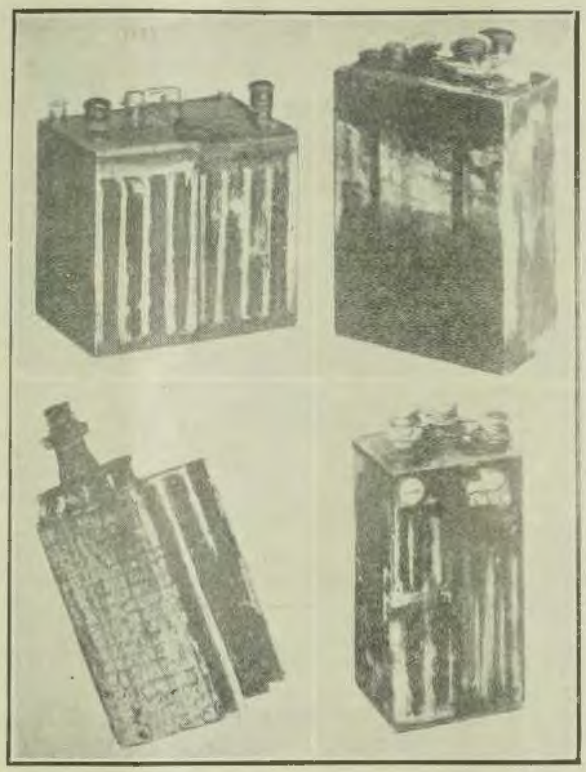
When buckling has set in to any appreciable degree, it is advocated that the positive plates are at once replaced by others, or else that the affected cell or cells be put out of service altogether. When things have gone so far as this, it is almost always sheer waste of time to endeavour to attempt to do anything. But where sulphating is unaccompanied by buckling or where the buckling is only slight, matters may be somewhat remedied.

Curative Treatment.

A cell that is suspected of sulphating should be immediately taken out of use. The acid should be poured off, and it is as well if the containing cases are opened up and the plates lifted out for a thorough inspection and overhaul. It should be noted whether there are any small, dislodged pellets of paste bridging across the plates. If so, these should be removed. In handling the plates, considerable care will be found necessary in order to avoid dislodging more of the paste, all loss of which is of course accompanied by a corresponding decrease in ampere-hour capacity.

The sediment should then be removed from the bottom of the case and a fresh acid mixture prepared. This is done by adding about five parts of pure distilled water to one part of best brimstone sulphuric. (When mixing, always add the acid to the water and not the water to the acid.) The solution, when readly—and it is very essential to keep a small hydrometer by one for this purpose—should be then as near as possible to 1.200 specific gravity. This is important for several reasons. Acid either too weak or too strong is in itself conducive to further sulphating, and it is found, moreover, that this particular specific gravity coincides approximately with the greatest fluid conductivity. That is to say, at 1.200 the acid offers less resistance to the passage of an electric current than at any other specific gravity, either higher or lower.

Immediately the plates have been re-inserted in the case and the new acid poured in, the cells should be placed on charge. At first this should be at a very low rate, owing to the reduced area of active material. A sulphated cell placed on charge at normal rate almost inevitably buckles, so great care should be taken in this respect. Once on charge, the restoration of the cell to a healthy life is then very largely a mere matter of time. It is found that the electrolytic action of the charging current, which



A neglected battery in which the negative plates are covered with white lead sulphate.

Corroded terminals accompanied with bad sulphating.

Sulphated negative plates with the lead paste falling away.

Another example of sulphating due to inattention to the level of the acid.

may be gradually increased as the treatment proceeds, slowly disintegrates the white, scaly deposit, until at length, after persistent application, it gradually disappears altogether.

On no account should the current be drawn from the cell during this time, nor is it wise to stop or interrupt the charging current unless perhaps it is to empty out the old acid once or twice and fill up again with new, of correct specific gravity.

Continual charging then, until every vestige of the noxious white sulphate has been reduced, therein lies our cure.

Things to Do and to Avoid.

Once having remedied matters and having got our cell into action again, it is as well to avoid any relapse or repetition of the evil by attending closely to a few simple observances.

In the first instance, always adhere strictly to the directions of the makers as to the rates for charging. These are usually the maximum rates, and therefore should never on any account whatsoever be exceeded. Regarding the discharge rate, it may be taken as a good general rule that one should never exceed that rate which would result, if maintained continuously, in the exhaustion of the cell in about ten hours' time. That is to say, one should never discharge a 40 ampere-hour accumulator at a higher rate than 4 amperes, and an 80 ampere-hour accumulator at 8 amperes, and so on.

Secondly, never discharge an accumulator down to beyond 1.8 volts per individual cell. When so far discharged the electrolite is at a very low specific gravity, and the condition of the plates is such that there is every tendency towards sulphating. At 1.8 volts the cells should be immediately placed on charge.

Thirdly, never wilfully short-circuit a cell. It is necessary here to refer for a moment to the rather prevalent and dangerous practice of laying a short length of wire or cable across the terminals of a cell in order to ascertain whether it has received or still retains a good charge. Nothing could be more deleterious. The effect of the "short" resembles that of an explosion on a small scale. There is first a tremendous rush of current and evolution of gases, secondly a violent expulsion of active material, and thirdly a disastrous warping and distortion of the plates. Cells should always be tested with a small, accurate low-reading voltmeter.

Finally, pay strict attention to the specific gravity of the acid. When fully charged this should be about 1.20 1.210, and when in a discharged condition about 1.190. When, owing to evaporation and gassing, the level of the acid falls, make up the deficit by adding pure distilled water only.

R. R.—"Wireless World."

COMMUNICATION

Growth Through the Ages

INTERESTING LECTURE BY MR. CALVIN A. WALTERS, AT THE SYDNEY UNIVERSITY.

One of the most successful wireless demonstrations of the year was held at the University of Sydney, on November 29th last, when 400 people attended a lecture given under the auspices of the "Pathological and Bacteriological Assistants' Association."

The lecturer was Mr. Calvin A. Walters, Assistant Secretary of the Association, who spoke on "Communication, Ancient and Modern, with special reference to Wireless Telephony."

Mr. Walters dealt conclusively with communication starting from the earliest times when the early people used such crude methods of telegraphy such as drums, fires, flags, and lamps. He showed how the drums of the various native tribes were constructed and how they were used to convey messages from ont tribe to another. These native people, said Mr. Walters, were very expert in the construction of their instruments, and it is doubted if modern man could construct instruments to-day so efficiently as the primitive people of the earth.

Early Methods.

As man became civilised he sought other methods than drums, and his attempt was no more ingenious than the natives. It was certainly no better. Early civilised man used flags, lanterns and guns.

The lecturer then went on to show how the early Greeks and Romans signalled between their armies. Letters run out in certain orders and illuminated by oil lamps were used.

Pots carrying floats suspended in water were also used. These floats were provided with sticks upon which were divisions representing messages. When communications were started the pots were filled with water. Each army had one of these pots. At a given signal the water was let out of the pots. The message sticks were carried downwards. At another signal the taps were closed. The message was then read off the stick.

Modern Signals.

The lecturer then went on to deal with the invention of the semaphore by Richard Edgeworth and Claude Chappe, and a method of signaling with lamps, invented by John Booz, of Glasgow.

The origin of the postal systems was then dealt with. Mr. Walters showed how the Persian and Asryian monarchs developed a postal system. Riders on horses were able to cover 150 miles per day, which was not a bad speed, considering the times.

The speaker their described how Samuel Morse invented the telegraph, after seeing one of Ampere's electro magnets, and how this led to the laying of the Trans-atlantic cable by Cyrus Field.

This led Graham Bell to study the application of electricity to the transmission of speech. An interesting phase of the lecture was when Mr. Walters showed by diagrams how it may be possible for insects to use electro magnetic waves for calling each other. He showed how animals could generate electricity in their bodies.

Practical Demonstration.

When the lecturer had dealt with the discovery of electro magnetic waves by Hertz, he gave a popular descrip-

Continued on page 10, col. 1

LISTENING-IN

By "Dryblower" in Perth Sunday Times

In the mystic play of Hamlet, half-terrestrial, half divine,
From the lips of old Polonius dropt one everlasting line:
And "the music of the spheres" remains a fascinating phrase,
Though moulded when Elizabeth spoke through her spacious days.
Three centuries the world has rolled, and still may roll again.
Since Shakespeare's soul went out to seek the place of super-men,
But to-day across the continent and seas for ever swirled
We listen to a language that is whispering round the world.
Listening in, listening in,
Though the stars in splendour spin,
The wonder-waves of wireless have a magic soul within:
Far beyond the sprinkled spheres,
Where the darkness disappears,
Other planets may have ears—
Listening in!

It has drawn the ocean closer: it has linked up every land:
On the highlands of two hemispheres its swinging turrets stand:
It speaks to stately liners and to billow-battered tramps:
It talks in wonder wireless to a thousand timber camps;
It warns the Arctic whaler and it gives a nation's news
To the salt-encrusted collier and the gunboat on a cruise,
Pulsing, pulsing, purring, purring, from a million dynamos,
From the suffocating tropics to the Nova Zembla floes.
Listening in, listening in,
Where the porpoise flirts his fin;
From the Gippsland brown-coal gullies to the land of Gunga Din,
Mankind white and mankind black,
Submarine and fishing smack,
Steer a wireless-guided track—
Listening in!

Man is puny, man is petty, microscopic in his mind:
A molecule of mole-land, deeply burrowed down and blind,
With the magic of a million moons, the splendor of the sun.
In his mind conceiving chaos when his pigmy race is run.
He plods upon this planet as a microbe gropes the dark,
A nothing in a knot-hole in a God-directed ark:
Yet he doubts the Pow'r Omnipotent Whose hand is ever near,
And who gave him human eyes to see and human ears to hear.
Listening in, listening in,
Mankind's kith and mankind's kin,
Do not hear the song celestial soft 'ning life's discordant din:
Ocean waves, on shingle bars
Sing the song of angel stars,
Yet these humans hear but Mars—
Listening in!

Who knows, who knows, what wonders may poor human kind befall
When knowledge lifts the veil as lifts the night's plutonian pall?
Who knows as we to-day may call
Across the sea and land,
The starlit gulfs of God may be by signs supernal spanned?
The Architect who gave to mankind life and love and light,
Who sent us sun-emblazoned day and star-bespangled night,
Stops short at nothing circumscribed—a paltry, petty thing—
At continents and quarrellings, at crumbling crowns and king.
Listening in, listening in,
We to wonderland may win:
We may find our waiting loved ones far beyond the doubt and din.
Though they seems to us to-day,
Hopeless worlds and worlds away,
We may know that somewhere they—
Listen in!

COMMUNICATION

Continued from page 8

tion of the principles of wireless. How ether waves are generated and received, and how speech and music are transmitted, was dealt with.

After speaking for 1½ hours, Mr. Walters showed a series of very interesting lantern slides which were lent to him by Amalgamated Wireless Ltd. These slides were very instructive.

A demonstration was then given when music was received on a three-valve Sleeper Monotrol, from Broadcasters (Sydney) Ltd. The set was supplied by Mr. Harry Wiles, and Mr. Weston, of Mr. Harry Wiles, manipulated the apparatus. The music received was excellent and after 2½ hours of entertainment the meeting closed.

Many inquiries were made with regard to wireless, and the audience heartily enjoyed the very excellent lecture and demonstration.

Terrible Ordeal

Invisible Audience

I have just returned from my first attempt at broadcasting, writes S.P.B. Mais in the London "Daily Graphic." For two hours I stammered into a devilish engine made of tin, shaped exactly like the Laxey wheel or a toy cinema. I had travelled all the way to Cardiff to meet this sinister wheel, which had neither sound nor motion. It was as idle as a painted ship upon a painted ocean. It sat like Patience on a monument, unsmiling at my grief.

I felt as if I were blindfolded with cotton wool in my ears.

"It's time for you to begin," the dictator said. He turned on a light, and I stepped forward. I grasped the pillar which held the instrument with clammy hands. I searched for words, but all words, both good and bad, deserted me.

I mumbled coherently. I began a sentence and didn't like it. At all costs, I felt, I had to go on. The director crept up to me and whispered, "Too fast," he said, "too jerky; keep the voice even."

I longed for some book to read to my audience, I hadn't a scrap of paper or a single note. For two hours I was expected to keep an unseen host intelligently entertained. I searched through the mental blanket that enveloped my brain and swamped my imagination to visualise my listeners.

Schoolgirls or Colonels?

I began to talk as if they were a pack of schoolgirls; I became maudlin, dictatorial, superior, and sentimental.

It then struck me that a fiery, retired Anglo-Indian colonel might be listening; I trembled as I thought of his ears being offended at my audacity in trying to teach him. I became in consequence, for the next minute or so, almost Uriah Heepish in my humility.

Then I bethought me of riotous seafaring men or farmers in a bar parlor. I became truculent and explosive; I

Continued on page 14

Wireless Sets for Motor Cars

How Portable Receivers Add to the Pleasure of the Car User.

Since the earliest attempts made some years ago to develop wireless reception from motor vehicles, remarkable advances have taken place in connection with the instruments used for this class of work. From the results secured in recent experiments, it seems safe to predict that in the near future wireless sets will become almost as widely standardised on cars as are electric lighting and starting appliances, for the modern motorist belongs to a class of the public that is always on the alert for the latest scientific development applicable to the car.

By Richard Twelvetrees, A.M.I. Mech. E.,——in "Wireless World"

In certain quarters there is an objection to wireless sets as applied to motor cars, based on the erroneous supposition that the vehicle must be disfigured by the addition of an aerial, or that elaborate arrangements have to be made to fix up temporary wires in order to receive signals from a broadcasting station.

Though such was the case with the earliest experiments conducted, the modern receiving set can be relied upon to work quite satisfactorily without any such accessory.

During last summer the writer carried out a number of experiments with a portable outfit, which was entirely enclosed in an ordinary suit case, and messages were picked up with great clearness when travelling at fairly high speeds at a distance of forty miles or so from the broadcasting station.

One of the great advantages of a portable set of this description lies in the fact that it can be used for such a variety of purposes. For example, one can enjoy the evening concert round the fireside, carry music on the car when visiting friends, add to the enjoyment of outdoor picnics or river trips by providing an entertainment from the car, and those who find pleasure in relieving the monotony of our disabled heroes in hospitals may do worse than take their sets to such places when out on pleasure bent. No more appreciative audience can be found than a gathering of men in hospital blue, and the motorist with a portable set is always sure of a warm welcome.

In considering the advantages of the fully portable set from the point of view of the motorist, one must recollect the remarkable facilities provided in the modern motor car for obtaining an unfailing supply of electric current, for by tapping a circuit from the electric lighting batteries, the charging difficulty is entirely overcome.

Those who have had annoying experiences from Morse signals and other electrical disturbances in the atmosphere are apt to imagine that the magnetos on motor cars set up a great deal of interference, but at no time during his numerous experiments with sets on moving cars has the writer found any trouble in this respect. The only exception that may be remarked is in certain vehicles of trans-atlantic origin in which the ignition is provided by a flywheel dynamo and high tension coil, but even on these machines it is possible to insulate the instrument by a copper band connected by an earth wire to some part of the frame.

In installing a set on the car it is always advisable to provide suitable cupboard space for the reception of the valves, coils, telephone receivers and other parts liable to suffer from damage by vibration when travelling fast over rough roads, and indeed it will be a great advantage when sets are built into the cars instead of being regarded as mere additional fittings.

Motorists will appreciate this point when they recollect the objections found in early cars when lighting sets and other parts of the car equipment were added as after-thoughts.

In some respects the reception of a broadcast programme from a car in motion may be looked upon as a rather unnecessary luxury, for most motorists look upon their cars as a means of getting to a destination, and whilst on the journey have already too much to occupy their attention to wish to indulge in knob-turning, a fact that tends to the simplification of design for sets used for the purpose. After carrying out various tests with sets provided with frame aerials, the writer has come to the conclusion that the most convenient form of aerial to em-

How a portable Wireless Receiver can add to the pleasures of picnicing.

ploy, consists of a length of rubber covered flexible wire, loaded at one end and carried in the car in a kind of glorified fishing reel.

The weight at the end of the wire enables one to throw the aerial over a tree or other suitable object, and if so desired an earth can be used in the shape of a mat of copper gauze, laid on the ground near the car.

Though so much has been done in connection with wireless on motor cars, there is still a very wide field open for improvement, for up to the present the closest interests of the wireless constructor and the motorist have not been combined to the fullest possible extent. It is one thing to construct a very fine set for wireless reception and another thing to arrange it so that it can be conveniently installed in a motor car, where the matter of space and accessibility is of paramount importance.

Unless the wireless constructor is a keen and experienced motorist, his set will possess drawbacks that will only be discovered when put into constant use. Compactness is the greatest feature for a set to be used on the car, and it is sad to have to remark that many constructors appear to revel in masses of component parts spread over large areas, connected up by a maze of wires.

Whilst there is no doubt that such sets are the most useful for genuine research work, the motorist cannot be expected to submit his car to the tender mercies of the wireless experimenter, who does not fully appreciate the special requirements.

Erecting a Riverside Aerial

THE SOFT VALVE

Now that so many soft valves are in use, this short note on the operation should prove helpful to those whose experience does not go back to the days when valves were invariably soft. The soft valve for certain purposes will give results superior to the usual hard variety.

Recently, quite a number of "brothers in radio" have come to me, bewailing their fate in the following manner. "That cheap valve I got is no good; I don't know what's wrong with it but it won't work, and goes blue when it's alight."

Really these poor folk are the possessors of a splendid valve for some purposes and, once they learn how to use it, will search around to procure a stock of them.

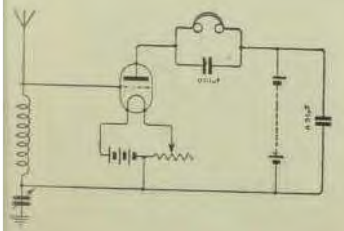
The so-called soft valve is identical in construction to the hard valve commonly in use, the sole difference being a slight amount of some inert gas in the bulb, or else an extremely low vacuum.

Ionisation easily takes place, producing the blue glow, which should not be allowed to continue. This valve is an extremely good detector and I have frequently obtained results with one, almost equal to a hard valve and one note magnifier; and all this entirely without the use of reaction.

Two things are necessary, firstly a good filament rheostat capable of fine adjustment, and secondly a high tension battery of about 40 volts adjustable in steps of 3 volts. Invariably the required plate voltage will be low in the region of 20 to 25 volts. As far as circuits go the ordinary grid leak and condenser system of rectification may be used, but sometimes better results may be obtained with a slightly different circuit shown in Fig. 1.

Care should be taken that the low potential end of the inductance and also the negative end of the H.T. battery are brought to a point between the filament rheostat and valve. A large condenser should be used across the H.T. battery and the value given is only a suggestion. Where low frequency amplification is to follow, hard valves should be used for the magnifiers and a tapped H.T. battery employed. The circuit would be as Fig 2.

Fig. 1



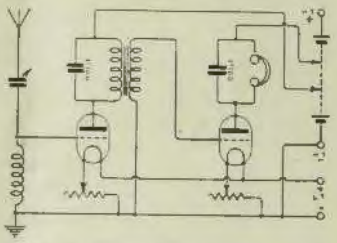


Fig. 2. Detector plate circuit and note magnifier

The soft valve frequently makes a good high frequency amplifier, but very rarely a good note magnifier. One great exception to this appears to be the American valve, Radiotron U.V. 200, which operates in any position on a plate battery of 22½ volts: The method of operating a soft valve is as follows: Give the plate a supply of 20 volts and slowly turn up filament. The valve will now operate, but requires a rather brilliant filament. Now increase the plate battery in steps of 3 volts, keeping the filament constant. A point will be reached where a violent hissing takes place, accompanied by a slight blue glow, or distortion of signals. The filament should now be reduced until the hissing stops, and again increased to a point just preceding hissing.

The extra trouble involved in the use of a solft valve is well repaid and, if compelled td work on a single valve, the author would definitely choose this type.

A. F. B.

in "Wireless World."

Variable High Resistance

The need of variable resistances for use in the Flewelling circuit resulted in the trial of the following method of construction. The resistance is critically variable, costs little to make, gives very satisfactory results, and can be put together in a very short time.

The difficulty was to make good contact, and this was overcome by using a small amount of mercury. For the resistance itself a bone knitting needle 6 inches long was given a coat of Indian ink, and a connecting wire twisted tightly round one end. A glass tube was chosen so that its inside diameter was slightly larger than that of the resistance, and a piece 5 inches long cut off. A cork to plug one end was obtained by boring a cork with a cork borer such as is used in laboratories, and carefully pushing out the boring and using that. A connecting wire was soldered to the eye end of a small sewing needle, and the latter was pushed through the cork and the cork plugged into one end of the tube. About 1/4 in. of the pointed end of the needle was now projecting inside the tube.

The tube was now mounted vertically and enough mercury poured in so that when the resistance was placed as far as it would go in the tube the mercury was about 1/4 in. from the top. The surface tension of the mercury was sufficient to retain the resistance in any position in the tube. In this way more or less of the resistance could be put in circuit by simply moving it up or down in the tube, the mercury shorting the part immersed. Very critical adjustments could be made, and two such "leaks" gave good results when used in the Flewelling circuit.

A. H.

TERRIBLE ORDEAL From page 10

even ventured on humor, and laughed in to the machine. I shall never forget that laugh. The machine seemed to hit me in the face for my ill-placed levity the laugh died away in a wail, and the balloon of my self-conceit was pricked.

I shut my eyes, and the shades of curates and chorus girls, milliners and 'bus conductors, stockbrokers and station masters, passed before my vision like all the ghosts of his enemies before Richard III., on the eve of Bosworth.

I was completely at sea. The more I floundered, the more fiercely I gripped the machine, trying to shake it out of its stupor into betraying some verdict on my words.

Out of the silence there came no hand-clap, no hiss — not even the whirr of an engine. I might as well be on a desert island chanting faint hymns to the cold, fruitless moon, for all the good I was doing.

In agony, I gave a backward glance at the clock. Surely my time must nearly be up. Two hours was not after all, eternity. I was petrified to find that at the end of what I had taken to be 1½ hours I had been talking for twenty minutes.

Carried Out.

Luckily, my entertainment was broken into by songs and recitations. Wildly I glared at my director beckoning him to release me, and I broke off in the middle of a sentence to be almost carried out of the ring to recover, while a baritone, completely at his ease, sang as if he were in the Albert Hall.

Like lightning the song ended, and I was on my feet again for the second round. I spoke as if I were reading the lessons in the arms of the reciter, who distracted the poor audience while I was being sponged and towelled for the third round.

By the end of 1 3-4 hours I was at last getting into my stride. They must all be asleep by now, I thought; I can say what I like. I had in mind a brilliant peroration, when———

"London calling!" said the director. "That's enough."

I had not even the strength left to smash the devilish instrument which had sapped all my energy for 105 minutes.

"You should hear Professor ——," said the director. "He makes us rock with laughter when he talks."

PUBLISHERS' NOTE

WE regret that owing to an oversight, we omitted to mention that the article headed "Practical Radio Slide Rule," which appeared on page 6 of "Wireless Weekly" (No. 38, Vol. 2), had been re-printed by the courtesy of New York Radio News.

NEWS IN BRIEF

The Westralian Farmers Ltd., the pioneer broadcasting firm in Groperland, has standardised a receiving set which they have christened the "Mulgaphone."

The firm intends to cater largely for settlers out-back.

* * *

One of the largest hotels in Minneapolis has decided that it cannot honestly advertise as being equipped with "all the modern conveniences," unless it includes radio service. Three sets, therefore, have been installed in an upper story and each room is furnished with a connection to one of these sets. A guest only has to plug in to be given radio entertainment.

* * *

There are about 1,900 amateur stations in the United States that are licensed to transmit, whilst over four million receiving licenses have already been granted.

* * *

According to report, 6,000 radio enthusiasts a month are applying for receiving licenses in England, despite the red tape and rules governing reception of broadcasting.

* * *

America is divided up into nine radio districts, each with its own inspector, who is in charge of several radio experts. Each district controls the operation of all stations, as well as the issuing of all licenses to both operators and stations.

* * *

At the great transmitting station at Kochel, in the Bavarian Alps, the antenna wires are stretched between two mountain peaks, which are 1,732 and 904 metres in height respectively. The lead in is taken off in the centre of the antenna and brought straight down to the operating building, which is located in a hollow between the two peaks.

* * *

When the "Mayflower" sailed from Plymouth to America, two years elapsed before an answer was received in England, yet two months was the record for the "speedy ocean liners" in the nineteenth century. The airships and aeroplane reduced that time to two days, but now messages can be sent and answers received from America in just two minutes.

* * *

The latest nation to take up radio is Switzerland, where the manufacturers can hardly turn out instruments fast enough to keep up with the demand. The nearest important broadcasting station is the Eiffel Tower, 300 miles away, but with the Alpine summits to give height to their antennas, the Swiss do not find difficulty in receiving programmes.

* * *

With the successful opening of broadcasting stations in Buenos Ayres, Montevideo, Rio de Janiero, and other cities, radio enthusiasm in South America seems to have really come to stay. American dealers report that radio apparatus is being bought in all the countries: in Argentina alone there are 25,000 receiving sets as compared to approximately 100 a year ago.

* * *

The harnessing of the human voice and of orchestral concerts are only beginnings of radio's possibilities; one of the latest achievements to be recorded is the broadcasting of the voice of Niagara Falls. By placing a microphone in the deep recess of the famous Cave of the Winds, it is possible "to hear the mysterious rush and roar of Niagara, the subtle orchestration of infinitely shaded sounds."

* * *

When Anna Case sang at the Metropolitan Opera House recently, her voice was broadcast from four radio stations at once—from WEAF in New York, WMAQ in Chicago, WGY in Schnectady and KDKA in Pittsburgh. Her voice was carried to the four microphones over the telephone wires, and was projected into the ether almost simultaneously.

New York Police have installed wireless apparatus to receive instructions from Headquarters when out on patrol.

THIS MAY BE A COMMON SIGHT AT MANLY.

A couple of insulated wires thrown over the sands in place of an antenna and a ground, a portable set and aloud speaker, furnishes a happy solution to the surfer who wants to miss neither his Sunday devotions nor his morning dip.

Engine Service by Radio

The radio operators on board ship have often been called upon to transmit messages dealing with human illness on board their vessels, but it is very seldom if ever they have to fill the ether with appeals for a diagnosis of engine trouble, yet that has been what the S.S. Jangvar recently did. This ship uses Diesel engines, which takes a special kind of oil as fuel. On her way from the Meditteranean to New York the vessel's fuel tanks ran dry unexpectedly. By using her wireless it was found that the nearest port where oil could be obtained was Ponta Delgada, but that there only a heavy oil, much heavier than Diesel oil, could be had. Could this oil be burned in the Diesel engine and if so, what, if any, alterations would have to be made? was the problem faced by the chief engineer of the Jangvar. An appeal for advice was sent to the Diesel department of the Morse Drydock and Repair Company, by radio. Instructions were sent back, and the Jangvar which otherwise might have had to wallow helplessly in the seas until a ship came along and towed her to New York, was able to continue her journey under her own power.

RADIOCULOUS

He: There's nothing very striking about that little man over there, is there?

She: No.

"And yet that man's name is famous in the radio world.

Really?

Yes, his name would be known in almost any part of the world.

Good gracious! What is his name?

Smith.

* * *

"Doctor, I've tried everything, and I can't get to sleep," complained a voice at the other end of the wireless. "Can't you do something for me?"

"Yes," said the doctor; "just listen in and I'll sing you a lullaby."

* * *

The captain entered the officer's mess kitchen.

"Do I understand that there will be no dessert to-night?" he demanded sternly.

"Yes," replied the new and careless private.

"Yes—what?" roared the captain.

"Yes—we have no bananas."

Coming Events

* * *

The congregation of a Kogarah Church was startled on a recent Sunday when a snake was noticed hanging from the rafters in the middle of a hymn. — Evening News.

* * *

We have never seen a hymn let alone one capable of holding a snake.

One of the great disadvantages of the sealed set, is the fact that the "listener-in" is compelled to patronise only one broadcasting firm. — Evening Paper.

* * *

There are several makes of cat whiskers on the market, the operator should be careful, however, to see that it just touches the crystal. It requires a good deal of skill to get the best results— Same Paper.

It's Safer to Use an Aerial

Leichhardt and District Radio Society

On Tuesday, December 11th, the sixtieth general meeting of members of the Leichhardt and District Radio Society was held in the Club-room, 176 Johnston St., Annandale. The occasion was a special one, and members were requested to bring a friend along, it having been decided to hold a Wireless Concert night for the special benefit of visitors. A considerable quantity of gear was assembled for the occasion, and, under the guiding hand of Mr. F. Thompson, was the means of providing a very pleasant evening's entertainment for all present. Later, refreshments were provided and, before dispersing, visitors were entertained with a brief explanation of a few of the mysteries of wireless by Mr. Thompson, who also replied to a number of questions asked by those present.

The Society has now gone into recess over the Christmas and New Year vacation, and the next meeting will be held on January 8th. On January 19th, a launch picnic will be held under the auspices of the Society, and, as a receiving set will be installed aboard the boat for the occasion, members are looking forward to a very pleasant outing.

With a view to increasing its membership, the Society is anxious to receive inquiries from those interested in its activities, the same should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale.

Northern Suburbs Club

PROPOSED RE-ORGANISATION

The Northern Suburbs Radio Club held its first meeting on Friday, December 7th, at Gordon Public School, Gordon, a room of which has been kindly lent to the club by the Education Department. A very good attendance of amateurs of the districts between Roseville and Hornsby made it possible for the organisers to carry out an election of officers on its first meeting night, which shows that a club is very badly wanted in these districts. It is the desire of the organisers to have if possible, one of the biggest radio clubs in N.S.W., as it is their contention that a small club in each suburb cannot do the same work as a one big central club. When the organisers approached the members of the Killara Club in the respect of this one big club, it was unanimously decided by them to affiliate at once. The Secretary would like to get into touch with the secretaries of other small clubs between Roseville land Hornsby, so that he can come along to one of their meeting nights and put this whole matter before them.

The meetings of the Northern Suburbs Radio Club are to be held every Thursday, at 8 p.m. at Gordon Public School. Any information in respect to this club will be gladly given by applying to the Secretary, R. Primmer, Gordon Rd., Gordon.

THE SECOND MEETING.

The second meeting of the Northern Suburbs Radio Society was held at Gordon Public School, Gordon, on Thursday, December 13th, Mr. D. McIntyre, the President, being in the chair. New members were enrolled, and a pleasant evening was spent. Dr. Greenwell gave a demonstration on a three valve set of his own construction, but owing to the fact that the temporary aerial was running parallel to the high tension mains the demonstration was not quite the success that it should have been for Dr. Greenwell should be congratulated on the construction of the set used. Mr. Bob Chilton also gave a short talk on the neutrodyne circuits, which was very well received by the members present. Questions were asked and answered on various subjects and short discussions were held. The meeting closed at 10.15.

The next meeting will be held at Gordon Public School on Thursday, December 20th at 8 p.m. when it is hoped to have another set working, and also a lecture. Intending members should try and be present at this meeting.

A CONDENSER BANK OF ADJUSTABLE CAPACITY.

A very useful piece of apparatus for the wireless man's bench is a bank of fixed condensers wired in parallel and so arranged that any can be removed or changed instantly. By making various combinations any capacity up to the total of that of the fixed condensers in one's outfit may be obtained readily. To be able to do this is a great boon when one is experimenting in order to find the best value of the condenser to be placed in shunt with telephones, loud speakers, the windings of transformers, the high tension battery, and so on. It will also be found particularly useful if one is making up low frequency resistance capacity amplifiers as a simple means of discovering the best value for the grid condensers.

The condensers used are of the flat metal-ended type, which fit into clips. Both condensers and clips can be bought quite cheaply from advertisers in this journal, but those who prefer to make their own are referred to the description which appeared previously in Wireless Weekly.

A very handy formula which was given there may be repeated. The capacity in microfarads equals O x N x 0.0001, where O is the overlap of the plates in square centimetres, and N the number of dielectrics made of the best ruby micra 0.002 in. thick.

The panel for the condenser bank is a piece of 1/4in. ebonite measuring 4 1/4in. by 6 1/4in. This is marked out and drilled as shown in Fig. 11, all of the holes being 4BA clearance. Two strips of sheet brass 5 1/4 in long and ¾ in. wide are each drilled with seven 4BA clearance holes to correspond with those in the panel.

The strips are now laid on the panels. The terminals are passed through the end hole of each and secured. The clips are then fixed in place by means of 4BA bolts passed through the brass strips and the ebonite. All that remains is to mount the panel upon a small box about 1in. in depth.

It will be seen that whatever condensers are placed in the clips the total capacity of the bank is the sum of their individual capacities, since all are in parallel. If, therefore, a set of condensers is made ranging from 0.0001 uF. to 0.01 uF., as described in the note already referred to, the experimenter, by using combinations of large and small sizes, can obtain a very wide range of capacities in steps of 0.0001 uF.

R.W.H.

A Simple Time Indicator

By W. G. W. Mitchell, B.Sc.

For very high accuracy in the comparing with clocks with time signals a recording device is essential. This recorder may very conveniently take the form of a syphon undulator, consisting essentially of a tape (upon which the record is made) moving under the syphon pen at a fairly regular speed, and periodically calibrated by a local circuit operated automatically from the pendulum of the observer's clock. A very high precision in the noting of the exact instant of the time signal may be obtained in this way: probably from one-tenth to one-hundredth of a second.

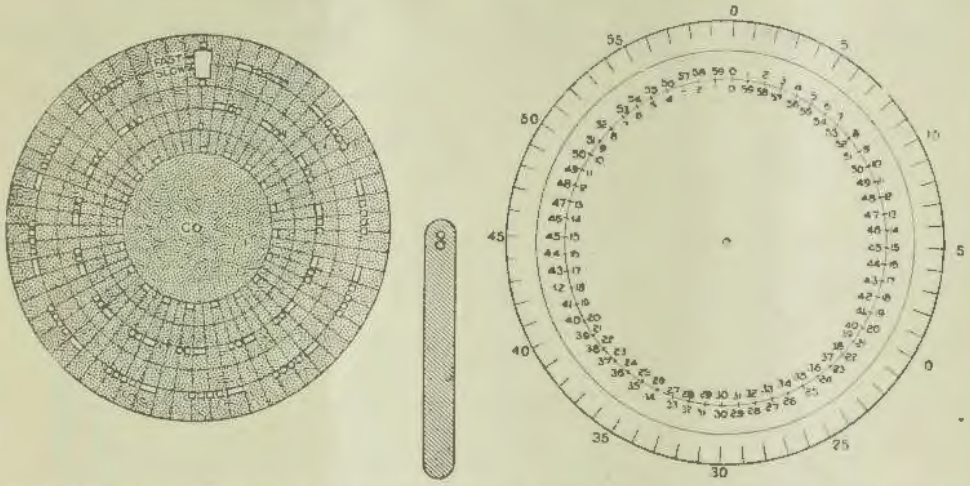
There are occasions, however, when the experimenter would be satisfied with a time signal accurate to the nearest second. Such occasions may arise in connection with the timing of measurements of received signal strength, and the phenomenon known as "fading" or other work of a fundamental nature caried out jointly by several experimenters, who wish to compare results on a time basis. The amateur cannot rely on the time services of the broadcasting stations for one second accuracy, and it may not be considered necessary to construct a syphon recorder specially for the purpose of the experiments. In these circumstances the time indicator described below may be found useful.

The time indicator is intended for use with any of the official systems of time signals, and is made from an ordinary "file" as use for filing correspondence.

The revolving disc, which is pivoted centrally to the file with a 'push-through" paper fastener, may be ruled up for use with any of the time signals given on page 102 of the Time Signal section of the "Amateurs' Year Book." The fixed dial is divided into 60 equal divisions as shown, while the metal "binder" of the file is utilised as a movable pointer, and pivoted with the revolving disc, but not attached thereto. A small aperture is cut through the revolving disc in an appropriate place through which appear numbers which indicate the amount in seconds by which the local clock is either fast or slow on the time signal. These numbers must be written on the fixed dial at equal distances apart and are numbered from 0 to 59, and from 59 to 0, commencing on the radius numbered 0 on the dial.

The procedure in using the indicator is as fololws: Having tuned in the wireless receiver to the particular signals, the observer takes up a position so that he can see the face of his clock. He then waits until he hears the first line of the signals consisting of dashes at two second intervals, and he then places the metal pointer in the position coresponding to 0. When the second hand of his clock reaches 60 or 0, i.e., at an exact minute, he begins to move the pointer of the indicator round in a clockwise direction, moving it one division for each swing of the pendulum, if the clock is a seconds clock, or one division for every two swings if the clock is a half-seconds clock. This may be done quite eas-

Continued on page 24



The revolving disc and the fixed dial of the time indicator. In constructing the indicator it should be made to a bigger scale than the illustration, to facilitate both the preparation and subsequent reading from the figures. The particular revolving disc illustrated is for use with the Paris time signals.

Application for Membership.

Members are urgently needed and those who have not already joined up are requested to fill in the following form and forward it, together with a postal note covering fees,to the Hon. Secretary, "Milano," Edward St., Concord.

A.R.R.L.
APPLICATION FOR MEMBERSHIP.

The Secretary,
Aust. Radio Relay League,
N. S. W. Division. 192

I, ...

of .....

beg to apply for admission as Active Member of the Australasian Radio Relay League If accepted I agree to abide by the rules and regulations of the League.

License No..... Date of issue .....
Address at which Station is maintained .....
Postal Address of applicant .....
Particulars of License (transmitting or receiving) .....
Power of Station (if transmitter)I enclose herewith.....
being payment of fees for one year.
Usual Signature.....

Active membership only to persons operating transmitters for League.
Associate membership to holders of receiving licenses.

Qualifications for membership.

(A) A bona fide interest in wireless; (B) Holder of an experimental license.

P.S.—This form must be accompanied by one year's subscription (active member £2/2/-; associate member 10/6) and forwarded to J. W. ROBINSON, Hon. Secretary, "Milano," Edward St., Concord.

World Stations

Wireless Weekly has been successful in securing a list of the principal wireless stations in the world, together with the times of operation and the matter broadcasted.

The Sydney mean time is given after the military style.

The figures 0000 represent 12 o'clock midnight; 0340 is 3.40 a.m.; 1640 is 4.40 p.m., etc.

Further lists will be published in each of our succeeding issues

Time. (Sydney)	Name.	Call.	Wave.	Type.	Remarks.
1910	Csepal (Budapest)	HB	4,400	CW	Weather report.
1915	Air Ministry	GFA	4,100	CW	Weather report.
1915	Mare Isld. (San Francisco)	NPG	4,600	CW	Press.
1915	Nauen	POZ	9,400	CW	Working with MSP (Moscow).
1920	Sidi Abdallah	FUA	5,150	CW	North African weather report.
1930	Wellington	VLW	600	Spk.	Weather report.
1930	Prague	PRG	4,500	CW	Czeco-Slavokian weather report.
1930	Rome	IDO	11,000	CW	Weather report in code.
1930	Helsingfors	OJA	6,200	CW	Press in English.
1945	Rome	IDO	11,000	CW	Press (stock market reports).
1945	Bucharest	BUC	7,400	CW	Press in French.
1955	Balboa	NBA	10,100	CW	Time signal (American system).
2000	San Diego	NPL	9,800	CW	Press.
2000	Balboa	NBA	10,100	CW	Press.
2007	Paris	LO	6,500	CW	Callibration waves (1st, 10th and 20th of each month).
2030	Sydney	VIS	600	ICW	Weather report.
2040	Christiania	LCH	5,400	CW	Press to PTG (Petrograd).
2042	Awanui	VLA	600	Spk.	Weather report.
2057	Perth	VIP	600	Spk.	Time signal.
2100	Eilvese	OUI	9,600	CW	Trans-Atlantic press in German.

A Simple Time Indicator

Continued from page 20

ily if the pendulum is kept under observation "with one eye on the dial," or by cutting round the outside circumference of the dial, the indicator may be held in front of the clock face and the pointer moved round in unison with the seconds pointer if the clock has one. The metal pointer is now indicating local time.

Continue to advance the pointer until the instant when the first dot of the time signal and the local clock can of the next minute) is heard in the telephones. The pointer is left in this position, and the revolving scale is moved round until the radius on which the three dots appear is above the pointer. As the signals are ticked out in the telephones they are followed on the disc, and the exact setting of the disc is checked by noting the agreement on the second and third dots (i.e., dots at the even minute). In this way a double check is secured. The minute differences between the time signal and the local clock can be noted during the observation, and the amount of the second differences are read off through the small aperture cut in the revolving disc.

A Remarkable Feat.

The wireless equipment on board the Union Steamship Company's R.M.S. "Tahiti," which is one of the standard sets manufactured and operated by Amalgamated Wireless (Australasia) Ltd., has performed a feat so far unequalled, it is claimed, in the world of wireless. Wireless messages sent from the Tahiti when she was 5,600 miles distant from San Francisco, were received about 20 miles from San Francisco with such strength that they were carried over 20 miles of telephone lines to the city office, amplified, put on to a loud speaker, and heard with ease in the street one block distant from the city office. Thus men and women walking in the streets of San Francisco heard signals coming from Australian-made wireless apparatus on board a ship nearing the coast of New Zealand. The time occupied for the wireless waves to travel from the ship to San Francisco was approximately one-thirtieth of a second.

Published by W. J. Maclardy, of 58 Murdoch St., Cremorne, for the Proprietors and Printers, Publicity Press Ltd., 33/37 Regent St., Sydney.

BROADCAST RECEIVING SETS AND LICENSE FORMS

Together with the FREE SERVICE of Broadasters (Sydney) Limited may be obtained from the following

Radio House
619 George Street Sydney
Telephone: City 1487.

Ramsay, Sharp & Co. Ltd.
217 George Street, Sydney.
Telephone: City 3176.

United Distributing Company Ltd.
(Wholesalers)
28 Clarence Street, Sydney.
Telephone: City 3566.

W. Harry Wiles
60-62 Goulburn Street Sydney.
Telephone: City 3688.

Wireless Supplies Ltd.
21 Royal Arcade, Sydney
Telephone: M 3378.

Pitt, Vickery Ltd.
335 Pitt Street, Sydney
Telephone: City 6053.

E. R. Cullen
96 Bathurst Street
Telephones: City 869, 2596.

Radio Company Limited.
15 Loftus Street, Sydney.
Telephone: B 5586.

L. P. R. Bean & Co.
229 Castlereagh St., Sydney.
Telephone: City 353.

Colville-Moore Wireless Supplies
10 Rowe Street Sydney.
Telephone: B2261.

Continental Radio & Electric Company
Equitable Buildings, George St., Sydney
Telephone: B 2467.

The Home Electric
106a King Street, Sydney.
Telephone: B 5565.

Pacific Radio Co.
Temporary City Address:
2nd Floor, 121 Pitt St., Sydney.
And 38 Donnelly St., Balmain.

O'Sullivan's Electric Shop
(Frank E. O'Sullivan)
296 Pitt Street, Sydney.
Telephone: City 8070.

Swains
119-123 Pitt Street, Sydney.

N. P. Olsen,
18 Hunter Street, Newcastle.