WIRELESS WEEKLY

3D.

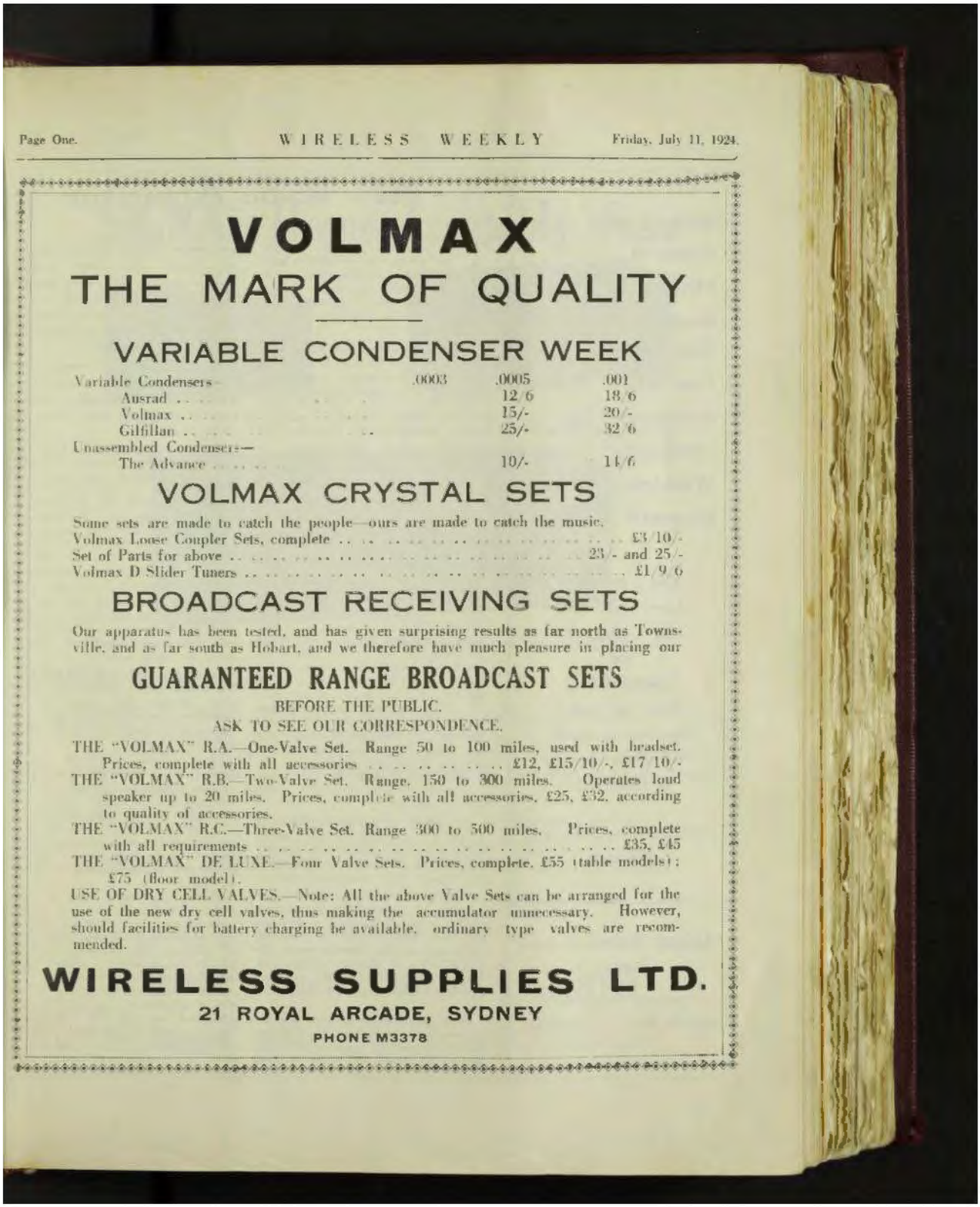
THE 100% AUSTRALIAN RADIO JOURNAL

Vol. 4
No. 13

REGISTERED AT THE G.P.O., SYDNEY, FOR TRANSMISSION BY POST AS A NEWSPAPER

FRIDAY, JULY 11th, 1924

This Week's Feature: Tuning Panel (By "Insulator")



New Radio Apparatus

THE prospective amateur wireless set builder will be glad to know that the much-heralded Frost lines have now arrived in Sydney. This is a new line of necessary parts, such as sockets, rheostats, potentiometers, jacks, etc.

The rapid development and perfection of wireless throughout the world to-day is indebted greatly to the manufacturers of parts and equipment, who realise the necessity of exhaustive tests for efficiency, durability and simpleiity in construction, and quality of materials used in such apparatus, before placing their final product before the public. Realising the above facts we will describe a few of the most important parts as manufactured by Herbert H. Frost.

The Frost "Shock Absorber Socket," for standard 199 tubes, proves to be the long wanted improvement in socket construction to eliminate vibration and microphonic noises, and prolong the life of the most important part of your set—the tube. The Frost "Shock Absorber Socket" is made of heavily moulded maroon bakelite, singly and in gangs of three, each drilled for panel and baseboard mounting. The upper part of the soc socket in which the tub efits and makes contact with the four phosphor bronze contact springs is suspended from the actual base by 1in. thickness of sponge rubber. Flexible wire leads are used to connect the contact springs to the terminals, thus ensuring the tube absolute protection from any outside vibration or shock.

A pleasing design, embodying these numerous scientific features should make the Frost socket very popular with the set builders, who want maximum results with unnecessary expense.

Rheostats and jacks are parts, the importance of which the average set builder is apt to overlook. Rheostats with loos eshaft bearings or weak contact springs invariably cause an irregular flow of current through the filament of the tube, which produces grating or spluttering noises when tuning.

In designing rheostats and potentiometers, Frost has utilised many ingenious ideas, and has standardised them throughout all the full range of plain and vernier bakelite rheostats and potentiometers. The heavy threaded brass bearing has been cast in bakelite mould, and is used as a shaft bearing and mounting block, so by drilling a hole in the radio (cabinet) panel, the rheostat or potentiometer can be mounted securely by the standard jack nut (which is supplied in each box). A strong spring is brought in contact with the end of the shaft, ensuring a perfect contact.

The newest feature in the Frost line is a combination of vernier rheostat and potentiometer, called in United States slang, "the pot rheo." The mounting features are the same as described above, but an additional shaft and knob are used, giving separate control of either rheostat or potentiometer. This "pot rheo" can be used to advantage where conservation of space and money is necessary.

All metal parts of the Frost line are heavily nickelled and highly polished, large terminals are used throughout, and there is a rheostat and potentiometer for every need.

Frost plugs and jacks are standard. The jack is highly polished and nickel silver springs with silver contact points are used. Each spring is separated by a formica, thus ensuring against a leakage.

There is also three styes of the famous Frots "phones." These head sets have been tested and are very sensitive, light in weight an dcomfortable when in use. The magnets in all these 'phones are treated with copper to avoid corrosion through moisture or salt air, making them extremely suitable to the climatic conditions of Australia.

There are also other Frost products, such as push-pull switches, tuning coils, adaptors, etc. They are all equally made and the general appearance of refinement and strength should establish its sale with the amateurs and manufacturers alike.

The United Distributors are the exclusive distributors, and the lines are advertised on page ??. The Frost lines are sold at one fixed price by all large dealers. Call in and look it over. It has many new features.

FAMOUS FROST PARTS

FROST-RADIO

No. 618. Bakelite Sponge Shock Absorber Socket, Standard base, panel or table mounting **6/3**

For 199 Tube 6/3

For those who wish a compact gang of three Shock-Absorber Sockets. The construction is identical with our separate sockets, except for base. For panel or table mounting.

FROST-RADIO

No. 600.—Frost-Radio Metal Frame Rheostat or Potentiometer.

Equal in operation to the best molded type, with precision operation of all moving parts and guaranteed resistance wire. Frame is made of heavy sheet brass, nickel plated and formed so as to give a rigid construction both to the windings and the contact arm. Central mounting thimble with locating tip prevents turning when mounted on panel. Washers provided to fit panels of varying thickness. Fluted molded knob and nickel plated pointer.

No. 600, Metal Frame Rheostat, 6 ohms 5/6

No. 602, Metal Frame Rheostat, 35 ohms 5/6

Same with Vernier 7/8

No. 603, Metal Frame Potentiometer, 400 ohms 5/6

No. 605, Metal Frame Potentiometer, 200 ohms 5/6

EACH OF THE ABOVE, WITH VERNIER, 2/6.

THE MOST COMPLETE LINE RADIO PARTS EVER

ONE PRICE

FROST SOCKETS

618 **SINGLE SHOCK ABSORBER SOCKET**, for Standard Valves 6/3

617 **SINGLE SHOCK ABSORBER SOCKET**, for UV199 and C299 ..... 6/3

(All above sockets are made of Bakelite and have sponge rubber cushions.)

612 **BAKELITE SOCKET**, for C299 and UV199 Valves 5/

100 **BAKELITE SOCKET**, for Standard Valves 5/-

619 **3 GANG SHOCK ABSORBER SOCKET**, for Standard Valves 24/6

616 **3 GANG SHOCK ABSORBER SOCKET**, for UV199 C299 ..... 24/6

FROST RHEOSTATS & POTENTIOMETERS

COMPLETE WITH TAPERED BLACK BAKELITE KNOBS, METAL PARTS HIGHLY NICKELLED, KNURLED TERMINALS, TECHNICALLY PERFECT.

650 **RHEOSTAT**, 6 ohm (Maroon Bakelite) 7/3

651 **RHEOSTAT**, 6 ohm Vernier (Maroon Bakelite) 9/6

652 **RHEOSTAT**, 35 ohm (Maroon Bakelite) 7/3

653 **RHEOSTAT**, 35 ohm Vernier (Maroon Bakelite) 9/6

600 **RHEOSTAT**, 6 ohm Metal Frame 5/6

601 **RHEOSTAT**, 6 ohm Vernier, Metal Frame 7/6

602 **RHEOSTAT**, 35 ohm, Metal Frame 5/6

604 **RHEOSTAT**, 35 ohm Vernier, Metal Frame 7/6

654 **POTENTIOMETER**, 400 ohm (Maroon Bakelite) 9/6

605 **POTENTIOMETER**, 200 ohm, Metal Frame 5/6

603 **POTENTIOMETER**, 400 ohm Metal Frame 5/6

FROST MISCELLANEOUS

301 **EXTENSION CORD**, complete with Adaptor and Plug, 20ft. 32/6

400 **LOOSE COUPLER** or Receiving Transformers 75/-

410 **CRYSTAL TUNING COIL SLIDER** (1100 metre range) 27/6

501 **RADIO JACK BOX** (for 4 plugs) 28/-

611 **ADAPTER**, for C299 or UV199 ..... 5/6

F R O S T

"Applause" Cards Furnished Dealers and Clubs Without Charge

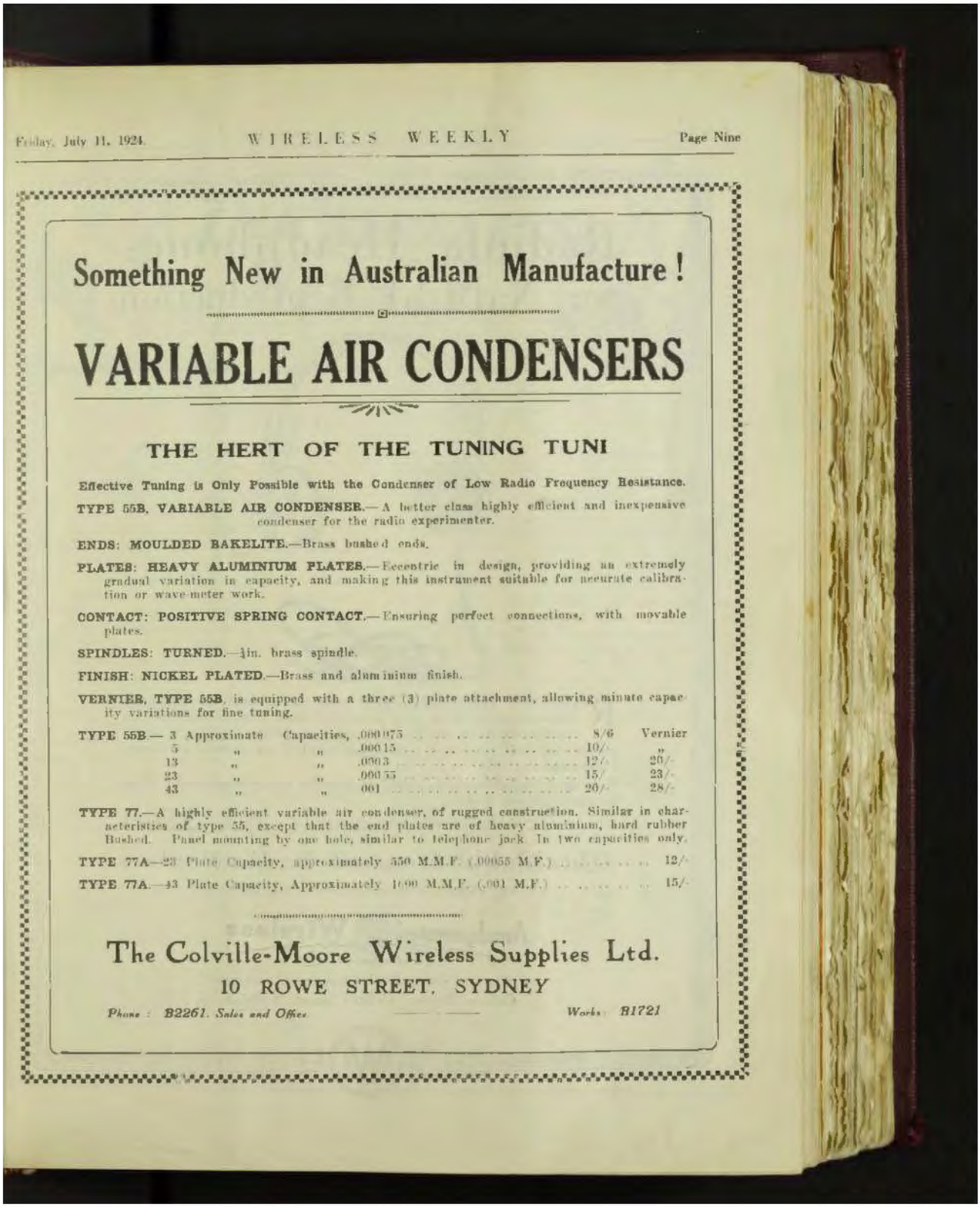
United Distributors Ltd.

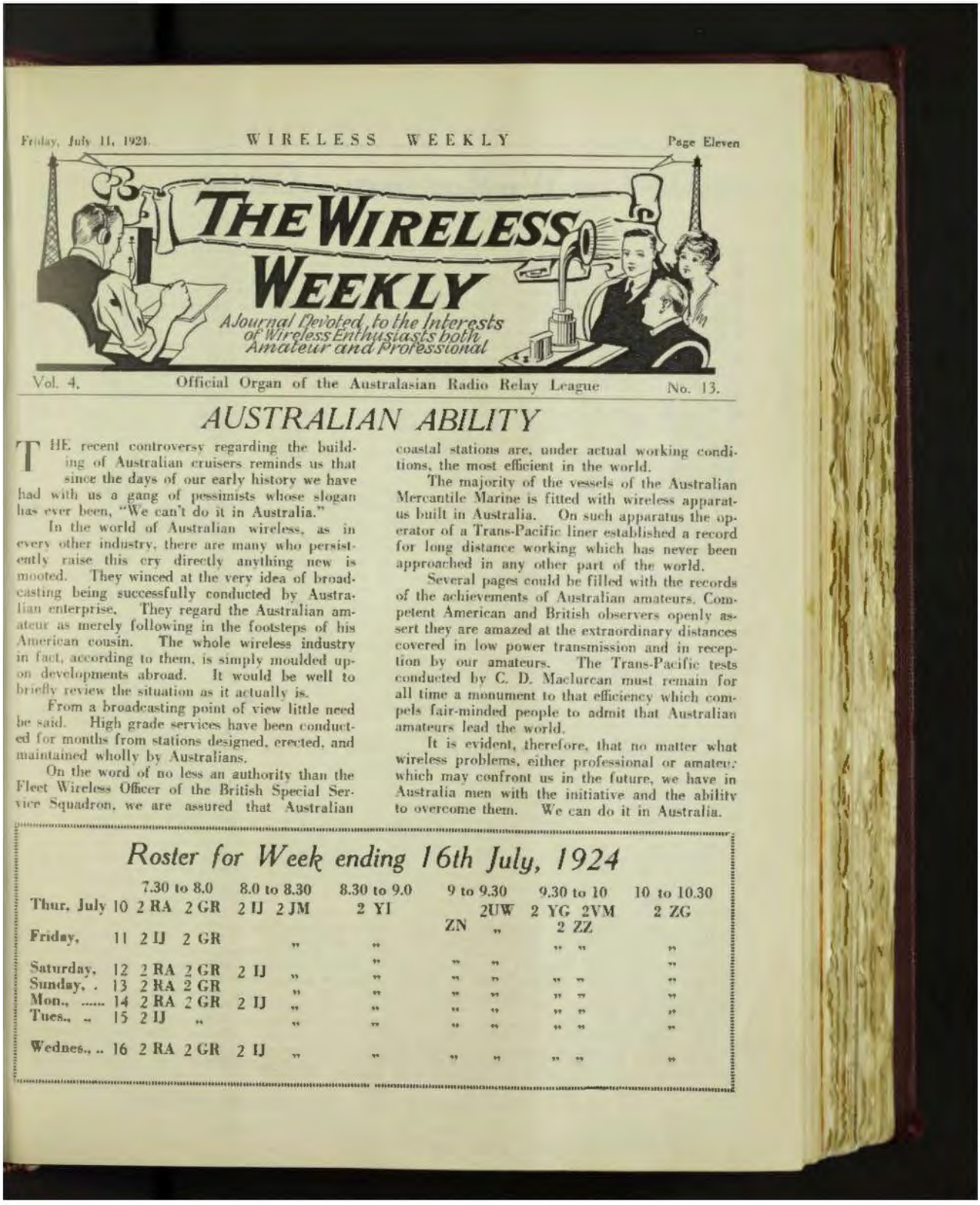
(WHOLESALE ONLY)

MANUFACTURERS OF RADIOVOX SETS

A FEW TERRITORIES OPEN FOR AGENTS

28 Clarence St., Sydney Hobart





THE WIRELESS WEEKLY
A Journal Devoted to the Interests of Wireless Enthusiasts both Amateur and Professional
Vol. 4. Official Organ of the Australasian Radio Relay League No. 13.

AUSTRALIAN ABILITY

THE recent controversy regarding the building of Australian cruisers reminds us that since the days of our early history we have had with us a gang of pessimists whose slogan has ever been, "We can't do it in Australia."

In the world of Australian wireless, as in every other industry, there are many who persistently raise this cry directly anything new is mooted. They winced at the very idea of broadcasting being successfully conducted by Australian enterprise. They regard the Australian amateur as merely following in the footsteps of his American cousin. The whole wireless industry in fact, according to them, is simply moulded upon developments abroad. It would be well to briefly review the situation as it actually is.

From a broadcasting point of view little need be said. High grade services have been conducted for months from stations designed, erected, and maintained wholly by Australians.

On the word of no less an authority than the Fleet Wireless Officer of the British Special Service Squadron, we are assured that Australian coastal stations are, under actual working conditions, the most efficient in the world.

The majority of the vessels of the Australian Mercantile Marine is fitted with wireless apparatus built in Australia. On such apparatus the operator of a Trans-Pacific liner established a record for long distance working which has never been approached in any other part of the world.

Several pages could be filled with the records of the achievements of Australian amateurs. Competent American and British observers openly assert they are amazed at the extraordinary distances covered in low power transmission and in reception by our amateurs. The Trans-Pacific tests conducted by C. D. Maclurcan must remain for all time a monument to that efficiency which compels fair-minded people to admit that Australian amateurs lead the world.

It is evident, therefore, that no matter what wireless problems, either professional or amateur, which may confront us in the future, we have in Australia men with the initiative and the ability to overcome them. We can do it in Australia.

Roster for Week ending 16th July, 1924

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9 to 9.30	9.30 to 10	10 to 10.30
Thur. July 10	2 RA 2 GR	2 IJ 2 JM	2 YI	2UW ZN	2 YG 2VM 2 ZZ	2 ZG
Friday, 11	2 IJ 2 GR	"	"	"	" "	"
Saturday, 12	2 RA 2 GR	2 IJ "	"	" "	"	"
Sunday, . 13	2 RA 2 GR	"	"	" "	" "	"
Mon., ... 14	2 RA 2 GR	2 IJ "	"	" "	" "	"
Tues., .. 15	2 IJ "	"	"	" "	" "	"
Wednes., .. 16	2 RA 2 GR	2 IJ "	"	" "	" "	"

Wireless versus Cables.

(By MALCOLM PERRY.)

IN dealing with this subject, and one in which several issues of "Wireless Weekly" could be taken up in order to make fair comparisons to both sides, I want the reader to remember that I have only been allotted a limited space, and necessarily a number of my arguments must be cut very short. Arguments and facts are somewhat like weak signals in wireless; you have to amplify them in order to fully understand them, and I am leaving it to the reader to put on two stages of audio whilst I do the detecting.

If you were asked, "Which is the more efficient, the horse or the motor car?" you would on first thoughts answer, "the motor car," whereas daily observation shows us that the bread, milk and vegetables are delivered per carts and horses, and therefore for these purposes the horse must be more efficient, for motor cars can be obtained, but tradesmen will not use them. Two factors come into operation here, one, time and the other cost.

Let us now consider the position of wireless as opposed to the cable, or I would rather say in conjunction with the cable. Before war we had several cable men in the Wireless Institute, and many were the discussions that we had as to the advantages and disadvantages of both wireless and cables. The result was that I obtained a fair knowledge of both systems, and I think that had world-wide direct wireless communication been possible in those days, then wireless would have been a long way in the lead to-day, that is, assuming that cable working made no advancement. At the termination of war, we marvelled at the wonderful strides wireless had made (naturally we did not know what development had taken place on account of war precautions), but I was astonished at the great progress the cable had made. Before war messages being despatched to London by cable were relayed by hand from six to eight times, the number of times varying according to submarine conditions, whereas we now find only two hand relays taking place, and that only for the purpose of checking off messages en route. These changes have come about by the development of special automatic relays, which have simply been inserted in stations where hand relaying was being done. Apart from this it is quite possible to construct a cable to operate direct from London to Sydney, without relaying, except that here, again, the factor cost enters. Cables and wireless are just like trains—it does not always pay to run through trains when paying passengers can be picked up en route.

Let us now consider the case for wireless. At present we have no direct wireless communication with London or other parts of the British Empire. Experiments have recently been carried out between London and Sydney with short wave telephony, and communication has been established. The thought naturally arises in the experimenter's mind regarding the number of hours per day that such a system can maintain two way working. Mr. Maclurcan's trip across the Pacific proved that night range was five times that of day range with low power short wave transmitters, although there is a possibility of this variation changing with the use of higher powers.

Then again comes the question of the number of words per minute that can be handled. I understand that the normal automatic working speed of the cable is about forty words per minute, and that this can easily be increased to 100 words per minute when traffic is heavy.

If wireless is to successfully compete automatic working would naturally be adopted, although this is not absolutely necessary, for to say whether one system or another must be adopted simply depends upon the cost. Automatic working, however, has a much greater degree of secrecy, a point which cannot be overlooked. Just here it is interesting to mention that the wireless engineers who took part in the tests at Bourke were worried by the post office sounders, which were audible in their receivers. Say, for example, it is possible to erect a five watt station and maintain two way communication with London for only 30 minutes in the 24 hours, then such a situation would have to be classed efficient in comparison with its cost.

The greatest advantage that wireless has, is that waves cannot be cut like the cables although an enemy station could put out a considerable amount of Q.R.M. thereby preventing messages from being received. When the readers to know that jambing the German signals, caused a number of the Zeppelins to lose their way home; readers will remember several landing in the south of France, and in the Mediterannean Sea. But all these airships were using comparatively short wave lengths which are very easily jambed out.

Australia badly needs a wireless station to communicate direct with London for defence purposes. Now that the British Government have partially abandoned the Singapore base, the question becomes more urgent. Here again our old friend harmonics comes to our aid. A powerful station, with a wave length of 30,000 metres, could not be easily jambed out; it would get through day and night. It would take a considerable amount of time and money for an enemy to erect a station to jamb out a long wave station, and if he succeeded in doing this, we would still have the harmonics to pull us through.

Cables versus wireless for commercial purposes simply boils down to the factor, cost. The factor, time, can be eliminated. Both can carry out the same functions of handling traffic overseas.

Senatore Marconi has suggested that short wave stations for communication with Australia will be quite suitable, and his proposition is quite alright from a commercial point of view. If one short wave station can only maintain communication for a period of six hours, and traffic is too heavy, it is a simple matter to erect another station on another wave length, thereby duplicating the service and so on, the only limit to the number of stations being the cost and the revenue.

But a new point crops up here. The amateur band of wave lengths is from 100 to 250 metres, and in order to provide for commercial work, we may look to a change of wave lengths as concerns the amateurs. At any rate, whatever happens, it must be to the everlasting credit of the experimenter that he has shown the world what can be done with low-power transmitters on short waves, and this fact alone must justify the existence of the experimenter for all time.

Wireless versus telegraphs overland, however, is a subject that is very interesting. I do no think there is a great possibility of wireless seriously

SEE ANNOUNCEMENT OF HOME ASSEMBLY SETS ON PAGE 3.

competing with overland telegraphs in sparsely populated, and new districts where telegraph lines have not yet been laid. So wireless becomes more familiar to the people as a whole, the cost of supporters small, inland wireless stations must gradually decrease. It is exactly the same in the case of motor cars; if you were living in Woop Woop twenty years ago, and purchased a car and something went wrong with it, the cost of repair would be high for the reason that there would be no one in the village who understood anything about cars. Wireless overland cannot be beaten in emergency for defence purposes except, perhaps, by the heliograph and search light. India is an example where wireless is used extensively over land for defence purposes.

SOUTH AUSTRALIAN NOTES. A WIRELESS CONCERT.

A WIRELESS CONCERT was given at the Naval Depot, Birkenhead, on Tuesday evening. The receiving instruments were operated by Mr. J. E. Hale, who gave an interesting lecture on wireless. A number of selections were played by the naval band. Musical items were also transmitted from Mr. Snoswell's station (5AD), at Exeter, including cornet solos by Bandmaster Rodda, of the naval band, and a number of gramophone records. A speech by Alderman J. Clouston, was broadcasted. Mr. Snoswell's transmission was excellent, being beautifully strong and clear, and the modulation perfect.

RADIO BALL.

The annual ball in connection with the South Australian Division of the Wireless Institute of Australia, was held in the Palais Royal, North Terrace, Adelaide, on Thursday evening.

Several fox trots were danced, to music supplied by wireless, and a number of songs and instrumental items were rendered per medium of the ether.

The music was transmitted by Mr. H. L. Austin (5BN), from his station at Norwood, and the receiver was in the charge of Messrs. L. C. Jones and H. A. Kauper.

The receiver used was a two valve set, a modification of the S.T.100, designed by Mr. Harry Kauper, no aerial being used with this set, only an earth connection on the water pipe. With a three-valve amplifier and two Magnavox loud speakers, the music was of tremendous volume.

The ball was a success in every way.

Amateurs v. Broadcast Listeners

WAR OF THE FUTURE.

A lot of us no doubt have long nursed the opinion that, compared to his Australian cousin, the American amateur rejoices in the privileges of a kind of wireless paradise. In many respects no doubt this is so. In the first place our friend over in "God's own" is singularly free from the kind of bunk which our local amateur is burdened with in the way of Government regulations. He is not pestered to death with the unwelcome attentions of the Honorary Inspector who drops in to have a friendly chat about the use of certain circuits. No fool regulations about the use of regeneration cause him to take to the woods wih his umpteen super reflex contraption and do his experimenting to the homely sounds of the early morn roosters. He is not eased of a certain amount of currency just because he feels a desire to assist in the great and glorious cause of science.

In the words of Methuselah, "No, boy." All he does if he wants to develop into a real dyed-in-the-wool amateur is to climb up on to the roof top and bawl to the world, "Say, folks, pipe yours truly as an amateur," and they don't sting him a single cent for it. He simply sits down in front of his twelve "tooh" humdinger one evening as a broadcatcher—the amateur bug bites him good and hard—and, lo; he is no more a mere listener, but an honest to goodness "ham." No forms to fill in; no waiting on the radio inspector's door mat while he views with sinking heart the trembling knees of the victims ahead of him. No waiting three months while his application is being chewed over by the head boss at Washington. That is—if he wants to be a receiving amateur.

For the guy who feels the itch to annihilate a little distance via the microphone route there are a few minor formalities to be observed before he is permitted to try his voice. A set of sub technical questions covering amateur transmitters is shown him, and he is asked to kindly step forward and say what's what; also to shoot a few words in Morse. Upon successfully passing this "exam," he is presented with a crinkly new license, and is required to take the oath of secrecy. All this knocks him back the colossal sum of 50 cents, which in British currency is somewhere in the vicinity of the price of a couple of whiskeys.

Forth sallies this new addition to the serried ranks of C.Q. pitchers, and proceeds to the business of installing a station. And here stand no fool regulations limiting him to a power of ten watts.

No, sir, anything goes in this amateurs paradise—that is, anything up to the limit where the pocket begins to show signs of calling it a day. And in a little while a ship operator down in the Gulf of Mexico logs what sounds like a new Transatlantic station.

All of the foregoing only serves to clearly demonstrate that the American amateur is permitted to live up to the spirit of those immortal words uttered by an American citizen during the Yanko-British war of a couple of hundred years ago. This lively bird was a prisoner aboard a British frigate during a naval engagement, and when the revolutionary shells dropped uncomfortably close to his temporary abode, he shoved his head out the porthole, and wavering the stars and bars warbled that cheerful ditty about "The Land of the Free and the Home of the Brave." Whether some profane soul on deck unfeelingly dropped a brickbat on his bean is not on record, but nevertheless he was a good fellow, and as has been shown the spirit of his remarks on freedom is today literally interpreted by American "hams." "The Land of the Free" is right.

That it is rapidly becoming the home of the Brave however is fast proving true to the amateur, and the time is not far distant when the transmitting amateur will be forced to take his walks in the company of a squad of cops and with a hearse travelling close behind. He is scorn; he is anathema; something to be snarled at and cussed by the very people whom, in his colossal egotism, only a few short years ago he referred to briefly as "wops," "hicks" and "come-ons"—the broadcast listeners. Looking ahead a little it is not hard to visualize the time when, to the strains of slow music, the last of that once merry

READ PARTICULARS OF THE NEW FROST LINES ON PAGES 4 & 5.

rollicking band of transmitters will file slowly past an infuriated mob of broadcast listeners, to be torn to pieces by the vultures of New Mexico. Twelve months hence it may be recounted with bated breath how a transmitter walked into the peaceful home of a broadcast listener and boldly announced himself as the owner of the 2k.w. tube set on the next block. Little Daniel munching peanuts in the lion's den will be a joke to him.

Here's the how of it.

Up to the advent of broadcasting, the amateur, aside from the commercial stations' operations had things all his own sweet way. Nightly he paraded his voice before the admiring ears of brother adventurers all over that great and glorious country. The world was his! The plain ordinary non-wireless citizens regarded him as the wonder of the ages—until, one by one the towers of broadcasting stations reared themselves in the cities—and later on in the smaller towns.

Sweet music was on the air, cultured voices spoke entertainingly of cabbages and kings and the political crisis of Liberia. Quickly Ordinary Citizen realised that by having one of "those wireless receivers" in his home he could sit by the fire of winter evenings and listen to it all merely by twiddling a couple of dials. He sought out an amateur he was acquainted with and shyly asked him his opinion upon what to buy. Indulgently, kindly and as gentle as a fond dad, our amateur pal explained the working of a three tube—sooper-reactor, and if there was a trace of condescension in his tones—well, who could quarrel about that?

So our ordinary citizen proceeded to the business and in a little while the outfit was installed on the dining room table. Results at first were not too good. Faint strains of music were audible and for half an hour the family said, "Sh!" to each other while dad listened with a worried look on his face. Then lo, pa accidentally discovered that by moving the honeycomb coils closer together the music came in louder and by turning up the valves a bit the phones could be laid on the table and all hands could listen.

This was fine! All went well until the phone rang and a wild voice spake, "Say, for the luvvamike, turn off that contraption and give me a chance to raise 10QZ in Missouri!" So with a sigh pa sorrowfully turned it off right in the middle of a beautiful rendition of "Love's Old Sweet Song," by Lutzka Pozrlxski, of Warsaw (formerly Bessie Hicks, of Hicksville). Now pa didn't know his set was reradiating. He just took it for granted his amateur friend was an expert and that in some way he was treading upon the tender corns of the lads who owned the ether. Well, this occurred several times, and pa was just beginning to wonder just what use his outfit was when one day the paper announced a special transmission from station WXK of that soul-stirring "drammer," "Driven from Home," played by the Bright Lites Co. Promptly at 8 p.m., pa tuned in and the family gathered around listening enraptured to the sweet utterances of the beautiful heroine. Right at the point when the stern stage father intoned, "Oot o' me hoose forever!" the phone rang. Pa stirred restlessly. He knew what it was. That darned amateur again. Somewhere in the depths of pa's being stirred the first faint throbbings of the old spirit of independence. 'Twas the worm turning. Grabbing the receiver off the hook he bawled: "Say, you go to blazes; I got as much right to the air as you have." Thus it started. It was the first shot in the war between the amateurs and the broadcast listeners.

Swiftly the news spread that a mere broadcast listener had thrown the gauntlet right in the teeth of Paul Schomberger, the owner of station 9 ZLT ,the feller whose phone had been heard in every state of the Union, and whose C.W. was read by the operator on a ship lying at Punta Arenas. Paul came back by writing a dignified letter to the papers explaining how these broadcast listeners were interfering with us amateurs by using reradiating receivers; how the amateurs were doing fine before broadcasting started; and the B.L's. should all be pole axed anyway. Back came the answer from an infuriated B.L., who lived two doors away from an amateur transmitter. "Why the heck should these hounds be allowed to drop their CQ calls around in the middle of broadcasting? Who were they, anyway? Was it a free country? The amateurs may be a decent crowd, but in his opinion they ought to be exterminated." So the conflagration grew and spread swiftly until every amateur transmitter swore a vendetta on the whole crowd of B.L's., and the B.L's. pledged themselves to feed off the carcases of those who butted in on their nightly entertainment. Even the K.K.K. became involved and the mysterious disappearance of Herman K. Heckheimer—a dinkum American transmitter, from his home at Sioux City (Tex.), caused the gallant band of amateurs to pause and wonder where they were at. Surrounded by hordes of B.L's., menaced by the hands of those at whom they had once scoffed, they called a halt while the white flag fluttered in the breeze over their stronghold. The chief "hams" pow-wowed with the leaders of the B.L's. The pipe of peace was smoked. Then forth went the message, blazoned across the whole country. The amateurs would keep off the air until after 10 p.m.

There was rejoicing. Joybells rang out their sweet song and to the accompaniment of special announcements from every broadcast station, peace was declared with a decided victory for the B.L. So things once more pursued the even tenor of their way.

All went well until quite suddenly a bolt from the blue descended in the form of a special transmission of the jazz orchestra of the Hotel La Beano, at Chicago, from 11 p.m. to 1 a.m. This was quickly taken up by other hotels until a chain of broadcast jazz was weaved throughout the country. The jazz bands blared across the ether; the last acts of plays were borne faintly across the Rockies; after-banquet speeches on the curse of hooch by big men who had just consumed the ninth highball were wafted to the ears of the ladies of the W.C.T.U. And through it all the blah blah of the amateur transmitters on their after ten experiments sounded like the hoots of Hades. Things were as nice and harmonious as a bull fight.

The multitudes stirred restlessly and there was the subdued murmuring of many voices. Suddenly; from a small town in Illinois came the distant echo of the first shot. A B.L., with righteous indignation exuding from every pore, climbed up on a statue of George Washington and told the world how the guy with the tube set on the outskirts of the burg was poisoning the broadcasting atmosphere. Quickly he was surrounded by a cheering crowd of B.L's. To the strains of "Hail Columbia" and "Blahing

HAVE YOU A HOME ASSEMBLY SET? SEE PAGE 3.

Through Georgia," the seething mob, bearing a pail of tar and a bag of feathers, advanced on the home of the "ham." However, he saw them first, and according to the local paper was last seen disappearing into the tall timber two jumps ahead of the sheriff. And so the war was on, and according to latest advices is still on. News from the front, filtering slowly through, tells of the mighty struggle. The B.Is', banded together in a universal brotherhood, sworn to stick together and to blame everything on to the amateur. If the set of a neighbouring B.I. reradiates the "Joeys" and interferes with a programme—cuss the amateur. If the broadcasters agree to close down for an hour to enable the amateurs to put over a trans-Atlantic test—cuss him again, only harder. If the amateurs, as seems likely, agree to close down until midnight—cuss them again. Somebody might start broadcasting from midnight onwards, and, anyway there's more B.I.'s than "'Hams,' and the latter don't count much, anyway. Why don't they sit down nice and quiet, and listen to broadcasting, instead of sitting up all hours trying to raise some other plug a thousand miles away just to pass remarks about "modulation" and other things which are all Czecho to any ordinary sane B.I.? If some commercial station ten miles away breaks in on broadcasting when the B.I. is listening on his new twelve "toob" reflex—swat that 5 watt amateur three blocks away; it must be him. If the amateur tries to explain in the press how the B.I. can handle his set without causing interference to others—darn him, he's the guy who started the trouble. In the words of Bowery Bill, "Gadzooks; this amateur is a scurvy knave."

So it goes on. Friend "Ham" little dreamed that when he played his gramophone records years ago, thus putting into the heads of the big manufacturers the idea of organised broadcasting, he was instrumental in creating a mighty force which would one day threaten to sweep him and his transmitter into the deep blue sea unwept, unhonored, and unsung.

While, as was mentioned in the beginning, from the point of view of Government interference, our American friend lives in an earthly paradise, there is no doubt that so far as his future is concerned, he is but one step removed from that other place which is generally conceded to be the destination of those who stray from the straight and narrow in this world.

What will be his fate? Hemmed in by millions of B.I.'s whose every hand is against him; blamed for everything that happens to interrupt the harmony of broadcasting; raked by the guns of the broadcast press; one can imagine him setting up his transmitter on the rocky fastnesses of the high Sierras, hidden from all mankind and secure from the six-shooters of his implacable enemy the B.I. Or perhaps an outcast from his race, skulking like the pariah dog of Constantinople, around the darkened streets, snatching his dinner from the homely garbage can; eking out a miserable existence until one dark night vengeance, swift and terrible, overtakes him. When the last is gone, then will come the cataclysm. The ravenous hordes of B.I.'s, thirsting for the blood of more victims, will fall upon each other. Armed with loud speakers and power amplifiers they will sweep the country and all will be chaos until the last remnants of the B.I.'s will stagger blindly into the canyons of Colorado—and over all will settle that peace which is eternal.

INTERNATIONAL LANGUAGE.

WE are in receipt of a special wireless number of 'International Language," the journal of the Esperanto Society. This contains a number of remarkably interesting articles by authorities illustrating the need for some language in broadcasting common to all, and showing how the International character of broadcasting of the future is inevitably linked up with Esperanto.

An article by A. R. Burrows, Director of Programmes of the British Broadcasting Company indicates that the necessity of announcing items in other languages besides English is realised by so high an authority as the Company itself.

So much has been written and said concerning the possibilities of International Broadcasting that, in the clamour of words we are apt to overlook the message behind them. A few moments' reflection, however, shows beyond all doubt that wonderful things are yet to be accomplished in the direction of world harmony by broadcasting. What a tremendous vista is opened up when we consider that a broadcasting station in London may have an audience representing every nation in Europe. Imagine in the future a speech on some vital International topic being broadcasted over the whole of Europe in a language easily understood by all.

Talks in Esperanto have already been broadcast from such famous stations as 2LO, London; WJZ (Newark, U.S.A.); Geneva (TSF) and there are regular talks from Moscow, Prague, and a Canadian station. Amateur transmissions in Morse Code in French, English and Esperanto are made by Dr. P. Corret, of Versailles.

NEWCASTLE GETS K.G.O.

MR. L. T. SWAIN, of Everton St., Hamilton (Secretary of the Wireless Society of Newcastle) on Wednesday, 18th June, logged K.G.O. in good strength at 6.30 p.m., and then held the station for 1/2 an hour. Mr. L. Jones was present during the latter quarter hour of the reception, and says: "I could hear him quite clearly with only the one head phone."

Music was in great strength considering the distance. The ring of the piano in the solos could be heard distinctly.

Inspired by the success of other amateurs in the State, Mr. Swain determined to add K.G.O. to his log, and succeeded.

The set (of home construction) consisted of 3 valves, 1 R.F., D., and 2 L.F.

He is the first Newcastle man to hear the Californian station.

Mr. Alan Cotton, of Waratah, has also logged K.G.O.

This was on Sunday, June 22nd. Using 1 R.F. and detector (this set also home made), at 6.5 p.m. the words "K.G.O., California" came in clearly.

Mr. Robinson, of Georgetown, was then communicated with and on returning at 6.25, nothing was heard till 6.32 ,when "K.G.O., St. Francis Hotel, San Francisco" was heard by both amateurs using two pairs W.E. 4000 phones in series. Towards 6.45 music was again heard and at 7 p.m., "K.G.O. (3 times). It is now 1.1 Pacific time." Nothing further was heard.

In the last quarter hour at times the orchestra came in quite clearly, and individual instruments could be distinguished.

FROST RADIO APPARATUS IS FEATURED ON PAGES 4 & 5.

The Tuning Panel

By "Insulator."

This is the second of this series by "Insulator," covering the description and constructional details of a progressive unit panel receiver. To all those who are contemplating building a really first-class receiver, we strongly recommend modelling their receivers along the lines laid down in these splendid articles.—Editor's note.

FOLLOWING on with the construction of the progressive unit panel receiver, which I started in last week's "Wireless Weekly," I propose to give you the constructional details necessary to make the first panel, that of the tuning unit.

Here is a list of the material required for this item:—

1 piece of bakelite, 9in. x 8in. x 3-16in.
1 United three coil holder.
1 Marco series parallel switch.
1 No. 77a .43 variable condenser.
1 No. 77a .23 variable condenser.
2 3in. dials.
6 bakelite top terminals.
Some No. 16 gauge T.C. wire (for connections).

All the material for this set I obtained from Messrs. Colville-Moore, of Rowe Street. The Marco S.P. switch fills a long felt want inasmuch as it saves considerable time in marking and drilling panel, as well as the fact that it is simpler to connect than the standard type of S.P. switch. The 77a condensers also only require a single 3-8in. hole for fixing, and considering the price they are a particularly good article which I will never fail to recommend.

Seeking the most suitable parts for this set, I strolled around a few radio shops, and I noticed the scarcity of 3-20 aerial wire. Let me tell you all that if you can't obtain 3-20 wire, don't get excited or get down in the mouth, and be silly enough to give up wireless. Just purchase No. 14 gauge copper wire. It will make quite a good aerial, as it is substantial. Look at the number of telephone wires there are about, and these wires are either No. 14 or No. 16. Personally, I have experimented with various gauges of wire for the aerial, and for the life of me, on local signals I can't see any difference in results between 7-20 wire and No. 28 gauge enamelled wire. If you doubt me try it for yourself, and tell me if you get any different results. Anyhow, back to our roast lamb and mint sauce!

Trim up the bakelite and if desired bevel the edges, using a steel plane for the purpose. This operation is perfectly simple, and lends quite a nice appearance to the set. Proceed now to mark it out as is done in Fig. I. The dimensions are clearly shown this week as a friend of mine, who knows how to draw, told me that my dimension figures were too small. Thanks, Mr. Stiffe! how are they now?

I know that while I have been talking drawings you have the panel

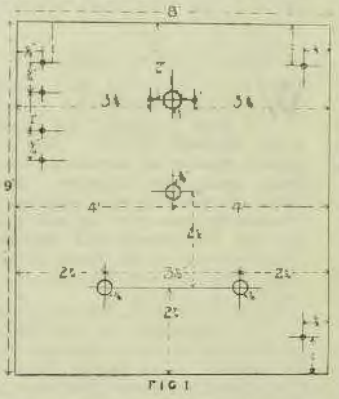


FIG I

marked out correctly. So far it has never occurred to me ti tell you that before drilling bakelite always mark the centres of your holes with a centre punch. By doing this you will avoid that sinking feeling which generally follows when the drill slips and scores across the panel. It's awful, isn't it? And a centre punch is cheap. Don't be afraid to hit the punch fairly hard. I myself use the coal hammer, but I confine my hitting to the punch, never fingers or finger nails.

On reference to Fig. I. it will be noticed that only three drills are required, one 1-8in. for terminals and coil holder, one of 3-8in. for condensers and series parallel switch, and a ¼in. drill for the hole which allows the connections of the coil holder to come through the panel. If such a thing as a ¼in. drill is not available, I should think 3-8in. drill will prove quite satisfactory for creating this last hole.

Having drilled the bakelite a good high polish will accrue if some Brasso is applied with a soft rag, and applied vigorously at that. Using a clean duster, rub hard until a glorious high shine results. It is worth the effort.

Pick up the three coil holder and to each of the screws on the sides of the holders attach a short length of bell flex, taking them through the hole in the back provided for the purpose. Now mount the three coil holder on the panel, using two contact studs for the purpose. This should be a very simple matter provided you have the panel laid out correctly. Bring the bell flex through the ¼in. hole and leave them for a moment. Undo the knob and pointer of the Marco S.P. switch, take off the nut and one washer, insert the spindle through the hole in the middle of the panel, replace washer, tighten up the nut, attach the pointer and knob and you have now mounted the series parallel switch. Look now at Fig. II. and see just in what direction I have the studs of this switch lying. The reason is obvious.

Next thing you do is to mount both condensers. This is done by taking the nut off the spindle, inserting spindle through the 3-8in. hole in the panel, replace nut and tighten up with a spanner or pliers. Easy, isn't it? Better than drilling four holes and having the misfortune to find perhaps one a shade out of place. Attach the dials to these condensers, and then mount the bakelite top terminals. Declare a smoko now, and come along with me for a moment to Fig. II.

Yes, this is a drawing of the BACK of the panel, and shows the wiring. Don't be misled by the three rectangu-

DEALERS WILL BE INTERESTED IN HOME ASSEMBLY SETS. SEE PAGE 3.

lar objects towards the top. You will notice I have drawn these to represent the coil holders and thereby simplify the connections, and further, I have lettered them as follows: P for primary, S for secondary, T for tickler or reaction.

To wire, start off with the flexible leads from T and connect them to the two top terminals, R. Just use sufficient flex to allow for a free swinging motion of the holder. Now follow out the diagram and you won't go wrong. Use No. 16 gauge tinned copper wire for connections, soldering where any joins are necessary. Avoid as far as possible having the connecting wires running parallel to each other. Spaghetti tubing may be used to enclose wires and also insulate one from the other, but this is a matter for yourself really.

Now that all the wiring is completed, just check over again and give the terminal screws another touch with the screw driver to ensure tightness. I will leave you to screw panel to a suitable baseboard.

The tuning panel is completed excepting the coils. Many and varied are the makes of honeycomb coils on the market to-day, but take my advice and purchase only the best.

If I were you I would confine myself to either Atlas or Giblin-Remler coils, and forge tabout all the others. Of these two I am inclined to prefer the Atlas, as they are wrapped with oiled muslin, which precludes any damp from getting in. Giblin-Remler's I those of you who purchase themanyb know to be splendid, and to those of you who purchase them, here is a little wrinkle which will improve signal strength as well as give them longer life.

Place the coils in a moderately hot oven for a few moments to dry out any moisture which may have accumulated. Now wrap each coil with a strip of 2in. oiled muslin, thereby totally enclosing th ewire. This may seem a bit tedious, but it is well worth it.

I know full well that these coils are perhaps a little more expensive than many other makes, but pay the price, because what is the good, of spoiling a ship for a ha'penny worth of paint. This unit set is one which you will be proud to own, so don't spoil it. If these coils are too dear for you, perhaps it would be better for you to wind your own. Some time back I remember writing an article in "Wireless Weekly," telling just how to make honeycomb coils. Don't think me egotistical when I say I prefer my own make of coils to many another which are sold in shops to-day, so if you would rather make your own, obtain the back number of "Wireless Weekly" (April 25), and follow out my instructions.

Next week I will give you the details necessary to make the detector unit, so look out for it. Oh, before I close down, I want to tell you that should you wish a blue print, showing Figs.

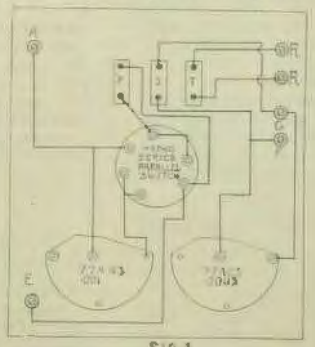


FIG 2

I. and II, in full size, I will be pleased to send one to you for ninepence, post free, or for 2/6 I will mail a blue print of each unit as it comes out, showing everything in full size. Address your letters and queries to "Insulator," "Wireless Weekly," 33 Regent St., Sydney.

Wireless Telephony

Conference at Geneva.

A preliminary conference for an International Agreement on Wireless Telephony was held at Geneva on 22nd and 23rd April, and was attended by delegates from 39 wireless telegraphy and telephony companies, stations and administrations in seven countries, says "International Language."

The League of Nations, the International Labour Office, the Swiss Postal and Telegraph Administration, the Engineering Section of the Swiss Army and the Marconi Company were officially represented. The delegates were welcomed by the Minister of Education of the Geneva Republic and were accorded a civic reception in the Palais Eynard, hitherto only used for state functions.

The chief aim of the conference was the discussion of the allotment of wave lengths to wireless telegraphy and telephony in order that Morse might not interfere with reception of broadcasting. A resolution was passed calling on the Governments to hold an Interstate conference to revise the London Convention of 1912, which allotted wave lengths to wireless telegraphy but did not forsee the development and wonderful spread of wireless telephony. This resolution will be conveyed to the League of Nations and the Universal Telegraph Union and it is hoped that radio organisations everywhere will petition their Governments to take part in such a conference.

The Conference considered the question of an auxiliary language for international broadcasting and passed a resolution recommending Esperanto and asking broadcasting companies to send out news and summaries of speeches in Esperanto regularly each week on an agreed day.

The delegates were the guests of the Geneva Radio Club on the Wednesday evening, when, by means of a loud-speaker, they heard the Esperanto translation of the King's speech broadcast from London. A translation into French was at once made and read to the audience which included reporters and representatives of news agencies. This was the first text of the speech received in Geneva, and telegraphed translation in French arriving some hours later.

CAN'T BE DONE.

"Hello, Sam," said the doctor to the colored man, who had come to him with a wounded head, "I see you got cut again."

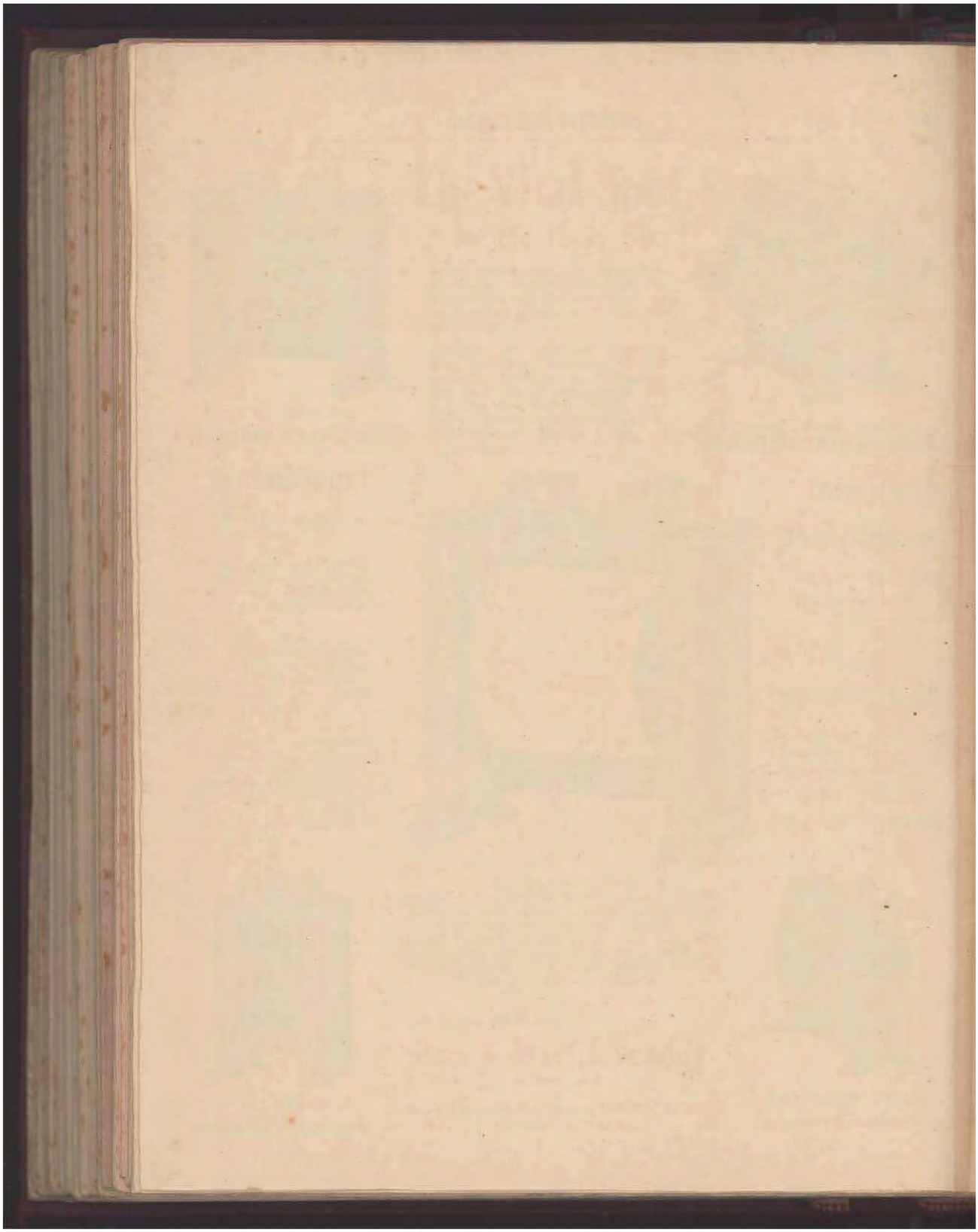
"Yas, sah. Ah done got carved up with a razor, Doc."

"Why don't you keep out of bad company?" asked the physician.

"'Deed Ah'd like to Doc. But Ah ain't got nuff money to get a divorce."

Correspondence: o."5

WHAT ARE THE FROST LINES? PAGES 4 & 5 WILL TELL YOU.



Hints on Receiving Sets.

By LOUIS FRANK

(Reprinted from "Radio News.")

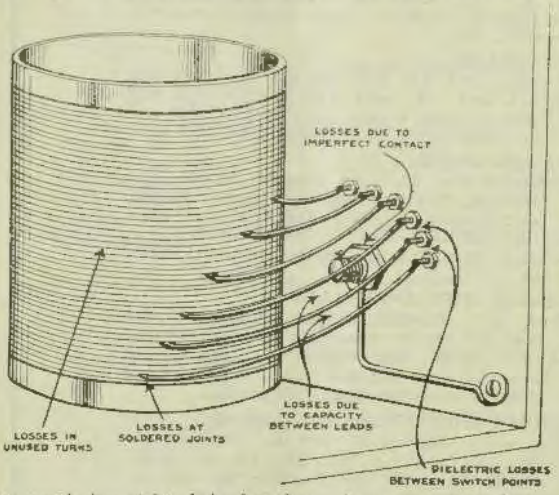
Are you obtaining the best results possible from your receiving set? If not the reason is more than likely due to one of the many mistakes in receiver design that Mr. Frank covers in this article, written in plain words that everyone can understand.

The hobby of receiver construction is greatly on the increase, far beyond anything the amateurs ever dreamed of. A large number of the broadcast listeners are potentially amateurs and experimenters, which may account for all the different types of receivers which we read about in the magazines and newspapers. Just because of this enormous activity in the building of receivers it becomes essential to stress a few of the fundamental principles to be observed in such construction. So much energy is being expended in the devising of novel and unusual circuits, that people lose sight of the fact that by taking proper precautions and attending to fundamentals, simple circuits may be made more efficient, and will bring in signals which, otherwise, would require more sensitive receiving apparatus to detect.

At present the owner of a receiver is after one or both of two things. First, he wants to receive good, husky loud speaker signals for the real enjoyment of broadcast programmes. Second, he wants to reach out and get long distance. Instead of discarding present receiver, which does not satisfactorily give either or both these results, and building a new circuit, see whether the present receiver cannot properly be modified to give satisfaction. Often a simple standard circuit properly constructed will give almost the same satisfaction as some of these so-called sensitive and complex ones. One might say that "it's all in the way it's built."

COIL CONSTRUCTION.

Coil construction is the first consideration. A bad coil may completely spoil an otherwise perfect set. The first thing the constructor ought to do is get away from using tapped coils. The modern tendency is to use fixed tuning coils and do all the tuning with the variable condenser. The tapped coil is bad for the following reasons: The reason for tapping a coil is to enable a part of it to be used. When a part of the coil only is used, the other part which hangs on (called the "dead end") increases the resistance of the small part used; it may be hard to believe, but it is a fact. Ten turns of wire all alone give a certain resistance, but the moment we add a few turns to the 10 and again measure the resistance of the original 10 turns, we find the resistance higher. The mere presence of additional turns is sufficient to cause such a resistance rise. This resistance rise, due to hanging on turns, causes a loss of energy called "dead end loss," which cuts down local signal strength and prevents long distance work. Again, when a coil is tapped numerous joints must be soldered, two for each tap, one at the coil, and one on the switch stud. Every soldered joint introduces the possibility of a bad connection with increased resistance and losses again. Furthermore the switch studs to which these coil taps are brought must be imbedded in some dielectric, generally it is the panel. This again causes a rise in the coil losses due to losses that occur in the insulating panel where these studs or taps are fixed. This loss, called the 'dielectric loss," is due to the imperfections which exist in all insulating material, and they actually exist. For these reasons the tapped coil is passing into oblivion. Use only fixed coils and tune with variable condenser.



The use of a tapped coil with the leads running to switch points introduces serious losses in the circuit. The accompanying sketch shows exactly where such losses are located.

In connection with energy losses which occur in the dielectric of the panel, a similar remark holds for the insulating material on which the coil is wound. The presence of insulating material in the electric field of a coil results in losses through it. It is often difficult to make people believe or realise this, because they feel that if the panel or tube is an insulator, no losses can occur in them. This is true enough when we deal with ordinary commercial currents like direct currents or lamp lighting currents. Radio frequency currents, however, are different and they do many things not done by ordinary currents. They cause currents to flow in insulating material of a radio set which increase losses and

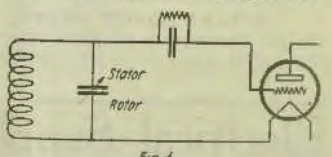
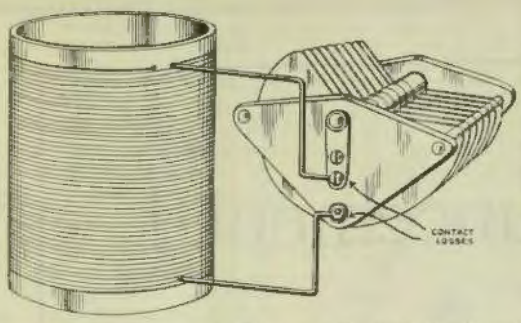


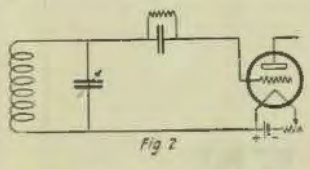
Fig. 1



By constructing a coil with the correct number of turns to cover the broadcast wave - lengths when shunted by a variable condenser, circuit losses are considerably reduced. The contact losses do not amount to a great deal.

thereby make the set inefficient. Therefore, if an insulating tube is used, see that it is made only of the best material, as for example, hard rubber, phenol resin, etc. Avoid, wherever possible, fibre and composition material. These do not stand the severe tests imposed on them by radio currents. Better still, use, if possible, coils which have considerable air insulation. Air is the best insulator for radio frequency currents. Thus spider-web coils have air insulation, which explains their low losses. The honeycomb type of coil is likewise a good type.

Coil terminals are generally soldered, and here is where trouble generally enters. A coil, like a chain, is no stronger than its weakest link, and if a coil is otherwise perfect, a poor soldering job may make it worse than useless. Care should be taken that

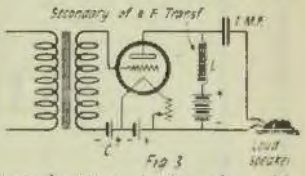


a clean, solid connection is made. Avoid spreading soldering flux over the coil itself. It causes leaks, and increases the resistance. As for the type of wire to use, there are current suggestions to use special kinds of wire such as Litzendraht. This idea should be abandoned for two reasons. First, at very high frequencies such as those employed in broadcasting, the radio frequency resistance due to skin effect is so great that even the employment of special wires does not reduce it very much. It is just as well to use simple solid wire which is very easily obtainable. Second, the use of special Litz wire introduces the possibility of increased resistance, for it consists of a large number of very fine wires stranded together, these wires having enamel insulation on them. In order that the Litz wire be used to advantage, it is necessary to use all these strands unbroken; if one or a number are not used, the resistance goes up, which may very easily happen. When soldering the wire, it is necessary to remove the enamel from each individual wire, otherwise the latter will be insulated from each other. If the enamel is off all but a few, the resistance of the wire goes up. If some of the strands are broken, which is very likely to happen since they are so small, the resistance again goes up. In other words, Litz is very difficult to work with; so it is best to stick to the readily obtainable, simple and easily worked solid wire.

CONDENSER DETAILS.

The next logical part of the receiving set to consider is the condenser. Not much need be said here about the construction of it, but a word should be said about the method of using condensers and connecting them in receivers. A condenser has a rotor and a stator. The rotor is connected to the handle, which is turned by the operator; the body of the operator is thus capacitively coupled to the condenser. The rotor plates should under no circumstances be connected to the grid or the vacuum tube, for the capacity of the body when tuning will affect the grid and give different tuning. Thus, if the rotor is connected to the grid, the signals may decrease when your hand approaches for tuning the condenser, and they may increase when the hand is removed, which makes tuning difficult. By connecting the rotor plates to ground or filament, this is avoided. Stator plates, for best results, should be connected to the grid as in Fig. 1.

When connecting a condenser to the input side of the detector tube, namely to the grid, through a grid condenser and leak, care should be taken to con-



nect the return circuit to the positive leg of the filament, not to the negative. A detector tube with grid condenser and leak is much more sensitive this way, because its action depends upon the grid being given a small positive potential, which may easily be secured by connecting in the manner described and shown in Fig. 2. On the other hand, the return circuit of both radio and audio frequency amplifiers should always be connected to the negative leg of the filament.

GRID BIAS ON AMPLIFIERS.

One of the most frequent mistakes in the construction of sets (unfortunately even some commercial sets have it) is the omission of a grid bias or "C" battery on the amplifier tubes. Amplifier tubes generally are worked with over 90 volts on the plate. When a tube is worked with more than 50 volts on the plate, it should have connected in the grid circuit a negative potential. This is important for three reasons. First, it prevents grid currents from flowing and thus decreases the losses which otherwise occur. In the second place, by using a suitable negative potential on the grid, the tube is worked on the straight portion of its characteristic curve, which results in maximum amplification. Without this suitable bias less than maximum amplification is secured. In the third place, and perhaps the most important as far as broadcast reception goes, the grid bias helps secure best quality of speech and music. Without a grid bias we have grid currents which result in distorting the received speech and music. If most of the available commercial sets which give poor quality speech and music are examined, it will be found that nine times out of ten there is no grid bias battery. This is a fundamental principle of amplifier construction which all

Turn to page 23.

HOME ASSEMBLY SETS. SEE PAGE 3.

Continued from page 21

builders of their own sets should remember: No bias battery means poor quality. The best value of grid bias to use depends upon the type of tube and the plate voltage. The higher the plate voltage the greater should be the bias. Adjust the grid bias until speech and music reception is best. For UV-201A tubes, a grid bias of 4½ volts should be used with 90 to 100 volts on the plate. If over 100 volts is used, this should be increased to about 7 to 9 volts negative. For UV-199 tubes, plate voltages higher than 80 or 90 should not be used, and for these voltages the grid bias should be 4 1/2 volts.

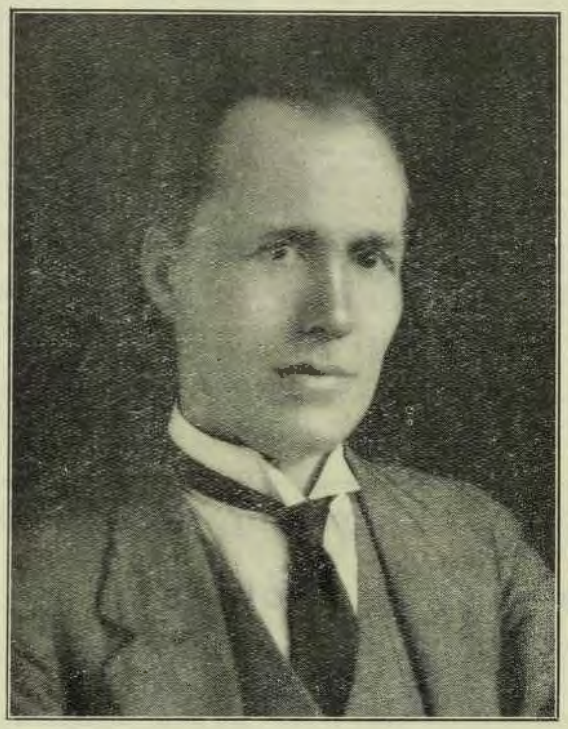
CONNECTING THE LOUD SPEAKER.

As implied above, in broadcast reception the listener is most interested in good quality. When he listens to a stringed orchestra he wants to hear a stringed orchestra, and not a jumble of sounds which are like music, but still are not music. There are numerous places in the receiver where the quality of the received speech or music may be destroyed. One of these was mentioned above, namely, lack of bias battery. Another and equally important place is in the loud speaker. Best service is derived from a loud speaker when nothing but alternating currents flow through it. The instant direct current passes into it, distortions make their appearance, since the direct current tends to demagnetise the windings when the loud speaker is not connected properly in circuit. Although rules are given for connecting the loud speaker properly, they are not always followed. Also the presence of the direct current saturates the magnets and thus produces distortion. The easiest way out of this morass is to connect it so that direct current cannot flow through it. This means the use of two additional pieces of apparatus, but the results are well worth it since through their use the loud speaker magnets will never be injured, and the quality of the loud speaker will be at its best. This method of connection is shown in Fig. 3. L is a very high inductance, and C is a 1 mfd. condenser. The condenser prevents direct current from flowing through the loud speaker, but permits the audio frequency currents to flow uninterrupted. The secondary of any audio frequency transformer may be used with the primary open at L. Insulate the primary terminals so that they cannot be short circuited, for if they are, no signals will be received. This method of connection will give the best results. Incidentally it will give the maximum amplification which the last tube is able to produce, which is not secured with the loud speaker connected directly in the plate circuit because the inductance of the loud speaker is small.

All of these points are fundamental and may seem trivial, but every radio set is really made up a large number of what appear to be trivial things. It only takes a trifle to spoil a set, and likewise proper care of trifles will make a good set.

One must always give consideration to small details if their goal be distant reception and clear reproduction of speech and music. One turn more or less on a tickler coil may make all the difference in the world insofar as reliable operation of the receiver is concerned. Other trifles are just as important.

Personalities in the Australian Radio World.



MR. W. J. WING.

Sales Superintendent — Amalgamated Wireless (A/sia) Limited.

AFTER graduating at the Marconi Wireless School, Liverpool, England, in 1911, Mr. Wing served as an operator on the Canadian Pacific and Allan Lines Trans-Atlantic service.

His first ship was the large 13,000 ton liner, the "Empress of Ireland," whose wireless equipment, consisting of a ten inch spark coil for transmitting and a magnetic detector for receiving contrasts strangely with the elaborate ship set of to-day.

After a period as operator on the White Star liner, "Runic," trading to Australia, he entered the Commonwealth Government Radio Service in 1913, as operator at Melbourne Radio, was subsequently attached to Thursday Island Radio for two years, Perth Radio for three years, and was chief operator at Sydney Radio for a like period.

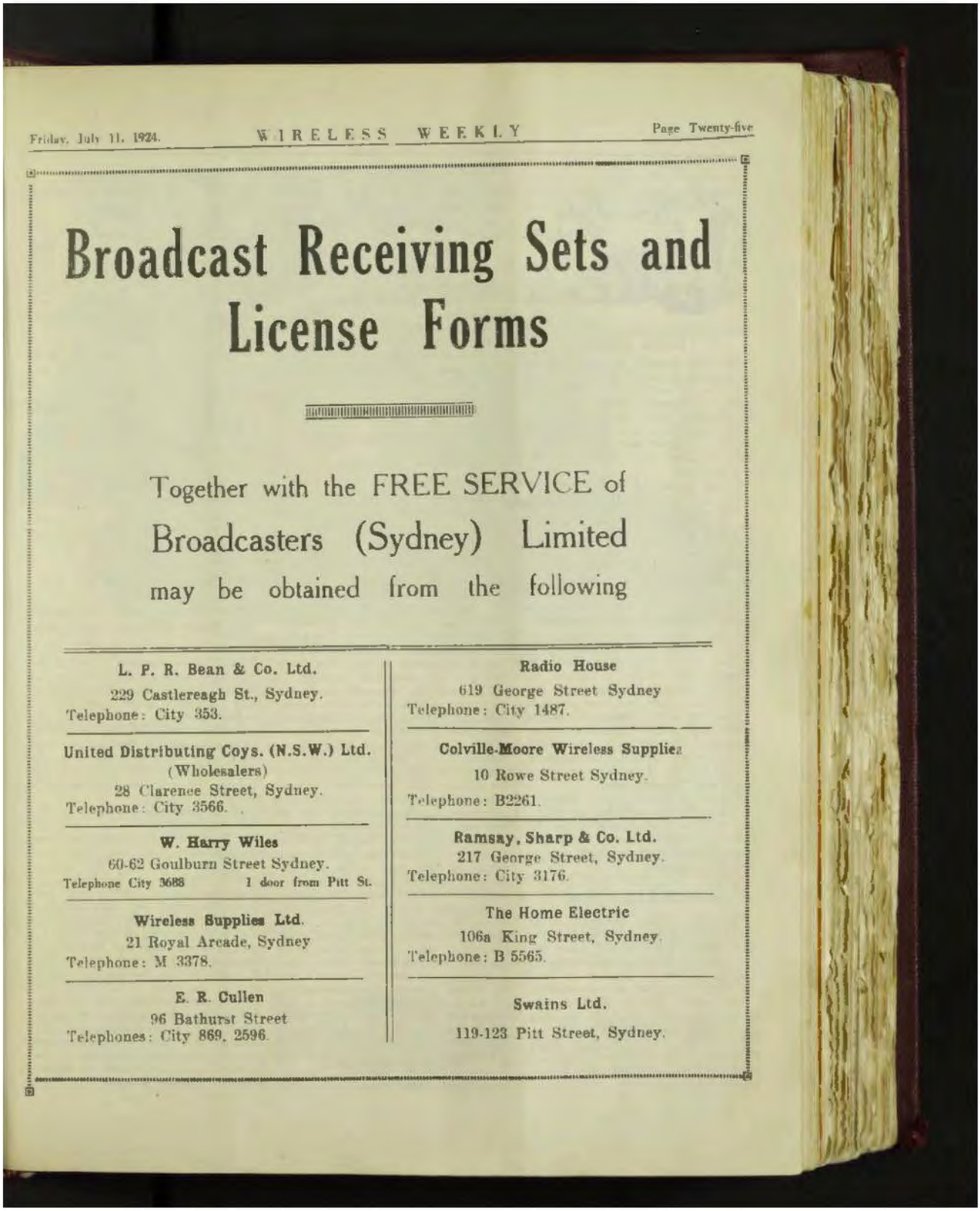
His next transfer was as officer in charge at Cooktown Radio for two years, where he became interested in public affairs and was elected alderman of the Town Council, and President of the District Hospital.

In 1922 he was transferred to the Sydney office of Amalgamated Wireless (A/sia) Ltd., taking up the position of sales' superintendent.

Mr. Wing's extensive wireless experience and knowledge of Australian conditions, coupled with a pleasing personality and the possession of that indefinable quality called tact, conduce to make him an excellent sales' manager, while his desire to serve all interests have made him many friends both in the trade and in the "House."

QUESTIONS AND ANSWERS.

J.R.S. (Lindfield): Not while you continue to use it as a crystal receiver.



Broadcast Receiving Sets and License Forms

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

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

United Distributing Coys. (N.S.W.) Ltd.
(Wholesalers)
28 Clarence Street, Sydney.
Telephone: City 3566.

W. Harry Wiles
60-62 Goulburn Street Sydney.
Telephone City 3688 1 door from Pitt St.

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

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

Radio House
619 George Street Sydney
Telephone: City 1487.

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

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

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

Swains Ltd.
119-123 Pitt Street, Sydney.

THE LEICHHARDT AND DISTRICT RADIO CLUB.

The 21st monthly business meeting of members of the Leichhardt and District Society was held at the club-room, 176 Johnston Street, Annandale, on Tuesday, July 1st.

The attendance was excellent, and several important matters were dealt with, including the election of two new members.

It was announced that on the following meeting night, the 10th lecture of the syllabus would be delivered by Mr. H. F. Whitworth, acting in place of Mr. F. E. Roscoe, who had intimated his inability to be present. Mr. Whitworth would deal with the very interesting subject of valve circuits, and the lecture would be accompanied by a demonstration with the society's newly reconstructed three-valve receiving set.

Next Tuesday night the 89th general meeting will be held, when Mr. J. N. Edmonds will deliver a lecture entitled "Esperanto: Its Relation to Radio." This lecture has been arranged by courtesy of the Sydney Esperanto Society, and as Mr. Edmonds is an accomplished linguist, his lecture should be well worth hearing. Consequently a good roll up of members is anticipated next Tuesday night.

Persons interested in the activities of the society are invited to communicate with the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale, who will be pleased to supply any information required.

CROYDON RADIO CLUB.

The usual weekly meeting of the Croydon Radio Club was held at the Club Rooms, "Rockleigh," Lang St., Croydon, on Saturday, June 28th, at 7.30 p.m., when all business in hand was rapidly discussed and attended to.

The auditor, Mr. H. W. Lees, presented his balance sheet for the past year, which was accepted.

The result of the Questions' Night Competition fell to Messrs. Craig and Luckenck, who received the divided prize of 1/6 each.

The meeting held on Saturday last, being the first on the new syllabus, was a decided success, and it is hoped that every meeting will prove as successful.

The meeting closed at 10 p.m.

Syllabus of Croydon Radio Club—quarter ending 27/9/'24.

1st week—Question night.
2nd Week—Testing transformers.
3rd week—Social.
4th week—Lecture.
5th week—Debate.
6th week—Circuit night.
7th week—Invitation to club.
8th week—Home made apparatus.
9th week—Lecturettes.
10th week—Lecture.
11th week—Questions night.
12th week—Debate.
13th week—Circuit night.

All intending members are respectfully invited to communicate with the Hon. Secretary, Mr. G. M. Cutts, 'Carwell,' Highbury St., Croydon.

STRATHFIELD AND DISTRICT RADIO CLUB.

The 15th general meeting of the club was held at the secretary's residence, on Tuesday, 1st July, Mr. Rourke being in the chair. The meeting was held on a Tuesday on this occasion, on account of the club's dance falling on our usual meeting night.

The club has pleasure in stating that it has secured a club room (where meetings, lectures, etc., will in future take place), owing to the generosity of Mr. E. J. Powell, of Albert Road, Strathfield, who has placed at the disposal of the club his fine large room for a club room. This, together with lathe, drilling machine and all necessary tools, a reference library, etc., at last puts Strathfield Club on a very sound footing. The aerial, which is in course of construction, will be supported by 80ft. masts. The type selected and all particulars of the club's set will be notified later. One feature of this offer is that Mr. Powell has given the use of the club room, together with the use of a special wireless room, which is now being fitted up absolutely free of any expense, and on this account the club cannot thank Mr. Powell enough. The headquarters of the club are now situated at the corner of Albert Road and Luke Street, Strathfield, where all experimenters will be welcomed any Thursday night. Or communicate with the secretary, Mr. M. Wraxall, "Almor," Long Street, Strathfield.

WIRELESS INSTITUTE. SOUTH AUSTRALIAN DIVISION.

JUNIOR SECTION.

The monthly meeting of the junior section of the South Australian Division of the Wireless Institute was held in the Prince of Wales Lecture Theatre, Adelaide University, on Wednesday evening. The attendance was very poor, as is generally the case with the junior meetings.

These meetings are especially arranged to help the beginners, but it seems by the attendance that the beginners don't want to learn, but if they have their licences taken away in the near future, we may be certain that they will be the first to squeal.

Mr. Frank Earle occupied the chair, and commented on the poor attendance.

A very interesting lecture on "Resonance" was given by Mr. J. M. Honnor, and after the lecture a good deal of discussion took place and contributed to the educational value of the evening's lecture.

WIRELESS INSTITUTE OF AUSTRALIA. NEW SOUTH WALES DIVISION. MONTHLY GENERAL MEETING.

Those members of the New South Wales Division who were present at the monthly general meeting, held at the Royal Society's Hall, on Tuesday, 17th June, spent a very enjoyable and profitable evening. The occasion was a series of papers by members on low power transmitters, but before these papers were presented, Mr. Renshaw gave a brief account of the recent Federal Council meeting in Melbourne.

Mr. Renshaw, accompanied by Mr. Stowe, represented this division at the council meeting, and while they were in Melbourne, did some very good work interviewing both Mr. Malone and Mr. H. P. Brown, Secretary to the Postmaster-General. Both these gentlemen received our representatives very courteously, and thoroughly discussed the present position with regard to broadcasting and experimental interests. Both showed a great deal of sympathy for the genuine experimenter, and there is no doubt that experimental interests will be carefully safeguarded in the new regulations. In this connection, both Mr. Renshaw and Mr. Stowe spoke very strongly against any alteration in the licence fee to be charged to experi-

Continued on page 29

Continued from page 28

members, and their action has since been confirmed by the executive.

A letter has been received from Mr. Malone, in reply to the telegram recently forwarded stating that every consideration will be given to the wishes of experimenters.

The Wireless Exhibition, held in Melbourne at the same time as the Federal Council Meeting, was described, and much praise was given to the energy displayed in promoting a successful exhibition. Both Mr. Renshaw and Mr. Stowe expressed great satisfaction at the very cordial relationship which has been established with the officers of the Victorian Division during their visit, and it is confidently anticipated that these relations will be more firmly cemented in the future.

It was also announced that the Australian Radio Relay League had accepted the offer of the Delegate's Council to take over the activities of the League in globe and establish same on a sound working basis.

Mr. Cook then spoke with reference to certain aspects of low power transmission, emphasising the necessity of carefully designing the aerial and counterpoise systems, and showing that they must be absolutely balanced for the most efficient working. He then dealt with the general principles of direction finding, and described a portable transmitter which could be used for this class of work. He urged members to make themselves proficeint in this branch of the science.

Mr. Renshaw then followed with a description of spark coil transmitters, pointing out some of the most important items, but as this subject is a very large one, he promised to give a more detailed description at a later date, when a very interesting evening is anticipated.

Mr. Stowe then dealt with the measuring side of the experimental transmitting set, describing the various instruments and their construction.

At the close of the meeting, Mr. Marsden gave a brief account of the recent test held at Bourke to determine the adaptability of broadcasting under present conditions to education in outback districts. He emphasised the fact, which was strikingly demonstrated during these tests, that all fancy circuits failed to give as good results as straight out connection. The tuned impedance method, he considered, gave the best results.

"Braemar,"
June 30th, 1924.

Editor, Wireless Weekly

Dear Sir,

With reference to letter in Wireless Weekly, June 27th, from Mr. Worland, saying that in all cases except Mr. Wright, of Scarborough, it has taken at least 4 valves to pick up K.G.O. I have picked him up on one valve, and for the fifth time last night, and have heard speech, announcements and music at very good audibility. I picked him up for the first time on one valve on Easter Sunday and claim to be the first Australian experimenter to do so. I have only my 12 year old son as witness, but am willing to perform the same feat before any witness.

Yours faithfully,
H. GOTTING.

---

18 Arlington St., Five Dock.
The Editor, "Wireless Weekly."

Dear Sir,—With reference to the Wireless Exhibition in October last year. On that occasion a number of prizes were allotted for amateur exhibits, and I was fortunate enough to be among the prize-winners. About December the prizes were presented at the Wireless Institute rooms at the Royal Society Building, when it was announced by Mr. Renshaw that a handsome certificate would be later forwarded to each prize-winner. It is now over six months since that announcement was made, but up to the time of writing nothing has been forthcoming.

On two occasions I interviewed Mr. Renshaw (Secretary of the Institute), Mr. Basil Cooke (Vice-President) being present at the first interview. Both these gentlemen assured me then that the certificate would reach me in one week. The explanation offered me on my second visit to Mr. Renshaw was "pressure of business," but the certificate would be forwarded at a later date. That is three months ago, and still nothing doing.

About six weeks ago I appealed to Mr. MacLurean in his capacity as President of the Institute, and that gentleman assured me he would endeavor to expedite the matter. Mr. MacLurean mentioned at the time that the certificates were ready and simply awaited his signature, but apparently the signature has never been affixed.

In a burst of righteous wrath I wrote a letter to the Institute, reminding them that I was still on the waiting list; but my effort was rewarded with a blank and chilly silence. Evidently it did not merit a reply.

Now, Sir, just in case there are others who have received similar treatment to myself, I particularly ask you to publish this letter in the hope that it may spur the officials of the Institute to make an effort to keep the assurance given so long ago. Thanking you.—Yours faithfully,

ROBERT WYATT.

Newbeld, Victoria, June 30, 1924.

The Editor, "Wireless Weekly."

Dear Sir,—I would like to make a suggestion to experimenters, if you could find space to publish it, regarding the manner of pronouncing their call signs. As, no doubt, everyone is aware, there are several lettters that have a somewhat similar sound, and it is a difficult matter, when reception is bad, to determine what the letter is. I would suggest that experimenters pronounce these letters by the special names given them. Any ex-army signaller will be familiar with this method, as in army signal schools these particular letters were always pronounced by their special names. For example, take, say, "9BS." This may possibly be read as "9EF" or "9DF." But if the call is pronounced "9 Beer Esses" there is no mistaking it for something else. I have heard only one or two experimenters who use this system.

For anyone not familiar with this, I am jotting down the letters, eight in all, with their corresponding names—

A.	"	Ack.
B.	"	Beer.
D.	"	Don.
M.	"	Emma.
P.	"	Pip.
S.	"	Esses.
T.	"	Toc.
V.	"	Vic.

—Yours faithfully,
N. L. McKENZIE.

Briny Reminiscences

By "Brasso"

My first ship! The wonderful feeling I had as my feet trod up the gangway of the Blue Funnel liner, "Ulysses," can only be realised by those who, like myself, have spent long days of study at the Marconi School in Sydney, and after many false alarms and anxious moments, have at last been given the fateful letter to the captain of the ship.

I was one of a bunch of callow (very callow) young bucks, who were rushed through an intensive course of training to be in readiness to join troopships, late in 1914. Considering the limited time at the disposal of the instructors (Mr. G. Apperly, now technical superintendent of Amalgamated Wireless, was then school manager), the amount of knowledge that was coaxed, kidded and sometimes forced into our thick domes, was positively amazing. In those days the stock school equipment was a Marconi 1½ K.W. set and a Telefunken spark coil and tuner, and on this stuff we were daily drilled in the learning of starting-up, stopping, adjusting the crystal, etc. On the black-boards, after much patience, the meaning of criss cross lines and queer dodads gradually became fairly clear to us, and when, early in December, we were all shipped hurriedly to Melbourne by the "Katoomba," not one of us but considered himself on fraternal terms with Guglielmo himself. I can easily recall the bewildered look on the face of the captain of the "Katoomba" when he stepped jauntily into the music room and found half-a-dozen "wops" gathered round a key and buzzer, reading the code while the saloon passengers looked on in wonder. The captain delivered himself of one of the finest and most effective impromptu speeches of a long and useful career, and his meaning being clear and unmistakable, we, to use his own term, "opped" it.

The fact that I was signed on as third Marconi operator of the "Ulysses" did not reduce my chest expansion one single inch, and as my eyes took in the broad sweep of spotless deck, the tall funnel and the aerial swinging high up aloft, I felt that my life's greatest ambition had been fulfilled. The senior operator was a small Scotsman, with a lisp and a leaning toward that dry brand of Scots' humour which always leaves you wondering why the heck they call Scotsmen witty.

Personally, after a long acquaintance with Scotsmen at sea, I find their peculiar accent still grates on my tender nerves, and their humour leaves me cold. However, Tommy (everybody called him Tommy, although his front name on the articles was Angus) proved quite a decent little citizen, and we got along fine together. I occupied the lower berth in his state room, and right excellent company I found him when he used to squat on the edge of his bunk and squinting down at me, pitch me some pretty tall yarns about his adventures in South American ports. Now and again he would interrupt his narrative to cackle over some obscure point of humour in it, and although it was seldom apparent to me, I was an easy going sort of cuss and never failed to chime in at the right moment with a burst of raucous laughter.

The second operator was a strange product of the eastern suburbs of Sydney. He answered to the homely name of Tim Ryan, and his cool, blase outlook upon life and every old thing in general, was a never failing source of wonder to me. Although during the weeks we were together many things happened which threw Tommy and myself off our beat a bit, Tim never diverged from his attitude of calm detachment.

He was a queer mixture of efficiency and slovenliness. There was a permanently unkempt look about him, and his facial forestry department was ever crying softly for the caress of the razor. In his hours off watch he would sit for long periods practising scales on a flute, to the intense delight of an engineer in the cabin next door, who used to thump violently on the bulkhead but to no effect. Tim had a passion for learning that I have never seen equalled. By way of mild diversion he passed the hours of his watch poring over some intricate mathematical problem, or deeply engrossed in a volume that a university professor would have found a trifle heady. His personal belongings when he joined the ship were just what he stood up in, plus a few articles contained in a small handbag, just as if he were toddling along to Manly instead of embarking on a deep-sea voyage. Never shall I forget the astounded look of the chief officer when, in response to the latter's offer to send a steward down to lift his bags from

The Marconi School.

the wharf, Tim gravely informed him there were no more to bring up.

The three operators dined with the four deck officers in a mess-room on the boat deck, and many a happy hour I spent there listening to breezy yarns of strange ports and the years served in sailing ships. Reviewing the many ship-mates with whom I herded during eight years of sea life, I think, without doubt those four were the finest bunch of good fellows I ever had the good fortune to meet.

As our engagement with the Naval Department was an indefinite affair, neither Tim or myself had a uniform, and during the voyage we were objects of great curiosity to the 2500 troops on board. The only other person minus a uniform of some kind was the war correspondent of the Melbourne "Herald" (he was killed at Gallipoli, I believe), and he affected a khaki outfit with leather buttons, which somehow passed muster.

The "Ulysses" was the flagship of the second convoy to leave Australia, the officer in command of the convoy being Captain Brewis, R.N., a great stickler for etiquette and discipline. He had a way of barking his remarks which was somewhat disconcerting. On one memorable occasion I ventured to suggest to him the correct way to route a message, and the captain, in true gentlemanly spirit, requested me to mind my own ruddy business. A custom rigidly adhered to was when mounting to the bridge to salute the officer on watch. Not having a uniform cap, I met the situation by raising my felt hat,

T.S.S. "Ulysses."

and this later was supplemented by an exaggerated bow, to which the officer solemnly responded. The message having been handed over, we would each retreat a few paces and bow to each other again. This was a source of great amusement to us until one day Captain Brewis unexpectedly arrived on the bridge in the middle of our courteous exchanges. Let us draw a veil over what followed.

The wireless installation consisted of a 1½ K.W. Marconi set, with a rotary spark gap, and ye olde magnetic detector. The aerial was a twin wire T type . Being only third operator, I naturally fell in for the worst watch, which was the 12 to 4, and it took me quite a while to get used to being hauled out at midnight to sit for four hours blinking at the two ebonite disks of the old magnetic as they revolved slowly around. On one of them was stuck a penny stamp, so that it was possible to see when the clockwork needed rewinding. At 3.45 a.m. I went below and called friend Tim, who kept the 4 to 8. As he early showed no keen desire to crawl out, I fell into the habit of stepping into his cabin, switching on the light, and yanking the bedclothes off. This method never failed, nor did it ever arouse Tim to protest.

For over a week after leaving Albany, the convoy proceeded at about eight knots, the formation of three long lines stretching out for miles, presenting a wonderful sight. The "Ulysses" was at the head of the cen-

Continued on page 33

Wireless Weekly

SUBSCRIPTION RATES

Single Copies . . . . . 3d. net
12 months (52 issues), 13/- post free.
6 months (26 issues) 6/6, post free.

All communications to be addressed to the Editor, Wireless Weekly, 33 Regent St., Sydney.

Telephone, Redfern 964.

All advertising and other matter for insertion should be in the hands of the Editor by Friday.

All copy must be written in ink or typed, and on one side of paper only.

Advertising Rates on application.

Continued from page 31

tre column, the "Ceramic" on the left hand and the "Thermistocles" on the other. Diversion was caused on several occasions by the ill-fated submarine A.E.2, which was in tow of the "Berrima," for all the world like a small chicken following in the wake of its mother. On occasions when a sea worked up, the tow line carried away, and there would be a blowing of sirens and a general scramble of ships to get out of the way. Then the convoy would slow down until things became adjusted.

The "Vestalia," which was immediately behind the "Ulysses," was daily a source of anxiety to the officers on the latter ship. About noon, her funnel would belch forth black smoke, and to the accompaniment of cheers and yells she would rapidly increase speed and wallow past the "Ulysses" at about twelve knots. On one occasion she passed so perilously close that the troops basking in the sun on the poop got up and ran for their lives. It would usually be about four hours before the vessel was manoeuvred into position, and the blunt snout busily pushing up the water astern once more.

Wireless business was slow, and I was just beginning to get bored with copying VIP's, weather when one day the signal warrant officer handed me 110 words of ten letter code addressed to X.L.9. I never discovered the name of this station, but on the first "X..L.9, De A.V.B," (the transport call of the "Ulysses") he came back immediately with "K.," and I slammed the lot at him pronto. One solitary "R" came floating back, and that was the last I heard from X.L.9. Our theory that he was a cruiser snooping around just out of sight was never confirmed, and for obvious reasons we felt it would have been indelicate to discuss the matter with Captain Brewis.

Our next point of radio contact was V.P.K., the famous station on the Cocos Island, from which the S.O.S. signal was sent to the "Sydney" on the occasion of the visit of the "Emden" (some years later I had the pleasure of photographing the bones of the "Emden," as they were being pounded by the surf on the beach at North Keeling). With V.P.K., we were kept busy, and for a couple of days the air hummed with code messages.

By this time we were well into the tropics, and the ship's officers appear-

Continued on page 36

Continued from page 33

ed in neat white drill uniforms, with black and gold epaulettes, and looking remarkably cool. Fortunately I had a light grey suit along with me, and a pair of cream trousers which had seen long service at tennis. Somewhat of a problem confronted me as to the laundering of these, until by resort to bribery I effected a working arrangement with the Chinaman in charge of the laundry. At the mystic hour of midnight, clad in homely striped pyjamas, I used to sneak along the silent corridors, cream trousers under my arm, and, crossing a small space of open deck, deposit them just within the door of the laundry. At exactly five minutes to eight a.m., a parcel would be handed to me by a steward, and at 8 a.m. I stepped out on deck spruce and debonnair, clad in grey coat and spotless cream trousers. How the Chink worked the oracle must ever remain a mystery, but every time we passed each other in the alleyway, he would grin profoundly at me as though we had in common some secret which it was not given to other mortals to share.

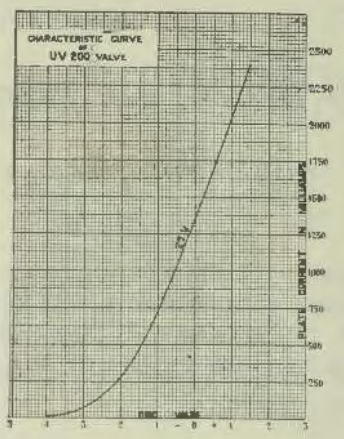
Tim met the peculiar conditions caused by the change of temperature, in characteristic manner, and with an easy nonchalence typical of all his actions. He just went on wearing the same old duds and thus the problem was solved. His appearance on deck, clad in a Fox serge suit and bull-nosed boots while the mercury was caressing the top of the glass, was a source of continual edification to the military officers neat in their khaki drill, but Tim was a monument of placidity.

During the midnight to four a.m. watch, pyjamas covered my birthday suit, and these I found not only cool, but convenient. I simply turned out of bunk and donned the 'phones. At the completion of the watch I went back to bed, thus avoiding the formality of dressing and undressing. On several occasions Colonel (now General) Monash, who was O.C. Troops, dropped in, and we discussed the wonders of wireless. As far as I can remember, the Colonel was almost the only soul on the ship who regarded the war from other than the standpoint of a picnic, and many of his prophecies made in the Marconi cabin at 2 a.m. on those tropical nights came very true.

To be continued next week.

Published by A. W. Watt, "Strathaird," East Crescent St., McMahon's Point, for the proprietors and printers, Publicity Press Ltd., 33/37 Regent St., Sydney.

U.V. 200 VALVE



U.V. 200

The U.V. 200 may be called upon to perform a great variety of duties. In either simplex or complex circuits the U.V. 200 as a detector valve embodies all the characteristics necessary for faultless performance. A .00075 grid condenser with grid leak should be used. The plate voltage required is from 18v to 28v. Voltages in excess of 30v should not be applied. The normal voltage to be applied at the filament terminals is from 5 to 5.4 volts.

The U.V. 200 is very stable in operation and has a long life. These valves also possess uniform characteristics so necessary for critical receiving adjustments.

Characteristics of U.V. 200 Valve: Fil. bat. volts 6; fil. term. volts, 5; fil. amp. 1.0; anode volts 15-25; socket type — standard V.T.; overall length 110 M/M; Diameter of bulb 5 0 M/M.

WIRELESS INSTITUTE OF AUSTRALIA.
New South Wales Division.

Mr. E. B. Crocker (2BB) succeeded in logging the following stations, during the last week end in June: 2CQ (phone), 2HM (phone), 3AP, 3BD, 3BH, 3BM, 3CB, 3LS, 3XO, 4AA, 4AP, 4EG (phone), 4TX, 5BD, 5DO.

Mr. Crocker is well known in experimental circles and is a councillor of the Wireless Institute of Australia, New South Wales Division. His work on behalf of the experimental movement will be remembered by many and we are glad to note the interest that he still maintains in the science of radio telegraphy.