

# AUSTRALIAN RADIO HISTORY

An in-depth study into the development of A.M. broadcasting throughout Australia by Bruce Carty Ph.D. [bruce.carty@bigpond.com](mailto:bruce.carty@bigpond.com)

Other recommended sites: [www.australianotr.com.au](http://www.australianotr.com.au) [www.radioheritage.net](http://www.radioheritage.net)

Author Biography and Book Introduction.

First Came Recorded Sound.

Australian Radio Trivia.

Australian A.M. Radio Timelines.

Broadcasting Pioneers of Australia.

Broadcasting Nostalgia in Australia.

Australia's First Licensed Broadcast Station (2CM 1922).

Wireless Institute of Australia by Charles MacLurcan (2CM).

A.W.A. Receiver Installation Guide (1926).

History of Broadcast Station 4CM (1925).

Experimental Broadcast Station 4RM (1928).

Early Radio in Britain, America, and New Zealand.

Radio Receiver Licences.

Australian Railway Broadcasting Stations.

Commercial Licenses That Never Went To Air.

Early Australian Shortwave Broadcasters.

What Makes Radio Tick?

Radio 2UW Portable Outside Broadcast (1932).

Miracle Men of Radio are Never Heard.

Australia's First Licensed Television Station (Radio 4CM 1935).

A.W.A. Broadcasting Station 9MI (M/V Kanimbla).

Comparison of Early Program Guides – 2GB 1926 + 1939 + 1954 + 1978.

Talkback Anecdotes.

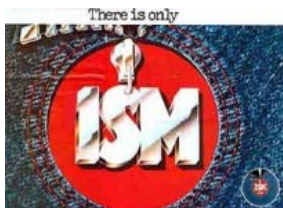
50 Golden Years of Broadcasting (the Amateur Contribution).

## Part 1

Author Biography & Book Introduction

To

50 Golden Years of Broadcasting (the Amateur Contribution)



# **“AUSTRALIAN RADIO HISTORY” by BRUCE CARTY Ph.D.**

## **BOOK INTRODUCTION and AUTHOR BIOGRAPHY.**

Bruce Carty started his interest in radio at the age of five as a member of the A.B.C. “Argonauts” club. By seven his radio interest was listening to A.B.C. news broadcasts. By twelve, Bruce avidly followed the 2UE TOP 40, obtaining their weekly listings from the local music store. At fourteen he became Australia’s youngest commercial radio announcer in 1963 with radio 2KA in Katoomba. He used to pester the announcers to let him panel for them. One day they were short an announcer so Bruce was asked to step in. So started his media career. Later, in Brisbane, he studied announcing, script writing, and program production with Jim Illiffe’s School of Broadcasting classes held at radio 4BC. Bruce then studied for his Broadcast Operators Certificate of Proficiency, with lectures in Brisbane by P.M.G. engineers. These lectures included an examination on the theory and operation of a 2,000 watt transmitter with water-cooled valves.

Bruce launched his own closed circuit radio station in his spare time on Queensland’s Sunshine Coast, with a studio in the Mooloolaba surf lifesaving club. From here, his SUNRADIO station was relayed via P.M.G. landlines to every Sunshine Coast beach through the public address system at each surf club. SUNRADIO operated every weekend and public holiday, playing the current Top 40. On the odd occasion, he even announced shark warnings for swimmers.

Bruce moved into television, working for BTQ-7, TVQ-0 and ABQ-2 in Brisbane, plus stations at Tamworth, Mackay, Darwin, Newcastle, and Wagga Wagga. He then worked as Presentation and Traffic Manager at Canberra, Station Manager at Mount Isa (after installing some of the equipment), and General Manager at Geraldton. Geraldton was quite a shock to him as when he arrived he discovered that the station was only on air four hours a day (6PM - 10PM) and running at a loss. By the time Bruce left Geraldton two years later, the station was on air twelve hours daily, and making a profit, achieved with an increase in staff of one.

While in Geraldton, he joined the local Citizens Radio Emergency Service Team (C.R.E.S.T.) as a volunteer, and was eventually appointed to the volunteer position of Western Australian State Director.

Bruce also worked for NASA at their Honeysuckle Creek tracking station, one hour South of Canberra, in their communications control room, supporting the later Apollo moon missions (16 and 17) and all the Skylab missions. With the aid of an 85 foot diameter dish antenna, he controlled all two-way voice transmissions and monitored all the bio-medical information from the astronauts. The Apollo missions included monitoring all the ALSEP (Apollo Lunar Surface Experiment Packages). These packages were left on the moon by each Apollo team to continue collecting and transmitting data back to Earth.

Bruce took his experience overseas, visiting 100 countries, starting in Mexico. While travelling through a town called Taxco, he visited a local radio station, and accepted an offer of an announcing position for three months. The pay consisted of full board only, but he thought of it as a great experience living with the local Mexicans. He then travelled through all the Central American and South American countries, spending three months in Brasilia (the capital of Brazil) where he worked as a videotape operator for a TV station. In Columbia he was shot at by bandits, and in Chile he was outside the Presidential Palace when it was strafed by the Chilean Air Force during an attempted coup.

Moving on to Europe, he obtained a drivers position for Atrek, a camping tour company taking young (18-30) Aussies and Kiwis on tours through North Africa and Europe. The North African itinerary included Morocco, Algeria, (with a crossing of the Sahara Desert), and Tunisia. Once while escorting his passengers through the Marrakesh (Morocco) markets he was approached by an Arab Sheik with an offer to buy one of his young female blonde blue-eyed passengers. Back in the U.K. he was on a car ferry crossing the English Channel to Ostend in Belgium when a force 14 gale hit. The ferry survived, limping into port with a 30 degree list, while two nearby ships, including a British naval destroyer, were sunk.

Bruce’s travels included numerous flights, some of which he didn’t enjoy. A TAA Boeing 727 flight from Perth to Sydney landed unexpectedly in Adelaide at 3AM with a bomb on board. A Laker Airways DC9 flight from Gatwick (London) to Toronto in Canada landed very heavily at a top secret Military base on Newfoundland Island with only one engine, as they had run out of fuel. An old DC4 above the jungle in Guatemala experienced one third of its’ starboard wing falling off, and spiralled down to an emergency landing on a fortuitous dirt track. While taking off from Kuala Lumpur in a British Airways 747, one engine exploded too late for the take-off to be aborted. The pilot struggled to get the Boeing jumbo into the air with reduced power.

Upon returning to the U.K. he obtained a position with London Weekend Television as an audio operator on sport outside broadcasts.

During a visit to Heathrow (London) airport he saw a flight to Iceland on the departure board. A sudden decision saw Bruce buying a ticket, with the flight leaving in two hours. While visiting Vestmannaeyjar Island off the South coast of Iceland, he was hurriedly evacuated when a lava flow from a volcano destroyed half their town. He then set out hitchhiking around Iceland and called in to a Government operated radio station at Akureyri on the Arctic Circle. He accepted an offer of an announcer’s position, but left a few months later when their severe Arctic winter arrived.

Back in Australia, Bruce obtained a Science degree with a Major in Broadcast Communications in 1989, then an M.B.A. in 1991, and a Ph.D. in 2012. As the volunteer program manager for community station 2CCC in Gosford, he organised a publicity stunt for the station in 1993. He attempted to break the world record for the *Longest Continuous Broadcast by One Announcer*. He reached 121 hours, breaking the world record, which was then recognised and published in the 1995 edition of the Guinness Book of Records. (The previous world record was also achieved at an Australian station with announcer Mike Summers at 2GF in Grafton in 1986).

Bruce was concerned that there was no radio station available that specialised in music for baby boomers on the Central Coast of New South Wales. He organised a group of volunteers and launched a Nostalgia station, concentrating on the bright, popular, well known songs and artists from the 1930s to the 1960s. They were forced to operate on various temporary frequencies due to no permanent frequency being available. They even had to endure long periods off the air while other temporary radio stations were on. In order to keep the station operating, Bruce launched the station on the internet. In 2010, after eighteen years of lobbying the Australian Communications and Media Authority, they were finally issued with a permanent licence. The lobbying had included nearly 2,000 letters of support from listeners, plus a 30,000 signature petition. At the time, this was recognised as the largest petition ever submitted to an Australian Federal Department. However, the licence was issued for Lake Macquarie instead of the Central Coast.

So as not to disappoint their Central Coast supporters, he bought an “out of band” broadcast licence, requiring a special receiver. He used this licence, broadcasting on 151.625 MHz. to launch Radio Yesteryear, with the help of his supporters. Their format was “Bright, Popular, Songs and Artists 1930s – 1960s”. Such was the demand for their music format that nearly 1,000 receivers were sold. A large amount of letters, phone calls, and emails also came in from listeners saying that they were hearing the station on multi-band communication receivers. Coverage on this frequency was from Mona Vale in Sydney to Charlestown in Newcastle and out to Mount Victoria in the Blue Mountains. This was achieved using the maximum allowed transmitter power of 50 watts.

Bruce was asked to explain the origin of letters in some broadcast station callsigns. As a hobby, he then researched the origins of the letters in all Australian A.M. broadcast station callsigns. The number of callsigns kept increasing until he reached nearly 700. This was a much higher number than any previously published listings, and even exceeded official Government records. Bruce realised that there was no published research on these stations on an “individual station” basis. He then compiled a brief history on each A.M. broadcasting station, organised in chronological order within each State. His research included the early broadcasting experiments in Australia from 1918 with Walter Coxon in Perth, plus A.W.A. in 1919 in Sydney, and 1920 in Melbourne.

Bruce’s journey started with emails being sent to all A.M. stations, plus the F.M. stations that had converted from A.M. The response was very poor, so he wrote to the remaining stations. Again the response was poor, so he telephoned them. Most ‘*promised him everything, and sent him nothing*’. He formed the impression that most stations either had no interest in their history, or had experienced so many changes of ownership that their history was lost. A small number of stations did have some history on their web sites. These sources of information were of some use; however, except for **2AD** Armidale and **2DU** Dubbo, they lacked much detail. **2RE** Taree and **2GF** Grafton were both good enough to send a book on their history. While on holidays each year, he visited as many stations as possible. Again he was promised that information would be sent. Nothing ever arrived.

Commercial Radio Australia was good enough to publicise his quest to all their member stations. However, this resulted in only one station responding (**3GL** Geelong). The **A.B.C.** sent some information which, unfortunately, contained numerous contradictions and errors. Bruce then researched the availability of relevant books on the internet. These were borrowed through his local libraries at Gosford and Kariong, and were a great source of information, despite also containing numerous errors. He visited the National Film and Sound Archives in Canberra, the Australian Communications and Media Authority library in Sydney, and the Mitchell library (several times) in Sydney. These three sources were very cooperative. Other worthwhile sources were the Radio Heritage Foundation website and individual members of the Historical Radio Society of Australia, plus various radio-interest Facebook sites.

Bruce then contacted every local council library, every historical society, and every local newspaper, in locations where information was still lacking. These three types of sources proved to be of immense value. Also of value was the National Library of Australia ([www.trove.nla.gov.au](http://www.trove.nla.gov.au)) with old newspaper cuttings. Following interviews on radio stations **2GB**, **2UE**, **2AD**, **2GO**, **3AW** and **6WF**, he was contacted by numerous helpful ex radio station employees and their descendants. The Daily Telegraph also assisted Bruce by locating the grandson of Charles MacLurcan from Australia’s first licensed broadcast station (**2CM** in December 1922).

The **2CM** licence followed the Australian Government issuing “The Regulations – Radio Laws for the Amateur” on 1-12-1922. The broadcast licence (number one) was signed by Prime Minister, The Rt. Hon. Billy Hughes. Despite not being a commercial licence, Charles often advertised his own MacLurcan Radio receivers. Callsign **2CM** is listed by the Federal Government as “*Never to be Reissued*”, in recognition of the pioneering broadcast achievements of Charles MacLurcan. (Most publications recognise **2SB**, on air 23-11-1923, which soon changed to **2BL**, as the first licensed broadcast station to go to air in Australia). **2SB** was the first licensed commercial broadcast station in Australia; not the first licensed broadcast station. They ceased broadcasting advertisements when they became an **A.B.C.** station on 1-7-1932. Numerous amateur operators were also issued broadcast licences. Several of these stations, which, contrary to their licence conditions, did broadcast advertisements, were later granted commercial licence status and still exist today. In addition, several licensed broadcast amateurs became the Chief Engineers, managers, and owners of the early commercial and pre **A.B.C.** licences.

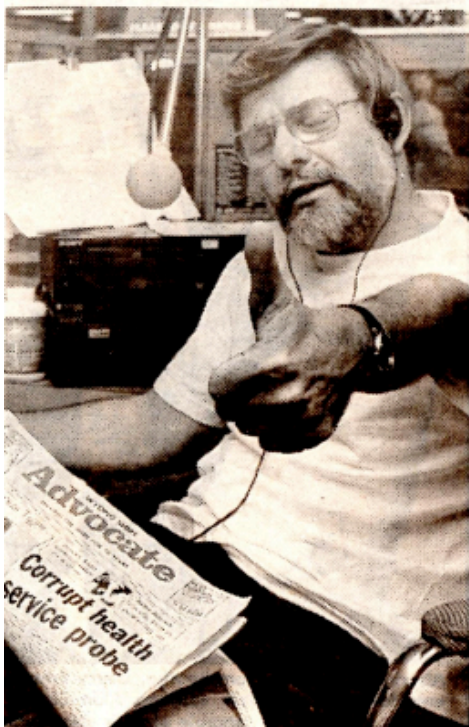
This research started in 2005 and is still ongoing. The fully updated fifth edition of his book “*Australian Radio History*” was published in 2014 and reprinted in 2015, and includes over 600 historical colour station logos and photographs. Also included are numerous relevant separate articles on the early development of broadcasting throughout Australia.

Bruce was driving to work six days a week at his job in Sydney, and looked after some of the technical requirements for community radio station transmitters at Gosford and Wyong. He often acts as a volunteer consultant for other aspiring community radio stations. Bruce also fills in to speak at various community group meetings, using PowerPoint to talk about the development of Australian radio.

He survived bowel cancer surgery at 56, 67, and 69, prostate cancer surgery at 58 and 69, kidney cancer surgery at 62 and 65, and bladder cancer surgery at 69. He then retired to Listening Hill.

Photo = *Wyong Advocate* 23-9-1993.

## World record!



DJ Bruce Carty nears the end of his marathon stint

2CCC FM disc jockey Bruce Carty has captured the world record for continuous lone radio broadcasting.

Bruce set the new world record of 121 hours and three minutes at Bay Village shopping complex last week.

His marathon stint beat the old record – set by 2GF announcer Mike Sommers in 1986 – by an hour and three minutes. He began the attempt on September 11 at 6pm – he finished, exhausted, last Thursday night at 7.03pm.

Bruce said the first 36 hours of the marathon were easier than he expected. “Then on Monday morning I started to feel very tired,” he said.

“I had a few psychological problems, but I had them under control by Monday afternoon. Monday night till about 1am Thursday I was fine.

“After 1am I was close to the edge and thinking of quitting. I started to think I’m only doing this as a publicity stunt for 2CCC FM.

“Then I thought of all the people who’d backed me and I told myself I couldn’t let them down.

“Thursday morning between 2 and 9 I was hallucinating and not quite with it. I couldn’t think as clearly as I should. It was not a matter of staying awake, but my mind wasn’t alert enough to cope with panel operating.

“For one three-hour period I used a panel operator to do the mechanical work for me. Incidentally, the guy who held the record before me didn’t operate his own panel,” he said.

Once he passed the old record Bruce kept on for another one hour and three minutes before he gave it away.

“I’d achieved what I wanted and I knew I wasn’t in the mental state to think what I had to say on air.

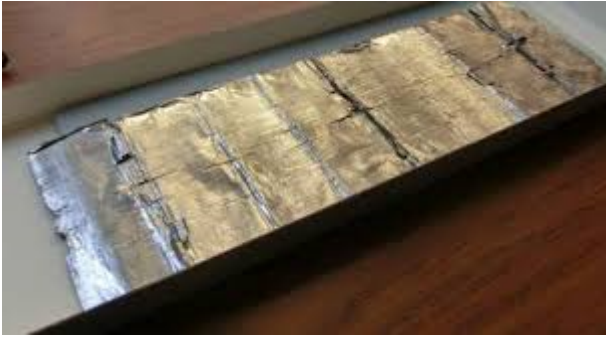
Bruce’s wife took him home and after 1½ hours relaxing he went to bed.

He slept for 14 hours straight, got up for a couple of hours and went back to sleep for another five hours.

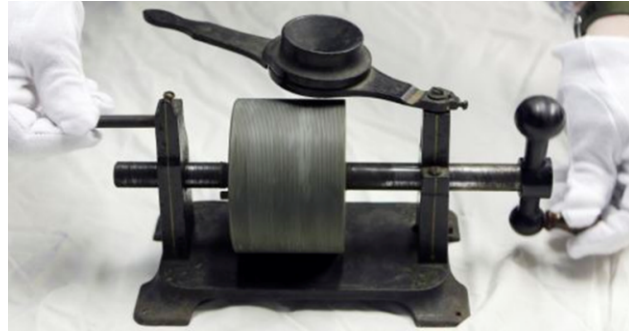


# FIRST CAME RECORDED SOUND

## TINFOIL RECORDS – 1879



Laid-out tinfoil record



Tinfoil record player

Recordings were made on sheets of tinfoil up to 5" by 15". A hand crank turned the cylinder under the stylus, with the thin metal speaker dome on top. Typically, tinfoil records were only suitable for two or three plays, as the stylus would shred the tinfoil. Travelling showmen often tore tinfoil records into pieces after playing them, to be given away as souvenirs to spectators. Only ten tinfoil records are known to exist in museums, and only two of these are regarded as still being in a playable condition.

## CYLINDER RECORDS – 1886



Edison Cylinder Player



Hand-written cylinder label



Edison cylinder with cover

Various early manufacturers of cylinder records insisted on their own specifications, which resulted in cylinder records being incompatible with the players of other manufacturers. Eventually the Edison Gold Moulded cylinders were accepted as the standard. These were manufactured from 1902 – 1912 and operated at 120 R.P.M. Their recording time was three to four minutes (earlier cylinders only lasted for two minutes). Flat 78 R.P.M. ten and twelve inch discs were introduced in 1913, resulting in cylinder players being phased out by 1929.

## JUKEBOX – 1889



Ten ear-tube Edison cylinder player



One ear-tube player



Cylinder orchestra recording session

The first jukeboxes, known as 'Automatic Coin-operated Phonographs' or 'Nickel-in-the-Slot' machines until the 1930s, consisted of an Edison cylinder player and a coin slot to activate them. The owner of the player would change the cylinder record every day. From one to ten listening tubes were provided, to be placed in the listeners ears. In 1928, the first jukebox with amplification and a speaker was introduced with primitive automation, allowing a selection of eight 78 R.P.M. discs from eight separate turntables. These records were usually changed weekly.

## THEN RADIO WAS BORN



# **AUSTRALIAN RADIO TRIVIA**

**Below are examples of extensive history and interesting trivia collected from a list of over 700 A.M. stations researched. For further details on each station, refer to the six State listings.**

Radio Australia started as **3ME** in 1921. \*\* **3AW**, **3CS**, and **2GB** once banned all Beatles records. \*\* **3AR**, **3KZ**, **2HD**, **2UW**, **5KA**, **5AU**, and **4AT** were closed by the military for broadcasting alleged security breaches during WWII. \*\* **3UZ-3XY**, **5AN-5CL**, **2SM-2CH**, **3GL-3CS**, **6PR-6PM**, **7BU-7AD**, and **4BC-4BK**, experimented with stereo in 1958 (left and right audio on separate stations - listeners needed two radios). \*\* **3DB** rejected a job application from John Laws. \*\* **3BO** was the first to employ John Laws. \*\* **3AK** and **2SM** both claim to be the first to try talkback radio, but **2UE** and **3DB** were the first to legally broadcast talkback. \*\* **2BL** was previously **2SB**, and actually started as **2HP**. \*\* **2FC** broadcast an interview with Adolf Hitler in 1932. \*\* **2UE** started the original Top 40 charts in March 1958. \*\* **2BL** broadcast 7,094 episodes of "Blue Hills". \*\* **2UW** broadcast 2,276 episodes of "Dad and Dave". \*\* **2GB** planned to open **3GB**, **4GB**, **5GB**, **6GB**, and **7GB**. \*\* **2KY** was the first station in the world to broadcast Parliament. \*\* **2HD** opened with 12 records in their library. \*\* Moss Vale used to have its own commercial station (**2MV**). \*\* The studios of country stations **2GZ**, **2LE**, and **2KA** used to be in Sydney. \*\* **2WG** was once kept on air during flooding by an amateur operating his radio link to their transmitter. \*\* **2DU** was often put off the air due to flooding. \*\* **2CH** banned liquor and gambling advertisements, and any mention of the Melbourne Cup. \*\* **5DN** newsreader Murray Nicholl broadcast live his home burning down during the "Ash Wednesday" fires in 1983. \*\* The Australian Army was issued a broadcast licence for its Adelaide River camp (N.T.) which never went to air. \*\* Perth had a secret underground radio station in Nedlands to be used if invaded by the Japanese in WWII. \*\* **4WK** lost a grand piano when termites caused it to fall through the studio floor while being played live to air. \*\* **2BS** had the studio, transmitter, record library, and office in one room. The owner and his family lived in the second room. \*\* The **2KA** transmitter was wired with explosives during WWII in case the Japanese attacked. \*\* **4CM** conducted the first Australian TV experiments in 1929, which were later seen regularly in Melbourne. \*\* **2LM** was sold for 25 pounds. \*\* A **6KY** program called "Topless Radio" was banned by the censors. \*\* **3BA** was forced to give up its' security pistol, and **3XY** race caller Ken Howard had his binoculars seized for the war effort in WWII. \*\* The first F.M. experiments (mono) in Australia were in 1927 on 9 MHz. \*\* **4BH** was the first station in Australia to install a directional aerial, and **2SM** was the first to install an active aerial. \*\* **2UW** was the first to broadcast live shark and beach reports from an aeroplane, the first in the British Empire to broadcast 24 hours per day, relayed their broadcast of the Sydney Harbour Bridge opening to 23 stations, and the first station in the world to broadcast serials. \*\* **2UE** was the first to broadcast the 6 pips every hour (1939). \*\* **7EX** listeners raised enough money to buy a Spitfire fighter plane for the war effort in WWII. \*\* In 1938 **2KY** was closed for five days by the Federal Government for inciting labour unrest. \*\* Callsign **2XL** was issued to commercial stations in Lismore, Broken Hill, and Cooma. \*\* **2UE** was the first to experiment with transmitting still pictures, and newspapers took one year to mention their existence after they opened. \*\* **2VM** was the first A.M. regional station to be granted an F.M. licence. \*\* **3SR** created a record by airing 40 commercials in one hour. \*\* **4GR** was put off the air when a crop duster plane demolished their tower. \*\* **4BC** was the first to broadcast an Aboriginal corroboree. \*\* At one stage, **6KG** announcers also operated the Royal Flying Doctor Radio Base. \*\* **2FC** used 150 batteries to power a broadcast from a church. \*\* All the fish in the **2KA** reception aquarium died on the opening day of their Penrith studios. \*\* **7HT** once played "High Noon" by Frankie Laine continuously for 24 hours. \*\* While Billy Thorpe was interviewed on **3XY**, a man arrived with a shotgun demanding to see him. \*\* **7LA** was the first station to own an outside broadcast van. \*\* **3KZ** was first to broadcast news of the Japanese surrender. \*\* Commercial licences issued to **4CH** Charleville, **5MG** Mount Gambier, **5EP** Port Lincoln, **5MC** Adelaide, **2LE** Meadow Flat, **2SI** Singleton, **6XY** Perth, and **2NZ** Narrabri, never went to air. \*\* Radio towers at **6WA** (700 feet tall), **2LT**, **2LF**, **2RE** (3 times), **2KO**, **2QN**, **2WL**, **3TR**, **3YB**, **3CS**, **4EL**, **4GR**, **4BU**, **4BH**, **4AY**, **4HI**, **4LG**, **4QN**, **5UV**, **5RM**, **6MD**, and **7ZR** all collapsed. \*\* The first manager of **3XY** was Tom Holt; father of Prime Minister Harold Holt. \*\* Catholic station **2SM** banned the song "Itsy Bitsy Teeny Weeny Yellow Polka Dot Bikini", and the words "rape" and "pregnant" in their news. \*\* Melbourne had three pirate radio stations in the 1970s. \*\* **3LO** received news via Morse code from London. \*\* John Laws resigned after one shift at **2PK** due to a studio smoking ban. \*\* **3UZ** started with one microphone, one gramophone, and one pianola. \*\* **2CK** (Cessnock) closed after their studio was destroyed by fire for the third time. Other stations put off the air by fires included **6GE**, **4QN**, **2BE**, **2QN**, **2NI**, **3HA**, and **3DB**. \*\* **2GB** was the first in Australia to broadcast news on the hour, every hour, and the first to broadcast live on the internet (1998). \*\* **2XT** was a mobile station in a train, broadcasting from 100 N.S.W. rural towns. \*\* **2NI** (Norfolk Island) was operated by the telephone exchange operator. \*\* **7QT** sacked one announcer for only playing hillbilly records, and another for singing along with the records. \*\* Australian stations at our Antarctic bases include Radio **ICY**, Radio **COLD**, and Radio **BLIZZARD**. \*\* **6WF** opened with a 10,000 watt transmitter bought from Radio Luxembourg. \*\* A **5DN** application in 1929 to obtain Australia's first television licence was rejected. \*\* **5KA** experienced Australia's first announcers strike, caused by a flea infestation. \*\* In 1978, **2NZ** broadcast an appeal for one million green ants to make some anti-venom for a listener. \*\* **2BL** experimented with talkback programs in 1926. \*\* **2UW** had a relay station in Wagga Wagga (**2UX**) in 1927. \*\* **2WL** started with a homemade 50 watt transmitter. \*\* AWA forgot that they had been issued a licence for **2GF**. \*\* **2KM** enjoyed better reception on Lord Howe Island than in Kempsey. \*\* **3DB** relayed wildlife programs to stations in New Zealand and South Africa. \*\* **3KZ** once stated that television would never be introduced into Australia. \*\* **3AK** was only licensed to broadcast overnight until 1969, and banned all ABBA records. \*\* All the **3SR** equipment in their four studios were destroyed by an announcer. \*\* Hardened cactus needles were often used as record needles during WWII, due to steel being diverted for military usage. \*\* **3LO** commenced operations with all equipment powered by batteries. \*\* An unemployed **3DB** listener bought a half hour time slot to promote himself seeking work in 1932. \*\* **3UZ** fired 79 out of 84 staff in 1950. \*\* **8DN** took out a court injunction to prevent their sacked manager from entering the station. \*\* **3MP** was put off the air by their fire sprinkler system operating during their opening shift. \*\* **6WA** technicians were given rifles by the Army in WWII to defend the transmitter in case of attack. \*\* **6PM** sacked their Marketing Manager in 1989 for giving out too much cash in a competition. \*\* In 1933, **7LA** had fifty permanent landlines installed for outside broadcasts. \*\* **2FC** was issued with a second Sydney licence as **2FL** which never went to air. \*\* **2GZ** was issued a licence at Narrabri as **2IN** which never went to air. \*\* In the 1920s/1930s **2BL**, **2FC**, **2UW**, **3LO**, **3DB**, **3UZ**, **5AD**, and **6WF** also used shortwave transmitters to relay their programs. \*\* New owners of **6GE** and **6KG** ordered all Neon signs to be removed from outside their buildings. \*\* When **2UE** started, advertisements cost one shilling. \*\* **3LO** was issued with another Melbourne licence as **3FC** which never went to air. \*\* A **7HO** announcer was sacked for awarding a jackpot competition prize to his girlfriend. \*\* The **2KY** toilet, next to their production studio, couldn't be used during recordings, due to no sound proofing.

## AUSTRALIAN RADIO TIMELINES

- 1906** The first official Morse code transmission in Australia was conducted by the **Marconi** Company from Victoria to Tasmania.
- 1908** Ballarat inventor Henry Sutton demonstrated voice transmissions while contacting a U.S.A. naval fleet visiting Australia.
- 1910** The Wireless Institute of Australia (**W.I.A.**) is formed by Walter Hannam (the first Australian radio operator in Antarctica).
- 1912** A Government network of coastal and island Morse code stations was established for telegrams and shipping emergencies.
- 1913** Amalgamated Wireless Australasia (**A.W.A.**) was established by merging Marconi and Telefunken.
- 1918** The first experimental direct Morse code transmissions between England and Australia were conducted by **A.W.A.**
- 1918** The first public demonstrations of music and speech broadcasts in Australia were conducted over several days at the Perth Agricultural Show by licensed amateur operator Walter Coxon (later **6AG** and **6WF**).
- 1919** **A.W.A.** conducted their first demonstration of music and speech broadcasts to engineers in Sydney, hosted by Ernest **Fisk**. Coverage was 500 yards and lasted long enough to play the record "God Save the King".
- 1920** **A.W.A.** became Australia's first manufacturer of valves.
- 1922** **A.W.A.** applied for broadcasting licenses in all parts of Australia. All their applications were refused.
- 1922** Charles MacLurcan is issued with Australia's first broadcast licence, signed by Prime Minister Billy Hughes, for **2CM** Sydney.
- 1922** Thomas Edison (inventor of the phonograph) said "*The radio craze will soon fade*".
- 1922** The popular magazine "*Wireless Weekly*" was launched by Will MacLardy from **2HP** (which later became **2SB/2BL**).
- 1922** Valves were installed in **A.W.A.** radios for the first time, enabling loudspeakers to be used instead of headphones.
- 1923** **2FC** in Sydney (273 KHz.) is licensed as the first commercial station in the Southern Hemisphere (10-9-1923). However, **2SB** in Sydney (previously **2HP**, which changed to **2BL** in March 1924), was launched before **2FC** on 23-11-1923, using 857 KHz.
- 1924** **3WR** in Wangaratta is the first non-metropolitan station to be issued with a commercial licence.
- 1924** Grace Bros. department store in Sydney established the first retail outlet in Australia for selling receivers.
- 1924** **2CM** in Sydney (Australia's first fully licensed broadcast station) moved to short wave.
- 1925** Research in August indicated that 75% of listeners were using crystal sets.
- 1925** Numerous attempts were made to experiment using radio to transmit light, heat, power, refrigeration, cancer cures, and movies.
- 1925** **2UE** in Sydney was the first in Australia to experiment sending still pictures by radio to newspapers.
- 1925** **2XT** was launched as the world's first broadcasting station in a train. They broadcast weekly in different towns until 1927.
- 1926** **2BL** programs were relayed through shortwave station **2YG** to allow **2BL** to be heard throughout Eastern Australia and N.Z.
- 1926** **2UW** in Sydney was the first station in the world to broadcast serials. They didn't stop until 1964.
- 1926** **2BL** in Sydney was the first to try "Talk Back" radio. They soon realised the drawbacks of not being able to delay or edit calls.
- 1927** **A.W.A.** shortwave station **2ME** in Sydney was the first Australian station to experiment with F.M. (mono only on 9 MHz.).
- 1927** **A.W.A.** shortwave station **2ME** in Sydney relayed some **2FC** programs to medium wave stations in India, South Africa, Canada, United Kingdom, and the U.S.A.
- 1928** **6WF** in Perth became the only station to be operated by the Federal Government (for 10 months).
- 1928** **3UZ** programs were relayed through shortwave station **3LG** to allow **3UZ** to be heard throughout Victoria and Tasmania.
- 1929** **6WF** broadcast the first Australian stereo experiments by broadcasting a play using two microphones into two transmitters on different frequencies. Two receivers were needed to hear stereo.
- 1929** **4CM** in Brisbane was the first Australian station to experiment transmitting television (earlier called 'radiovision').
- 1929** The privately owned Australian Broadcasting Company completed the takeover of programming all twelve "A" class stations: **2FC**, **2BL**, **2NC**, **2CO**, **3AR**, **3LO**, **4QG**, **4RK**, **5CL**, **5CK**, **6WF**, **7ZL**, creating Australia's first programming radio network.
- 1929** **3DB** and **3KZ** cooperated by using their transmitters for television experiments (one transmitter for sound and one for vision).
- 1930** **2UW** Sydney formed the Federal Radio Network with nine other stations in five states, including **3DB**, **4BC**, **5AD**, and **6ML**.
- 1930** **Marconi**, by sending a radio signal from his yacht in Italy, turned on 2,800 lights around the Sydney Town Hall.
- 1930** The Federation of Australian Radio Broadcasters was established (later Commercial Radio Australia).
- 1931** **3AK** in Melbourne, owned by the Akron Tyre Co., was the only applicant for a "C" class licence, which were for specific sponsor licenses (none were issued). Their application was rejected; however, they were eventually issued a "B" class licence.
- 1931** **2KY** in Sydney was the first station in the world to broadcast parliament.
- 1932** **3KZ** in Melbourne stated that "*Television will never be introduced into Australia*".
- 1932** The **A.B.C.** was established, taking over the twelve commercial "A" class stations previously programmed by the privately owned Australian Broadcasting Company.
- 1932** A proposal from Ernest Fisk at **A.W.A.** that all country stations use long wave instead of medium wave was considered.
- 1932** The first independent Australian radio survey was conducted in Sydney by Bill McNair (later McNair Anderson).
- 1933** **2GB** in Sydney was the first station to play transcription records and had the world's largest transcription library.
- 1933** The popular **A.B.C.** program the "Argonauts Club" was launched by **3LO** and went national in 1941 until closing in 1972.
- 1934** **3DB** in Melbourne had the largest record library in the world.
- 1934** Glebe Council in Sydney built a "Wireless House" in a park, relaying the **A.B.C.** for people who couldn't afford a receiver.
- 1935** Amateur radio **4CM** in Brisbane was granted the **first television licence in Australia** (closed in 1939 due to WWII).
- 1935** **2UW** in Sydney was the first station in the British Empire to broadcast 24 hours per day.
- 1935** The **A.B.C.** in Sydney installed a disc recorder, enabling the recording of programs for the first time.
- 1936** An undersea cable was installed across Bass Strait allowing radio programs to be relayed to Tasmanian stations.
- 1936** **A.W.A.** launched radio **9MI** with two studios on board the M/V Kanimbla. This station was used to relay some programs to **A.W.A.** network stations via a shortwave transmitter.
- 1937** The one millionth listener receiver licence was issued.
- 1938** The first demonstration of Australian stereo broadcasting using one transmitter was trialled by Ray Allsop from **2BL** on 9 MHz.
- 1938** The Major network, headed by **2UE**, and the Macquarie network headed by **2GB**, were established.
- 1938** **6PM** in Perth started Australia's first music chart with their "Top 8 Hit Parade".
- 1938** Ferris produced the first car radio designed and built in Australia; the Ferris Fultone 56.
- 1939** All television, amateur radio, and experimental broadcasting licences were cancelled due to WWII security concerns.
- 1939** The **A.B.C.** launched their periodical "*A.B.C. Weekly*".
- 1939** **2UE** in Sydney was the first Australian station to broadcast the six pips every hour.
- 1939** The periodical "Radio and Hobbies" (previously "Wireless Weekly") was launched.



1939 Radio Australia ("Australia Calling" until 1945) started with VLR (A.W.A. station **3ME**), and VLQ (A.W.A. station **2ME**) with A.B.C. programming in English, Spanish, French, and Dutch. All programs commenced with a kookaburra laughing.

1940 A secret underground station was installed in Perth to keep information flowing in case of attack during WWII.

1940 **2GB** in Sydney became the largest producer of radio drama programs in the Southern Hemisphere.

1941 **2HD**, **2UW**, **3AR**, **3KZ**, **4AT**, **5KA**, and **5AU** were closed by the military for airing security breaches during WWII.

1942 **2UW** broadcast the first nationally sponsored top rating serial "Big Sister", five days a week for five years.

1942 The A.B.C. program "Kindergarten of the Air" was launched by **6WF** and went national in 1943 until moving to TV in 1965.

1942 Hector Crawford established Crawford Productions, specialising in radio serial transcriptions.

1944 The Australian Military open 29 radio stations in New Guinea and several Pacific islands during WWII to entertain our troops.

1944 "The Lawsons" (later "Blue Hills") started on the A.B.C. with 7,094 episodes. It was Australia's longest running radio serial until surpassed by "How Green Was My Cactus" which was still in production in 2018.

1944 **2BH** Broken Hill broadcast several WWII Relief Concerts which were also on shortwave via the Royal Flying Doctor Service.

1944 Grace Gibson established her radio production company, specialising in radio serial transcriptions.

1945 **5KA** Adelaide was the first Australian station to experience an announcers strike (caused by a flea infestation).

1946 A Government hearing recommended that television should start immediately and all A.M. stations be issued an F.M. licence.

1947 Commercial radio programming consisted of local live 32%, Australian records 64%, and U.K. and U.S.A. records 4%.

1948 Australia's first Antarctica broadcasting station, **0HI**, is opened on Heard Island (moved to Mawson as **0MA** in 1955).

1948 The A.B.C. launched experimental F.M. stations in most capital cities on 92.1 MHz. They were all closed by 1958.

1948 The Australian Broadcasting Control Board is established to regulate broadcasting.

1951 The transistor (which led to Integrated Circuits) is invented, which revolutionised portable radios and other electronic devices.

1952 Most radio variety and drama programs were replaced by quiz programs compared by Bob Dyer and Jack Davey.

1956 Television was relaunched in Australia, causing an increase of music programs on radio, and a further decrease in radio serials.

1956 The A.B.C. opened news offices in London, New York, Singapore, and Port Moresby.

1956 The Periodical "Radio, Television and Hobbies" (previously "Radio and Hobbies") was launched.

1957 **2GB** in Sydney is the first Australian station to broadcast news on the hour, every hour.

1957 A.W.A. produced Australia's first transistor radio. It was called the "Transistor Seven".

1957 A Government inquiry into the possible introduction of F.M. radio generates little interest.

1958 **2UE** in Sydney started the popular "Top 40 Charts" with "April Love" by Pat Boone as the first number one.

1958 **2CH/2SM**, **3UZ/3XY**, **3CS/3GL**, **4BK/4BC**, **5AN/5CL**, and **6PM/6PR** experimented with stereo by broadcasting the left and right channels on separate stations. Listeners needed two receivers to hear stereo.

1961 **2UV** in Sydney was issued with the first educational broadcast licence in Australia, operating on 1900 KHz.

1962 **2FC** in Sydney established a duplicate station at Emu Plains in case of a nuclear attack on Sydney during the cold war. Apart from late night testing from a Bathurst studio, it never went to air. The tower was in the Emu Plains prison until 2009.

1966 The periodical "Electronics Australia" (previously "Radio, Television and Hobbies") was launched.

1967 **2UE** in Sydney and **3DB** in Melbourne were the first to legally broadcast "Talk Back" programs at midnight on the 17<sup>th</sup> April.

1972 A decision to introduce F.M. radio on the U.H.F. band was quickly changed to V.H.F. after intense industry lobbying.

1972 **5UV** in Adelaide was issued with the first community broadcasting licence in Australia.

1972 **2MBS** in Sydney was issued with the first fulltime F.M. broadcasting licence in Australia.

1973 The Australian music quota for commercial radio was 10% (12.5% in 1974, 15% in 1980, and 20% in 1986).

1974 The Federal Government abolished radio and television receiver licence fees which were used to fund the A.B.C.

1975 Ethnic radio stations **2EA** in Sydney and **3EA** in Melbourne (Ethnic Australia) were launched.

1975 **2JJ** in Sydney became the world's first non-commercial 24 hour rock music station.

1975 Some stations started using satellites to relay their programs.

1976 The Australian Broadcasting Tribunal was established (previously the Australian Broadcasting Control Board).

1977 The Special Broadcasting Service (S.B.S.) was formed to take over **2EA** and **3EA** after the A.B.C. refused to.

1978 A.M. radio station frequencies were changed from 10 KHz. spacing to 9 KHz. spacing, creating twelve extra M.W. channels.

1978 **2WEB** in Burke became the first of a small number of A.M. stations to be issued with a three letter callsign.

1980 **3EON** in Melbourne was the first commercial station to be issued with an F.M. licence.

1982 **7RPH** in Hobart became the first Radio for the Print Handicapped station.

1985 A.M. radio stations were allowed to convert to stereo; however, A.M. stereo receivers were almost non-existent.

1986 **2GF** Grafton announcer Mike Summers broke the world record for the "Longest Continuous Broadcast by One Announcer".

1990 The A.B.C. launched its' Parliamentary Broadcast network (**2PB**, **3PB** etc.).

1990 **2VM** in Moree became the first A.M. regional station to be granted a supplementary F.M. licence.

1992 Programs were presented in 69 languages across Australian radio stations.

1992 The Australian Broadcasting Authority was established (previously the Australian Broadcasting Tribunal).

1993 Bruce Carty on **2CCC** broke the world record for the "Longest Continuous Broadcast by One Announcer" as recognised by the "Guinness Book of Records". He achieved over 121 hours.

1994 The ABC Parliamentary Broadcasting Network went 24 hours with "News Radio" programs when Parliament wasn't sitting.

1998 Some stations started relaying their programs live on the internet. **2GB** in Sydney was the first.

2002 Commercial Radio Australia was established (previously the Federation of Australian Radio Broadcasters).

2004 Australia had 107 AM and 150 FM commercial stations, plus 14 AM and 328 FM community stations.

2005 The Australian Communications and Media Authority was established (previously the Australian Broadcasting Tribunal).

2007 The M.W. band was extended to 1701 KHz. creating 11 more channels. However, few receivers covered the extra frequencies.

2009 Digital radio transmissions were introduced in Sydney, Melbourne, Brisbane, Adelaide, and Perth, using the proposed but never activated 9A television channel (digital trials commenced in the following year in Canberra and Darwin).

2013 Commercial Radio Australia appoints GfK to replace Nielsen as their ratings research entity.

2013 The moving of all television stations from the F.M. band was finally completed, allowing more F.M. radio licenses to be issued.

2014 On 2<sup>nd</sup> November Alan Jones on **2GB** achieved his 100<sup>th</sup> consecutive ratings win. (His last **2GB** shift was 29<sup>th</sup> May 2020).

2015 **2GB** and **2UE** announced a forthcoming merger, with **2CH** to be sold. (**2CH** became an SEN outlet in September 2020).

2017 Ray Hadley stated "when I leave this industry, it will owe me nothing, but I will owe it everything".

# **BROADCASTING PIONEERS of AUSTRALIA**

## **NEW SOUTH WALES**

**Ernest Fisk:** Founder/Chairman of A.W.A. Conducted their first Sydney and Melbourne experiments of broadcasting music. Director of all A.W.A. stations. President of the W.I.A. (N.S.W.). Launched the first radio communications to Britain in 1918 (using 21 KHz.). Founded the W.I.A. *Journal Sea, Land, and Air*. Awarded a Knighthood.

**Charles MacLurcan:** Known as “Australia’s Leading Amateur”. Only Australian amateur licensed to operate during WW1. Owner of Australia’s first broadcasting (non-commercial) licence (**2CM** – licence number one in 1922), which was signed by Prime Minister Billy Hughes. Broke several long distance radio records. President of the W.I.A. after Ernest Fisk. Earned several Olympic medals. Manufactured and sold his MacLurcan receivers. (Callsign **2CM** is listed by the Federal Government as “**Never to be reissued**” in recognition of the pioneering achievements of Charles MacLurcan).

**Otto Sandell:** Owner of experimental broadcast licence **2UW**, which was later granted a commercial licence. He produced 200 Sandell radio sets each week from his **United Wireless** factory at Kings Cross.

**Joe Reed:** Owner of experimental broadcast licence **2JR**. Conducted joint experiments with **2CM**. Employed as an A.W.A. Engineer, P.M.G. Engineer, and first **2SB** Chief Engineer. Supervised the installation of commercial (later **A.B.C.**) station **2FC**. Designed, built, and installed A.W.A. 5,000 watt transmitters for several “A” class stations.

**Cecil Stevenson:** Owner of experimental broadcast licence **2IY**. Chief Engineer and Director of **2SB**. He built their first transmitter. Owner of **2UE** and the Radio House electrical shop. Known as the “Father of Commercial Radio”. Cecil’s son, Murray, was the first Chief Engineer of television station ATN-7.

**Ray Allsop:** Owner of experimental broadcast licence **2YG**. Held a Morse code transmitter licence when 13 years old in 1911. Later appointed Chief Engineer of **2BL** after Cecil Stevenson. He designed, built, and marketed Raycophone radio receivers 1930-1935. Ray invented the Raycophone system of playing film sound which was installed in 375 theatres by 1938. First person in Australia to push for F.M. First to demonstrate stereo using one transmitter (1938). Developed submarine detection radar for the navy in WWII. Member of the Australian Broadcasting Control Board. Awarded an O.B.E.

**Will MacLardy:** Owner of experimental broadcast licence **2HP** which became commercial station **2SB/2BL** with Will as first Managing Director. Founder of the *Wireless Weekly* magazine.

**Emil Voigt:** Built a station in Los Angeles, then financed and built **2KY** as their first Chairman and manager. Instigated the inquiry into “B” class stations, and won the A.W.A. patent battle. Founding Chairman of the Federation of Commercial Broadcasting Stations and President of the Radio Manufacturers Association.

**Oswald Mingay:** Owner of experimental broadcast licence **2XX**. First manager of Sydney commercial station **2BE**. He designed, built, and sold his Mingay radios, and wrote a regular radio column for the *Telegraph*. Oswald also started the Australian Radio College and the Institute of Radio Engineers, and published numerous radio periodicals.

**Jack Davis:** 15 year old owner of experimental broadcast licence **2DS**. Conducted joint experiments with **2CM** for A.W.A. transmitter development research. Jack later syndicated a program called “Church in the Wildwood” on **2CH**.

**Oswald Anderson:** Owner of experimental broadcast licence **2ZH**. Oswald was later the first manager of commercial station **2FC**, then first manager of the Australian Broadcasting Company, then first manager of **2UW**.

## **VICTORIA**

**George Selby:** As a member of the London Institute of Electrical Engineers living in Caulfield, he instigated the first Morse transmissions in Victoria (June 1897) and probably the first in Australia. These were between himself and another civil engineer, Calder Oliver in Brighton. In 1936 Sir Ernest Fisk described these Melbourne experimenters as “*the first Australians in this field*”.

**Sidney Neuman:** Owner of experimental broadcast licence **3ME** (forerunner of VK3ME on shortwave, which became Radio Australia). All programs started and ended with a kookaburra laugh. Victorian manager of A.W.A. Installed a 5,000 watt transmitter for **3LO** in 1925. Sidney also installed the original transmitters for **3SR**, **4QG**, and **7LA**.

**Ross Hull:** Owner of experimental broadcast licence **3JU**. President of the W.I.A. in 1924. Editor of the *Wireless Weekly* magazine in 1929, and then editor of the *Radio and Hobbies* magazine. He built an experimental television transmitter and receiver. His television receiver killed him in by electrocution in 1938.

**Holst Brothers:** Owners of experimental broadcast licence **3BY**. Redesigned and rebuilt **3DB** in 1929. Designed, manufactured, marketed, and installed their own brand of renowned high quality transmitters and studio equipment.

**Oliver Nilsen:** Owner of experimental broadcast licence **3UZ**. Later granted a commercial licence. Mayor of Melbourne. Known as “The Father of Radio” in Melbourne. Oliver managed his radio shop which included a standby studio for **3UZ**. He built the equipment for the start of **3WR** Wangaratta (first Australian regional commercial station).

**Donald McDonald:** Chief Engineer of **3AR**. He used the higher powered **3UZ** and **3DB** transmitters late each night in 1929 for television experiments (previously called ‘radiovision’). One transmitter was for sound and one for vision.

**Harry Fuller:** Owner of experimental broadcast licence **3HF** which often broadcast soundtracks from a local cinema. Chief Engineer of commercial station **3SR** Shepparton, then manager and Chief Engineer of **3YB** Warrnambool. Designed and built the first wire recorder in Australia. Designed and built the first radio controlled gate in Australia.

**Morris Israel:** Morse code operator prior to WW1. During WW1 he monitored secret German military transmissions for our military. Owner of experimental broadcast licence **3ZN**. Installed all the original equipment for commercial stations **3GL** Geelong (1930) and **3AW** Melbourne (1932). He was the first Chief Engineer at both stations. His son, Rex, installed the equipment at GTV-9 TV and was their first Chief Engineer.

**Ronald Hipwell:** Owner of experimental broadcast licence **3KU** in Swan Hill, which was relicensed as commercial station **3SH**. Also established commercial station **2BH** in Broken Hill and experimented with X-Rays.

**Lionel Hooke:** Victorian A.W.A. manager. Instigated A.W.A. broadcast experiments. President of A.W.A. after Fisk.



## **QUEENSLAND**

**Val McDowell:** Owner of the first experimental broadcast licence in Queensland (**4CM**). Experimented with X-Rays.

**Thomas Elliott:** Installed the **4CM** equipment. Australia's television pioneer (previously called 'radiovision'). Started in 1929, with daily transmissions from 1935 being received regularly in Melbourne. First television licence in Australia (issued in 1935 but cancelled in 1939 due to WWII security concerns). Thomas was also the first Chief Engineer of commercial station **4BC**.

**Charles Stevens:** Assisted Val McDowell and Thomas Elliott with the development and operation of **4CM**. Owner of experimental broadcast licence **4RG**. First Chief Engineer of commercial station **4QG**.

**Edward Gold:** Owner of experimental broadcast licence **4EG**, which later became commercial station **4GR**. Second owner of commercial station **4VL**. Designed and built commercial station **4ZR**. With his nephew Cliff, he established experimental broadcast licence **4CG**. Edward's son, Geoff, was appointed Manager of commercial station **4MB**.

**John Chandler:** Owner of commercial stations **4BC** and **4RO**. Second owner of commercial station **4BH**. Assisted with the establishment of commercial stations **4MB**, **4AY**, **4AT**, **4GY**, and **4SB**. Owned a radio store assembling and selling his 'Gloria' radios. Awarded a Knighthood. Mayor of Brisbane and Member of Parliament.

**Steve Fittell:** Owner of experimental broadcasting licence **4JO**. Owner, manager, and Chief Engineer of commercial station **4GY**. Established the Australian branch of the Far East Broadcasting Company.

**Dahl Brothers (Norman and Syd):** Owners of experimental broadcast licences **4VT** Townsville and **4KA** Ayr. **4KA** was later licensed as commercial station **4AY** with Norman as Managing Director. He also planned the opening of **4AT**.

## **SOUTH AUSTRALIA**

**Harry Kauper:** Held a Morse code licence from 1919. Owner of the first experimental broadcast licence in South Australia (**5BG**) which broke a world record by being heard in New York and throughout California in 1925. Designed, built, and sold crystal radio sets and kits from his radio shop. Part owner of commercial station **5DN**. Chief Engineer of commercial stations **5CL** and **5AD**, and a consultant to **3DB** and **2AD**. Designed and built the original 500 watt **5AD** transmitter. Co-designer (with Alfred Traeger) of the pedal two-way radio for emergency outback use.

**Lance Jones:** Owner of experimental broadcast licence **5BQ**. Part owner of commercial station **5DN**, and their joint Chief Engineer. He built their first transmitter which was water cooled with 35 watts. Lance assisted the Wireless Institute of Australia with propagation tests using various antennas, transmitters and receivers.

**Millswood Auto and Radio Co.:** Owner of experimental broadcast licence **5MA** on long wave (341 Khz.) with 250 watts. They operated as an A.W.A. retailer and repair shop. Issued with the first Adelaide commercial licence on 2-11-1923. They tried to sell the licence without success. This 3,000 watt licence never went to air. They closed their **5MA** station in late 1924.

**Hume Family (Hume Pipe Co.):** Part owners of **5DN** (situated in the Hume family house). Unsuccessfully applied for the first Australian television licence (previously called 'radiovision') in 1929. Stella Hume was reportedly the first female announcer in the world, and their Program Director and technical operator. Erne Hume was the joint Chief Engineer. Jack Hume designed, built, and installed the equipment for commercial station **5RM**, then became an announcer with **5KA**. They designed the 'Accord Four' receiver.

**Frank Miller:** Owner of experimental broadcast licence **5BF**. Previously a signaller in WW1. Developed the teletype machine. He owned a radio shop, selling his own radios, and established the local Railways Radio Club. First Chief Engineer of **5MU** after designing, building, and installing all their equipment.

## **WESTERN AUSTRALIA**

**Walter Coxon:** Conducted the first demonstration of speech and music broadcasts in Australia, at the Perth Royal show in 1918. Broke long distance Morse code records with Charles MacLurcan from **2CM**. Owner of the first experimental broadcast licence in Western Australia (**6AG**). Described as "The Father of Radio" in Western Australia. First Manager and Chief Engineer of commercial station **6WF**. Designed, built, and managed commercial station **6AM**. Established commercial stations **6ML** and **6BY**. Pioneered the technical work for the Royal Flying Doctor Radio Service in Western Australia. President of the Wireless Institute of Australia (W.A. branch). Designed the Mulgaphone radio receiver with 1,200 being built and sold by **6WF**, and conducted the first Australian stereo broadcast.

**Blake Horrocks:** (VK6GS). Developed a 30 line TV system which he could record on a 78 R.P.M. Phonovision disc in 1936. Later worked for the P.M.G. at the **6WF** transmitter, and developed the videophone system for the P.M.G.

**Harry Atkinson (VK6WZ):** Established and managed **6VA**. Managed **6WB**, **6KG**, and **6GE**. Editor of *Wireless News* in 1932, then *Wireless Weekly* in 1933. He was also a regular contributor to the *Broadcaster* magazine. Produced numerous programs for the A.B.C. Owned a record and radio shop. Harry was also Vice President of the Wireless Institute of Australia (Western Australian branch). He was legally blind with only 10% vision.

## **TASMANIA**

**Norman Cave:** Owner of experimental broadcast licence **7BC** in Launceston. He was previously a radio operator for the R.A.F. in WW1. He designed and built the Willsonia receivers for Tas Radio P/L.

**Norman Findlay:** Owner of experimental broadcast licence **7BN** in Launceston. Second owner of commercial stations **7HO** and **7AD**. Owner of commercial stations **7LA**, **7BU**, **7QT**, **7DY**, and **7SD**. Established commercial station **7UV**. Owned several record and radio shops, specialising in A.W.A. radios.

**Ron Hope:** Owner of experimental broadcast licence **7RS**. Owner and Chief Engineer of commercial station **7HO**. Engineering consultant to the Findlay group of radio stations. Ron's bother, Lyndsay, owned experimental broadcast licence **7LA** in Launceston (no connection with the later commercial station of the same callsign).

**Arthur Smith:** Owner of experimental broadcast licence **7AB** in Hobart, and later, **7BN** in Launceston. Owner of Tas Radio P/L which launched the popular Willsonia receivers. Both stations advertised the Willsonia. **7BN** was later relicensed as commercial station **7LA**.

## **BROADCASTING NOSTALGIA in AUSTRALIA**

Broadcasting demonstrations started with Walter Coxon in 1918 at the Perth Royal Show. He broadcast speech and music from one side of the showground to the other. Then Ernest Fisk from A.W.A. gave demonstrations to engineers in Sydney in 1919 and to politicians in Melbourne in 1920 by broadcasting the record "God Save The King". The distances were around 500 yards. The Government started granting broadcasting licences in December 1922 (first was Charles MacLurcan with 2CM Sydney). The first broadcasting licences were issued to amateur operators. These radio pioneers were responsible for the development of broadcasting in Australia. Most stations started with one microphone and one 78 R.P.M. horn record player, (the microphone was placed in the horn), and sometimes a Pianola. When a record finished, the announcer took out the needle, put in a new one, and then played the next record. Some stations also experimented with television (previously called 'radiovision') from 1929. The first was 4CM in Brisbane, which was often viewed in Melbourne. They were granted Australia's first television licence in 1935 (see separate article). Most of these licensed amateur broadcasters became the owners, managers, and engineers of the early commercial and pre ABC stations.

In 1923 the Government started issuing permanent broadcasting licenses to businesses, with an unusual type of receiver, following lobbying from A.W.A. and other receiver manufacturers. It was the "sealed set". Receivers were sealed to receive only one station of your choice, and a licence fee was also paid to that station. The "sealed set" stations were 2SB/2BL and 2FC Sydney, 3AR and 3LO Melbourne, 5CL Adelaide, 6WF Perth, and 7ZL Hobart. This scheme only lasted one year, as many people worked out how to avoid the licence fee by modifying their sets to receive all stations, or learnt how to build their own receivers. In 1924 the Government established two classes of licences: "A" class financed by listeners licence fees, and "B" class financed by advertisements. "A" class licensees were allowed to use a small percentage of their on-air time for advertisements until 1932; however, 4QG Brisbane was the only station to take full advantage of this. The first "B" class licence was 2BE Sydney in 1924. However, it closed in 1929 due to financial difficulties. The oldest surviving "B" class licence is 2UE which started two months after 2BE. The licensees were one-off entrepreneurs at first. There was no program networking until 1929 when the Government granted the privately owned Australian Broadcasting Company a three year contract to program all "A" class stations. Various categories of "C" class licences were also proposed, including corporate and university stations. The Government also considered establishing a "C" class network to be leased for special event broadcasts. No "C" class licences were ever issued.

Unusual mobile radio stations were established in trains broadcasting throughout New South Wales (2XT 1925-1927), and Victoria (3YB 1931-1935). These trains operated on a one week schedule with five days broadcasting in each country town, and two days travelling and setting up. A salesman travelled ahead to arrange local advertisements to cover costs. They were licensed to broadcast at any location at least 2 miles from any Post Office, and 30 miles from other radio stations. The 1920s also saw A.M. stereo experiments in Perth, with 6WF using a medium wave and a long wave transmitter. Listeners needed two receivers to hear stereo. Also in the 1920s, mono F.M. experiments were conducted in Sydney by A.W.A. station 2ME on short wave (9 MHz.). From 1927, A.W.A. experimented with regular short wave broadcasts to the United Kingdom. These broadcasts became "Australia Calling" and later "Radio Australia". Each broadcast started with a kookaburra laugh. Radio Australia became part of the A.B.C. in 1939.

In 1932 the Australian Broadcasting Commission was created with the power to collect news, publish journals, and to take over the staff and assets of the commercial operation Australian Broadcasting Company. On the 1<sup>st</sup> July 1932, the A.B.C. came into existence, taking over the ownership of all "A" class stations. From then on, the "A" class stations ceased airing commercials. Funding came from compulsory listener licence fees until the 1970s, when the Government took over financial responsibility. Press agencies argued that the A.B.C. should only entertain people; not take over the newspaper's news role. However, the A.B.C. was allowed to set up its own news department in 1936. During WWII, when the commercial stations did little to increase their own news-gathering, the A.B.C. news service developed further. In 1941 the A.B.C. adopted "Advance Australia Fair" as their news theme (replaced with Charles Williams' "Majestic Fanfare" in 1952). Most people used to consider A.B.C. news to be the most believable in Australia.

In 1936, A.W.A. established broadcasting station 9MI on the M/V Kanimbla. This cargo and passenger ship covered the southern shipping route from Fremantle to Mackay. The 9MI shortwave transmitter was received by A.W.A. broadcasting stations throughout Australia for relaying the 9MI programs (see separate article).

In 1939, at the outbreak of WWII, all experimental broadcasting and television licenses were cancelled, along with all amateur licences. After the war, they were not allowed to reopen on the medium wave broadcast band.

WWII gave commercial radio the biggest ever financial boost. Newsprint was in very short supply, so advertisers looked to radio to sell their products. As Australian radio stations could no longer depend on transcriptions of American programs, due to supply problems with WWII, Australia had to make its own. Tremendous influence on the programming of commercial stations was wielded by the two main advertising agencies during the 1940s and 1950s; George Patterson and J. Walter Thompson. They bought large amounts of air time for all their major clients, especially Lever Brothers and Colgate Palmolive. They sponsored popular shows such as *The Quiz Kids*, *Lux Radio Theatre*, *Australia's Amateur Hour*, and *Pick-a-Box*. The two top performers were Jack Davey and Bob Dyer. Money was poured into program production, resulting in the development of more and better programs. Because advertisers were spending more money with radio, smaller independent production companies also greatly increased the number of shows they made. They could then sell their shows to sponsors more readily, and could place them on national networks. Such companies as Hector Crawford in Melbourne, and Grace Gibson and Artransa in Sydney, recorded and sold shows that were also broadcast overseas. Programs were recorded on transcription records, requiring a special turntable due to their size. Radio 2GB and 2UE also produced many programs, which were broadcast on their own networks; the Macquarie Radio and the Major networks. In 1958, the amount earned by the Australian radio transcription business, through sales here and overseas, exceeded one million pounds.

Due to Australia's war time economy, plus lack of studio and transmitter equipment, and trained personnel, new radio station development stalled during WWII. However, 41 stations were opened during the late 1940s and 1950s. WWII also produced other headaches for radio stations. The wartime Department of Information decreed that all announcements and music had to be approved in advance; no mention of any military operations; and even weather reports and foreign languages were banned as a security measure. Several stations were ordered to close at sunset, as their signal could be used as a bombing guide at night. Some were banned from mentioning their callsign or location, and others were closed by the Government for broadcasting breaches of security. When war broke out, the Army was on standby to destroy all radio studios and transmitters in Sydney, if Sydney was attacked.



Little known are the 29 broadcast stations operated by the Australian Army and the RAAF 1944-1946. These were in Papua and New Guinea, several Pacific Islands, and even in Japan. They were used to entertain our troops around the end of WWII. Announcers plus technical personnel came from enlisted Australian radio station staff (see separate article).

At the end of WWII, there were 100 A.M. commercial stations, and 29 operated by the A.B.C. All these stations had unique callsigns with a number from 2 to 7, plus two letters. The numbers indicated the station's geographical location: 2 for New South Wales, 3 for Victoria, 4 for Queensland, 5 for South Australia, 6 for Western Australia, and 7 for Tasmania. Later, 8 was added for the Northern Territory, 9 for Papua/New Guinea, 0 for Antarctica, and 1 for the A.C.T. This all started in 1901 when the Federal Government took responsibility for defence. N.S.W. was the 2<sup>nd</sup> Military District, VIC. the 3<sup>rd</sup> etc. Australia Post now uses these same numbers for postcodes, and Telstra originally used the same numbers for S.T.D. codes. The letters have more imaginative origins. 2FC stands for owners Farmer and Co. 2SM stands for St Marks as it started in this Catholic Church. Location also played a part, e.g. 4CA Cairns.

Experimental F.M. broadcasts started in 1948 in most State capitals, operated by the A.B.C. with classical music. Little interest was shown in F.M. so the stations all closed by 1958. The Federal Government then authorised the use of the international F.M. band for television in 1961. In 1972 the Federal Government decided to introduce F.M. broadcasting on the U.H.F. band. Before being acted on, this was changed to the internationally recognised F.M. band on V.H.F. The moving of television stations from channels 3, 4, 5, and 5A, out of the F.M. band, was not completed until 2013.

On Saturdays, sporting fans studied the racing form and listened to commentators describing the races. During the week when boxing was on, would-be boxers thumped the air vigorously, and gave the fighters good advice. Cricket fans stayed up all night, and visualised flannel-trousered batsmen piling up runs for Australia. In the evenings, families gathered around the Bakelite box to listen to comedy, variety shows, quiz shows, talent quests, plays, dramas, news, and documentaries. *"What did you look at while you were listening to the radio?"* a 12 year old TV addict once asked curiously, unable to imagine people just sitting. But, as every radio listener knows, the answer is simple. You looked at the pictures you made in your own mind. Radio has always provided the best pictures, because you make them up for yourself. So the uses of radio seemed endless. It was the main source of entertainment for the whole family.

Radio created employment for actors, writers, journalists, technicians, and personalities in a way that television has never done here. Producing and presenting programs was cost effective. There was room for new ideas and creativity. Australian radio has always had to live by its' wits. However, with the introduction of television in 1956, radio programs changed. Drama and serials were phased out, and quiz shows moved to television. An increase in music programs, including Top 40, came in, followed by "Talk Back" and news and sport stations. Other formats included classical, country, easy listening, Christian, nostalgia, jazz, Aboriginal, and ethnic.

Radio's story, from the first broadcasting licence in 1922 (2CM Sydney), and the first television licence in 1935 (4CM-TV Brisbane), to the introduction of F.M. and digital radio and television, is partly told in the words of the people who helped to make it such a vital medium. They are announcers, writers, producers, journalists, and technicians; people behind the microphones, as well as in front of them. Some of their names are still well known today.

\*\*\*\*\*

## THEATRES AND BROADCASTING

Since the entry of wireless broadcasting into the every-day life of the community, every phase of the world's affairs—both in work and play has been brought to the fireside of thousands of homes, and as the theatre plays a large part in the recreative side of life, naturally this has also appeared frequently on the broadcasting companies' programmes—in Australia anyway. Taking the case of 3LO, Melbourne, not a week passes but at least one of the latest musical productions in the city is relayed. Of course, some people may say that if musical comedy can be broadcasted successfully, why do we not have "straight" plays. This has been tried out long ago, but it was found to be a failure. The only suitable position for the microphone is in the footlights, as this is the only place where it would be out of the way, and yet be able to pick up the voices. In legitimate play, the players are situated chiefly towards the back of the stage, and the words would come through to the listener-in only as a hum. In a musical comedy, soloists are almost on the footlights, and near enough to the microphone for successful transmission, whilst the orchestra is so placed that it comes through with remarkable effect. Many letters of appreciation of the Tivoli Theatre Orchestra have been received by 3LO, Melbourne, this has been a weekly feature for the last two or three weeks.

Occasionally the vocal and instrumental items have been relayed and listeners-in have appreciated this, according to reports received. In broadcasting a

musical comedy it is possible to transmit the whole of the performance, but in vaudeville this would not be successful, as certain of the "turns" are acrobatic tricks, cyclists, etc., and the only noise to come through would be the disjointed music by the orchestra—and even this stops at periods—and the gasps of the audience.

When the theatre broadcasting was first commenced, the pessimist thought that this variety of entertainment would not last, as the theatrical companies would object on the ground of the attendances diminishing, but it has been found the case is exactly the reverse. Many yells of laughter and applause of the audience in the hall, have been thought by the listener-in, to be overdone, and it has had the effect of making them attend personally, just to see, whether the laugh and applause is merited. In other cases, the music has made many people anxious to hear more of it. In England, the theatrical management still cling to the old idea that broadcasting affects the box office receipts, and listeners-in do not enjoy the same benefits as those in Australia.

The initial theatre broadcasting by 3LO, Melbourne, was on the night of October 13th, 1924, when Dame Nellie Melba's farewell to the operatic stage marked the official opening of the station. Since then all the main theatrical musical productions have been relayed, and this is one of the most popular amongst thousands of listeners-in.

## AUSTRALIA'S FIRST RADIO BROADCASTS

Walter Coxon first held a Morse code licence (callsign XYK) at Darlington in Perth. Walter was the first Western Australian to communicate with South Africa, Java, Holland, England, and America using Morse code. In 1918 Walter was the first in Australia to publically demonstrate music and speech broadcasts. This was from one side of the Perth Agricultural Show to the other during five days in October using a 78 RPM wind-up turntable and a telephone mouth piece, with a home-made transmitter. He was then granted Western Australia's first broadcast licence as **6AG**, transmitting from Highgate. He often broadcast concerts from his lounge room.

Walter was appointed President of the Wireless Institute of Australia (W.A. Division). He was the first person in Australia to use a water-cooled transmitter valve, and was described as "**The Father of Radio in Western Australia**", by the *West Australian* newspaper in 1928. He was the original Chief Engineer of Perth's first commercial station, **6WF**, and later equipped commercial stations **6ML**, **6BY**, and **6AM**. Walter designed the popular Mulgaphone receiver which was built by **6WF**, selling 1,200 at £50 each (10 weeks average wage). Walter also pioneered the technical work for the Royal Flying Doctor Radio Service in Western Australia.

\*\*\*\*\*



**13-08-1919** was the date of the **first A.W.A. demonstration of music broadcasts**. This was by A.W.A. Chairman, Ernest **Fisk** during a lecture at the Royal Society of N.S.W., at 5 Elizabeth Street, Sydney. The single valve A.W.A. built transmitter was at Wireless House, 97 Clarence Street, and the signal travelled approximately 100 yards. 20 telephone earpieces with tin horns attached were hung from the ceiling as loudspeakers. The transmission only lasted long enough to play the record "God Save the King". Earlier, using 21 KHz. in 1918, **Fisk was the first to communicate directly between Australia and the United Kingdom** (using Morse code). In 1920, A.W.A. experimented with regular broadcasts of weekly concerts.

**13-10-1920** saw a demonstration of music broadcasting by A.W.A. Chairman, Ernest **Fisk**, to members of Parliament in Melbourne's Queens Hall, at the request of the Prime Minister, the Right Hon. Billy Hughes. This signal also travelled approximately 100 yards, again using the record "God Save the King". Weekly test broadcasts commenced three months later, being heard up to 1,600 kilometres away. Their 500 watt Marconi transmitter was at the Brighton home of the A.W.A. manager, Lionel Hooke. Lionel had previously accompanied Shackleton's Polar expedition to Antarctica as the shipboard Morse code wireless operator. He was knighted in 1957, and appointed Chairman of A.W.A. after Ernest **Fisk** in 1962.

\*\*\*\*\*

## AUSTRALIA'S FIRST LICENCED BROADCAST STATION

**2CM Sydney 1921.** Before becoming Australia's first licenced broadcast station, **2CM** was an experimental station owned by "**Australia's Leading Amateur**", **Charles MacLurcan**.



**The Will James band practising in the Wentworth Hotel Ballroom before a live broadcast on 2CM**



**Australia's first licensed broadcast station in 1922. (Pictured is Charles shortwave QSL card).**

Charles's station was first licenced in 1911 as a Morse code station (callsign XDM). Charles broke numerous long distance radio records, including a .0037 watt transmission heard in New Zealand. He was also often heard in San Francisco. He was the only Australian licensed amateur allowed to operate during WWI. Situated at Strathfield after tests atop his family's Wentworth hotel. **2CM** started on longwave 214 KHz. using seven watts with Sunday night classical concerts.

Following new Government legislation, **Charles was issued with the first broadcasting licence in Australia (licence number one signed by the Prime Minister, Billy Hughes) in December 1922** (most historians wrongly credit **2SB** 23-11-1923, as our first licensed broadcaster). Charles then received over 2,000 letters praising his first transmissions.

**2CM** was the first Australian station to publish a program guide, and every program ended with "**don't forget to wind up the cat and put out the clock**". **2CM** moved to shortwave on 2-2-1924. Charles MacLurcan was President of the Wireless Institute following Ernest Fisk and designed and built the popular MacLurcan radio receiver. Callsign **2CM** is the only one listed by the Federal Government as "**never to be reissued**" in recognition of the pioneering broadcasting achievements of Charles MacLurcan. The photo is of Josie Melville on air in the **2CM** studio on 6-3-1923 as Australia's first female announcer.







# WIRELESS INSTITUTE of AUSTRALIA

By Charles D. MacLurcan – 2CM (N.S.W. W.I.A. President)

Reprinted from the *Souvenir of Australian Wireless*, December 1923.



Wireless development needs as its strongest factor every encouragement given to experimenting, and in this respect, the Australian system covering Broadcasting is practically the most liberal in the world, inasmuch as it gives a free hand to broadcasters, provided of course, they do not encroach upon the Regulations under which broadcasting is carried out. It, however, behoves all Australian experimenters to work together, not only in experimental work and so improve the utilization of wireless, but also in order to see that every encouragement is given to the public to partake of the advantages of wireless as offered to them by legitimate broadcasting concerns; hence experimenters, by having such a great trust placed in them by the Government authorities, will return the compliment by doing all in their power to see that the arrangements are given best test.

With the remarkable development of wireless in the last decade, we can look for still further developments in the near future; hence broadcasters must ever be on the alert to peer into future developments and put on record the advantages won in their experimental work. There are many problems to be faced, for instance overcoming wave power weakening by statics, and also solving the problem regarding the one way inefficiency of messages between two certain points, particularly where equatorial districts have to be covered.

By being classed as an experimenter in wireless, no mean privilege is given to such, because such are really on the verge of a future which practically lifts humanity into the ethereal, and is really man's first touch with the infinite given in practice instead of theory. We, as experimenters in this great science, feel we are specially privileged and we trust that while we enjoy same, it shall have something placed on record to merit the honour that has been given us. The direction of the future developments of wireless will cover such problems as aerial traffic, natural coloured photography transmission, and the speaking with one voice that can reverberate round the earth. Experimenters, therefore, have a great responsibility, which can be best protected by uniting in the W.I.A.

Inaugurated in March 1910, the then Wireless Institute of New South Wales was the first Technical Radio association to be formed within the British Empire, and the ambitions of the enthusiastic small band of original experimenters in this wonderful science have been more than realised by the position of the Institute today in the very front rank of advanced Scientific Societies. If only that group of originals had been able to lift the veil of the future when they took the initial step of forming this Society, they would have been amazed by the intricate tangles in store for their successors in the years to follow. In this regard it is most gratifying that at least a dozen of the originals are still actively associated with what is now the New South Wales Division of the W.I.A.

Courage, determination and sincerity are the three outstanding qualifications of the Institute today as in the past, and recent events have proved that the faith of the Institute's founders in the righteousness of their cause, has been retained as one of the most precious possessions throughout the Institute's existence. The principal objects underlying the Institute may be briefly summed up as follows:-

- [a] Scientific development of radio communications in all its branches.
- [b] To provide a centre of information, instruction and advice on all matters pertaining to radio communication.
- [c] To consider, originate and promote reform in the law; to consider proposed alterations and petition Parliament.

The results so far achieved speak for themselves and the Exhibition is one of the activities under these headings. The Institute has always played its part and has been largely responsible for the development taking place in Australia.

Earlier in this year the Institute conducted a series of tests receiving signals transmitted from experimenters in the United States, the power used at the transmitting end being only 100 watts. The great success obtained prompted the Institute to go further, and a series of tests has just been concluded wherein American experimenters again transmitted to Australians, and the local experimenters transmitted back on the same low power. Although the results of this latter test are not yet definite from the point of view of Americans receiving the Australians, still it is gratifying to know that 88 stations in the U.S.A. have been logged in Australia.

When broadcasting was first seriously considered in Australia, the Institute took a prominent part in the compilation of the regulations to suit local conditions, and it is felt that the best possible steps have been taken in Australia to place this wonderful feature of radio on a comprehensive basis to suit local conditions and avoid the many complications which have occurred in other countries.

The severe test came with WWI in 1914. The shortage of wireless operators for military and transport purposes was acute, and it is a matter of history that seventy five percent of the then Institute members were immediately absorbed into the war service, and the value of such men in time of national crisis was and ever will be invaluable. Patriotism is very dear to the Wireless Institute, and one of the principal requirements before admission to membership in any State branch is that candidates must be of British nationality.

**EDITOR'S NOTE:** The author of this 1923 W.I.A. article was Charles MacLurcan, licensee of 2CM in Sydney; the first licensed broadcast (non-commercial) station in Australia (1-12-1922).

\*\*\*\*\*



1920s version of a busker



Walter Hannam 1910 founder of the W.I.A.



Bairds' 1920s Televisor

# **A.W.A. RECEIVER INSTALLATION GUIDE – 1926**



The following article is a reprint of an A.W.A. leaflet issued to all prospective buyers of an A.W.A. wireless receiver in the late 1920s.

**Choice of a receiver.** The object of these notes is to give the prospective purchaser of a wireless receiver an idea of the capabilities of the more common types of wireless receiver on the market today. You will also be informed as to the requirements necessary for the satisfactory installation of your wireless receiver in your house. Also included in these instructions are all the details that you will need to follow for the construction, erection, and installation of your aerial and earth wires.

**The Superheterodyne Receiver:** This type of wireless receiver incorporates the very latest ideas in receiver construction. It will usually receive interstate stations which can be heard on the loud speaker, sometimes without an aerial or earth. This happens without interference, even when situated in close proximity to a local station. These advantages are not possessed to the same extent by any other type of receiver.

**The Neutralised Receiver:** This wireless receiver, like the superheterodyne, will sometimes bring in interstate stations at a strength suitable to loud speaker listening. However, in the vast majority of cases, an earth and efficient outside aerial are essential. Being very selective, it will still receive some interstate stations when situated in close proximity to a local station. However, if you are too close to a local station then you could suffer from interference.

**Tuned Radio Frequency Receivers having Four or Five Valves:** These wireless receivers are excellent for interstate reception while producing loud speaker strength. Wireless receivers of this type are especially suitable in country districts where there is no local station in the near vicinity. If installed near a wireless station, they will cause severe interference to the reception of interstate stations.

**Two and Three Valve Receivers employing no High Frequency Amplifying Valve:** This class of instrument will give excellent reception strength enabling the use of a loud speaker, if desired, for listening to local stations. However, it does not possess the required degree of sensitivity to tune in interstate stations as with the four or five valve wireless receivers. This class of instrument is quite suitable for reception in country districts where there is no local station, as long as careful attention is made to aerial and earth installations.

**Crystal Receivers:** Whilst the crystal receiver cannot compete with the valve receiver, either in the matter of range or selectivity, it is an ideal receiver for anyone desirous of receiving only local stations. However, it must be emphasised that head phones must be used, as crystal receivers do not produce the sufficient power required to use loud speakers. If it is desirable to use more than one set of head phones, it is essential that they must all possess the same specifications, preferably at least 3,000 to 4,000 ohms, and that they are connected in parallel. Crystal receivers are subject to more interference than valve receivers, so experimenting with a smaller aerial may produce more satisfactory results. The chief recommendation of crystal receivers lies in the fact that no batteries or valves are required. Thus the initial and smaller cost is the only cost.

**Installing an aerial to your receiver.** One of the first considerations that arise with the erection of an aerial for broadcast reception is as to whether a long or short aerial is the more suitable. Both types possess advantages and disadvantages, and the final selection depends to a large extent upon the type of receiver used. A long aerial, while increasing the range of the receiver, reduces its degree of selectivity. A short aerial will not have the picking-up qualities of a long one, but with this type it is a simple matter to tune out undesired stations. Therefore, if you use a crystal receiver, a long aerial is necessary, being capable of picking up the maximum amount of energy. If you possess a valve receiver, a short aerial would be more suitable. Country listeners require a longer aerial because they are generally situated at a fair distance from a broadcasting station.

A good average length for the wire is 100 feet for a crystal receiver and 50 to 75 feet for a valve receiver, and must be as high as possible. It is not a good plan to join up several pieces of wire to make up the correct length. However, if this is deemed necessary, joints should be carefully soldered. If the aerial has to be above a building or tree, then it must be as far above as possible. The aerial must be suitably insulated at the point where it enters the house, using special lead-in insulators, and at the other end. If the other end is attached to a tree or wooden pole, then the insulator must be at least 2 feet away. However, if it is attached to a metal pole or other object, then it must be at least 4 feet away. On no account must any portion of the bare wire touch the house or tree or any other object. In fact, the section of the wire from the aerial to the receiver must not be positioned so as to run down the side of the house. In regard to the height of an aerial, it must be remembered that the efficiency of an aerial increases with its height.

Current Fire Underwriters Rules stipulate that a lightning arrester, operating at a maximum of 500 volts, must be located as near as possible to the points where the aerial and earth wires enter the house. If installed outside, then it must be protected from the weather. Lightning arresters may be obtained from most radio dealers, and detailed instructions are supplied with each instrument. Aerial wires and their lead-ins must not pass over or under any electric light or power wires to avoid the possibility of contact should either come loose.

**Installing an earth to your receiver.** A considerable number of broadcast enthusiasts go to a lot of trouble in erecting their aerials, with a view to obtaining the best possible results, but they totally neglect their earth circuits. This is probably because the earth connections, unlike the aerial, are buried and out of sight, and therefore more or less forgotten. The earth circuit is every bit as important as the aerial, and this point cannot be emphasised too strongly.



The efficiency of the earth circuit depends upon three things. Firstly, the nature of the soil in which the earth plate is buried, and its degree of moisture. The percentage of moisture plays a most important part in the satisfactory reception of signals, especially when a crystal set is used. There is always a certain degree of moisture around the roots of trees and bushes, and in the vicinity of a garden hose, and advantage should be taken of this. In dry weather a few buckets of water thrown over the spot where the earth plate is buried will usually improve the reception of signals. Second, upon the size of the plate or water pipe which is buried in the soil, and in the way in which the earth wire is satisfactorily connected to this plate. Lastly, and equally as important, upon the length and total area of the wire or wires connecting the receiver to the earth plate or water pipe. The earth wire should be as short as possible.

When an earth plate is used instead of a water pipe, it must consist of a sheet of galvanised iron about 4 feet by 2 feet. The strands forming the earth wire should be untwisted for a distance of 2 feet, and each strand carefully soldered to the sheet at well-spaced points on one 4 foot edge. This completed, the plate is buried edgewise, the edge to which the wires are soldered being uppermost, just deep enough to cover this edge.

When a water pipe earth is used, it is most important to solder the earth wire to the pipe as near the point where it enters the ground as possible. If this is not done, reception may be seriously affected by the joints in the piping. As an alternative method to soldering the earth wire to a water pipe (which is not always an easy job), a special clip fitted with a terminal to take the wire may be clamped to the water pipe. This method is quite satisfactory, provided that the water pipe and the inside of the clamp are periodically cleaned with an emery cloth and then wiped with a dry cloth. Gas pipes should on no account be used for earthing the receiver on account of the risk of fire and explosion. This method, apart from being most unsatisfactory, is prohibited by the Fire Underwriters Rules.

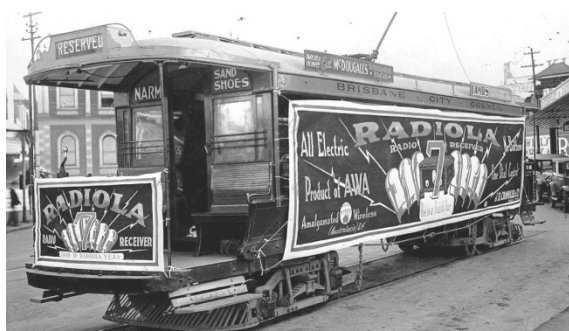
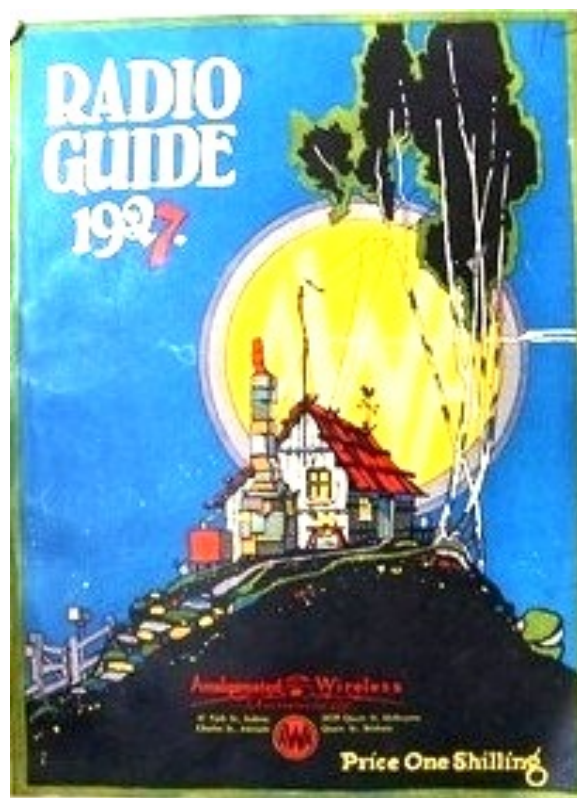
**Installing a receiver in your house.** Let us assume that you have erected your aerial and installed your earth, following the directions exactly as laid down in these installation notes. A small table should now be procured and placed as near as possible to where the aerial and earth lead-ins enter the room. The receiver is to be placed on this table. The next duty is to obtain each valve and cause them to be inserted into their sockets. It cannot be emphasised enough that care must be entertained in matching each valve to the correct socket.

The filament lighting battery, whether dry cell or accumulator, and often referred to as the “A” battery, should be connected to the receiver, taking care that the “+” and “-” terminals of the accumulator go to their respective “A+” and “A-” terminals on the receiver. The positive terminal of the “A” battery is either marked “+” or is painted red. An operation to confirm the correct connecting of the filament battery is now essential. The battery switch and the filament rheostat are to be turned on for a moment to make quite sure that the valves light up.

Next, connect up the bias or “C” battery (if used) and finally the high tension battery, often referred to as the “B” battery. In both cases great care must be taken to ensure that these batteries are connected up the right way round; that is, the “+” battery terminal to the “+” terminal on the receiver for that particular battery.

Having completed this, join up the aerial and earth leads to the receiver. It must be pointed out the necessity of attaching the aerial and earth lead-ins to the correctly marked connections. Next, plug in the headphones or loud speaker, switch on the filament battery, and turn the filament rheostat until the valves are burning at the required brilliancy. One of the local stations should now be tuned in with the variable condensers, and the filament control given a final adjustment for best results.

Having made yourself familiar with your receiver, turn your attention to the loud speaker. The actual position of this instrument in the room often has a great bearing on the quality of reception. The speaker can cause a disruption to the sound quality if installed near the receiver. Apart from keeping the speaker away from the receiver, its position in the room must be found by experiment. Sometimes better results are obtained with the loud speaker high up, whilst in other cases a low position can be found to be more preferable.



AWA RADIOLA TRAM



1927 - 1929



1930 - 1934

# **HISTORY of BROADCAST STATION 4CM**

**By Amateur Operator Thomas Elliott**

(First Chief Engineer of 4BC).

Reprinted from "*The Queensland Radio News*", Monday 2<sup>nd</sup> March, 1925.

Station 4CM is owned by Dr. Val McDowall in Brisbane. The whole of the apparatus, both transmitting and receiving instrument, have separate rooms, and the control work is done in the receiving room. The aerial (an inverted "L" type using two cages) is erected on the top of Preston House, and the lead-in is taken through a window to the apparatus. No counterpoise is used in conjunction with transmitting aerial, as it was found after careful testing that a counterpoise was not necessary. The earthing is done to the water pipe which, in this case, makes a very efficient earth.

Station 4CM commenced broadcasting in February, 1921, on a wave length of 800 metres (375 KHz.) using an input of 20 watts, with a "T" type, having a fundamental of 350 metres. Four Radiatrons U.V. 202 tubes were used; two as oscillators and two as modulators. The tube filaments were lighted from accumulators, and a high tension was obtained from a motor generator which delivered 500 volts. Later, all tubes were used as oscillators. The radiation using plate control method was 1,000 milliamps, and when all tubes were used as oscillators, 1,500 milliamperes were obtained.

The operations of the station proved efficient, with hundreds of reports from all over Queensland, and thousands from local "listeners-in" in regard to their reception. Townsville and Innisfail have reported by letter the full programme. Letters were also received from all over New South Wales, Tasmania, and New Zealand reporting on the transmissions. A speech given by Mr. Gillies (Acting Premier for Queensland) was heard at Ocean Island, a distance of 2,000 miles.

Two hour concerts were broadcasted every Sunday night for two years. Mostly gramophone records were used, however, once a month special instrumental and vocal concerts were arranged. A studio was arranged in an adjoining room to the apparatus with a micro-phone being placed in the studio; no amplification was used during the experiments.

After 12 months it was decided to broadcast concerts from different theatres by means of a telephone line connected between the concert hall and the broadcasting station. First it was decided to broadcast the Aladdin pantomime, being played at the Opera House. Arrangements were made with the management of the show and the Post Office for the use of a special telephone line, with an amplifier loaned from the Brisbane Electrical Co. At the theatre, an ordinary micro-phone, with the mouthpiece removed, was placed in position to the stage. Reports were received congratulating us on our work from North Queensland and New South Wales. This was our first attempt at using landlines for broadcasting.

The next performance we tackled was the Fleet concert, held at the Exhibition Hall, using the experience we reaped from the Aladdin pantomime. The Post Office officials were very good to us in loaning a special micro-phone and stand. The broadcasting of this concert was very fine, and from the station end of testing we thought it 100 percent efficient using amateur apparatus. The third was a broadcast of the Newcastle band with thirty instrumentalists, which was played in the same hall the following night. The micro-phone was 50 feet away from the band, which was the best position. The fourth performance was the Apollo concert, also held at the Exhibition Hall. The first half of the programme was fine, but, alas! In the second half, the local microphonic batteries ran down and the items faded away.

From December 1922 experimental work was carried out using short-waves, as it was found that the best results were obtained when the transmitting wave was equal to the fundamental of the aerial. This was overcome when using an aerial that had a higher natural period than that of the transmitting wave by inserting a condenser in series with the aerial. A heavy choking system was used with a 400 volt generator, which gave a 300 volt drop after passing through windings of the choke coil, giving 100 volts as working voltage. The input being two watts, and the radiation being 100-150 milliamps. Good results were obtained from using receiving tubes as oscillators, and the resulting modulation was far superior to that obtained when using power tubes. Two Radiatron U.V. 201A tubes were used, feeding 12 volts to the filaments, keeping a constant electronic emission as the tubes were not stable using lower voltages.

From 7<sup>th</sup> December, 1924, until 25<sup>th</sup> February, 1925, the station was equipped for broadcasting purposes and financed by Brisbane Radio Dealers. During this period the station operated from three landlines connected with the studio, situated in the Shulz Player Piano showroom, the Tivoli Theatre, and the Trocadero Desant, from which the concerts were broadcasted. It is only fair to offer our sincere thanks to the Modern Player Piano Co. for the loan of their showrooms for studio purposes. They placed their handsome parlour at our disposal three nights a week without any kind of payment. We feel sure that listeners-in will readily appreciate this generous act. The management of the Tivoli Theatre and Trocadero Desant have also been very good to allow their excellent music to be broadcast free of charge.

The transmitting apparatus consists of three panels; oscillating, modulating, and amplifying. The oscillating panels encase the coupling coils, condensers, transformers, tubes, and the tube filament controls, with an aerial meter and coupling dials filament voltage meters. The high tension panel with plate current high tension voltage, high frequency chokes, and by-pass condensers are behind. Next is the D.C. controlling switch board, operating the battery charging with fuses and regulating switches. The high tension voltage is obtained from a 500 volt D.C. shunt wound G.E. generator, having a 60 seg. commutator, belt driven at 1,500 R.P.M., with a half horse power D.C. motor. The transmitting apparatus is housed in a six foot square room with all controls being operated from the four foot square testing and receiving room next door, which houses the amplifying panels, receiving apparatus, micro-phone, and transmitting controls, with the relevant meters. For short-wave, a low capacity condenser has been placed in series with the aerial to reduce the wave length. When playing gramophone records, a tone arm operating with one amp at six volts is used with the micro-phone metallically connected to the tone arm, obtaining 90% of the records vibrations.

In closing, we take this opportunity in expressing our sincere thanks to all of those who have "listened-in" to 4CM, and especially those who have by letter or telephone sent words of appreciation. After all, 4CM is only a licensed amateur broadcast station, but we have endeavoured to broadcast worthy programmes, and have spared no effort to this end.



# **EXPERIMENTAL BROADCAST STATION 4RM**

From "*The Queensland Radio News*" 1<sup>st</sup> August 1928.

In recent months a great deal of interest has been centred on Experimental Station 4RM in Hawthorne, Brisbane. Many people who have listened to the excellent experimental broadcasts have shown a natural curiosity regarding the origin of the announcer, C.V. Woodland, formerly official announcer at 4QG. His presence has served to intensify the interest aroused.

Whatever the future may bring forth, 4RM at the present time is purely an experimental station, and is being operated as such. It is owned and operated by Mr. Ray McIntosh (one of the engineers at 4QG).

Some time ago, an application was lodged with the P.M.G.as Department for a Class "B" Broadcast Station License. This has not as yet been granted; the reason being that no new licenses are being issued until after the revision of the Wireless Regulations suggested by the recent Royal Commission has been effected. However, there is every reason to hope that the arrival of the licence will not be long delayed, and Mr. McIntosh has made arrangements to commence a regular service of a very high standard immediately the necessary authority is received.

Just now, the test transmissions are being effected on a power of only 15 watts, but the transmitter is designed to operate normally on a power of 1,500 watts. That the 250 metre transmissions are being widely listened to is attested to by the tremendous pile of letters which Mr. McIntosh showed to a representative of "*The Queensland Radio News*". These letters come from points as far apart as Longreach, Hobart, Bathurst, and New Zealand, and, without exception, refer in glowing terms to the writers' reception of 4RM.

Although regular programmes cannot be arranged until the license is received, 4RM has on several occasions secured the services of well-known artists in tests which were being carried out. Due to the fact that adjustments have been made at frequent intervals, the transmission has varied a little from time to time, but recently the quality and volume have been amazing, and 4RM can count on a large and very appreciative army of listeners, both in this and other States, whenever the station goes on the air.

The transmission of phonograph records, very well chosen by the way, is particularly fine, and one is sometimes left in doubt as to whether the item being broadcast is a record or "the real thing". The voice of "Uncle Jim" Woodland, of course, needs no introduction to listeners. It is one that is particularly suited to broadcasting, and no doubt will do much towards enhancing the popularity of the new station.

4RM's white-painted Oregon aerial mast forms a landmark for miles. Towering 95 feet into the sky, the mast and its complicated rigging present an imposing spectacle. Another 50 feet section is to be added to the mast in the near future. The aerial is of the three-wire ship type with Pyrex glass.

At present the complete station is situated in the house itself, but all the apparatus will shortly be moved into a special room which is being erected immediately underneath the aerial. The lead-in will then drop directly from the aerial through a bushing in the roof of the station building, and the earth lead will go through the floor to the very complete earthing system which has been installed. This earth connection consists of a copper plate measuring 18 feet by 6 feet, buried in permanent moist earth, three feet below ground level, with feeders radiating from the plate to different points underground. Thus, an ideal radiating system is assured, and the efficiency should be very high indeed.

In the meantime, the transmitting equipment at 4RM is located in a room adjoining the studio. All of the apparatus has been constructed by Mr. McIntosh, and the splendid workmanship is at once apparent. There are two separate transmitters; the main 250 metre set, and a small 32 metre set. The main transmitter at present consists of two UX210 7½ watt valves connected in parallel in a Meissner circuit. With these valves the power input to the plate circuit may be increased as high as 50 watts, but in the meantime the power is maintained in the vicinity of 15 to 20 watts. An interesting feature of the main transmitter is the very complete system of shielding employed; the whole unit covered on all sides by a sheet brass screen. The problem of filtering out generator or A.C. hum from the power supply is one which does not exist at 4RM. A bank of storage batteries totalling 300 volts supplies plate current to all the valves; this being kept charged by a Tunger charger operating from the A.C. lighting mains.

For 32 metre operation a beautiful little shortwave transmitter has been built. Behind the silver plated brass panel is a 7½ watt valve with its associated apparatus, arranged in a "Split Colpitts" circuit. At a later date, when the "B" class broadcasting licence which is shortly is an established fact, it is intended to utilise this transmitter for conveying programmes to the transmitting station, where they will be received on 32 metres, and placed on the air in the regular 250 metre channel. This will eliminate much expense, and will make it possible to relay programs from points to which the provision of landlines is difficult or where lines do not exist. Preliminary tests which already have been carried out within the suburbs of Brisbane indicate that extremely reliable communication can be maintained with 4RM when the power input to this "baby" transmitter is as low as one or two watts.

Both of these transmitters are oscillators only; their purpose being to generate the "carrier wave" upon which the speech and music is impressed. As they stand, they are each capable of sending out Morse signals, with a transmitting key being provided for this purpose, but they cannot transmit speech and music. The unit which impresses the voice currents from the microphone on the carrier wave is termed the "modulator", and at 4RM this is combined in one unit with the speech amplifier, the duty of which is to amplify or magnify the weak impulses from the microphone before they reach the modulator. Two stages of choke-coupled amplification using power valves are employed, drawing power at 160 volts from the same bank of batteries that supplies the oscillators. In conjunction with the speech amplifier, a specially designed volume control is used; the knob being mounted on the control panel alongside the switches and jacks, etc., which are provided in order to link up the station with a maximum of ten outside points by landline.

Mr. McIntosh has developed a modulation system which he claims includes several important advantages over existing methods. Any doubts as to the efficiency of the system are dispelled when one listens in to 4RM's transmission with its admirable depth and quality.

For transmission of phonographic music, an electric pick-up is used. This is identical with the pick-up designed and supplied by Mr. McIntosh to 4QG, and used by that station for all gramophone work. A new microphone of original design handles studio music and speech. This instrument, for which patents are pending, is a wonderful piece of work, and a great tribute to the skill of the designer and constructor.

## **EARLY RADIO IN BRITAIN**

The British post office was responsible for broadcast regulations, and licensed companies to transmit radio communications. The original companies were Marconi Wireless Telegraphy in Essex and Western Electric in Birmingham. They began broadcasting gramophone music, news, and talks to radio experimenters for half an hour each night (they were forbidden to broadcast to the general public). However, the *Daily Mail* paid Marconi to broadcast a recital by Australian opera singer Nellie Melba on 15-6-1920.

Public broadcasting was finally allowed in 1922, with the first licence being 2MT at Writtle, granted to the British Broadcasting Company, owned by six electrical and receiver companies, using one kilowatt on medium wave. Funding was obtained from royalties on receiver sales and from receiver licenses issued by the post Office. Reception difficulties led to the establishment of 5XX at Daventry in 1925 on 200 KHz. longwave using thirty kilowatts. 5XX was one of the most famous stations in Europe, closing in 1935.

A 1926 Government committee recommended that broadcasting in Britain should be conducted by a public corporation. The British Broadcasting Corporation commenced on 1-1-1927 with 2LO, taking over the staff and equipment of the British Broadcasting Co. including General Manager J. Reith (later Lord Reith) being appointed Director General. It was due to his influence that the BBC established a high standard of integrity. The BBC was barred from broadcasting advertisements. Their independence and objective treatment of news was their highest asset, establishing it throughout the world as being free from political and commercial pressures.

During the late 1920s the BBC attracted an evening news audience that was larger than the circulation of Britain's largest newspaper. Their variety, music, and drama programs were said to be keeping people away from cinemas and live shows. Churches complained that people stayed home to listen to religious programs rather than go to church. BBC commentators were banned from live sport, believing that sport attendance would drop. By the 1930s however, the BBC was part of the British way of life, including sport.

On Christmas Day 1932, King George V broadcast the first 'Round-the-Empire' message. Radio usage by Royalty did much to enhance the stature of radio. The Queen's Christmas Message is still listened to with great respect by millions of people worldwide.

In 1938, as the world moved towards WWII, the BBC began broadcasting in foreign languages with Spanish, Arabic, Portuguese, French, Italian, and German. They were directly financed by the Government to provide these services, stipulating what countries their broadcasts were aimed at and the number of hours devoted to each language. During WWII they broadcast in over 50 languages to the people of occupied Europe. Listeners in Germany and in German occupied countries were forbidden to tune to the BBC news.

The BBC WWII service was perhaps the greatest era in broadcasting history. Home broadcasting was merged with national programs, with information, inspiration, and entertainment helping the British endure the war. Many messages to the underground fighters in France and partisan groups were broadcast using coded and guarded phrases like 'The White Rabbit is safely asleep in his burrow' meaning an English underground agent called 'The White Rabbit' operating in France, had returned safely to London.

After WWII, the Light service was introduced, providing entertainment and relaxation for the masses. The Regional Home service was reactivated for 'middle-of-the-road' audiences. The Third network was for minority audiences whose education and tastes enabled them to appreciate broadcasts of artistic and intellectual distinction. They broadcast Open University programs, evening study sessions, schools broadcasts, plus sport results and news on weekends.

"Pirate radio" in the UK first appeared in the early 1960s when pop music stations such as Radio Caroline and Radio London started to broadcast from offshore ships or disused sea forts. At the time, these stations were not illegal because they were broadcasting from international waters. The stations were set up by entrepreneurs and music enthusiasts to meet the growing demand for pop and rock music, which was not catered for by the legal BBC Radio services. The first British pirate radio station was Radio Caroline which was launched by Irish music entrepreneur Ronan O'Rahilly, and started broadcasting from a ship off the Essex coast in 1964. The format of this wave of pirate radio was influenced by Radio Luxembourg (6WA in Wagin, Western Australia bought a 10,000 watt transmitter from Radio Luxembourg). Many followed a top 40 format with casual DJs, making UK pirate radio the antithesis of BBC radio at the time. By 1966 almost £2 million worth of advertising a year was sold to customers, including the government-funded Egg Marketing Board. By 1967 ten pirate radio stations were broadcasting to an estimated daily audience of 10 to 15 million. Spurred on by the offshore stations, land based pirate stations took to the air on medium wave at weekends, such as Radio Free London in 1968. Radio Caroline's audience was one third the size of the Light Programme in the parts of the country where it could be received, but the Light Programme's audience did not decrease, indicating that pirate radio appealed to an audience that the BBC did not serve.

In 1964, Manx Radio was launched as a commercial station on the Isle of Man and is often referred to as the first commercial station in Britain. However, technically, the Isle of Man is not British so Manx Radio cannot claim to be the first British commercial station.

In 1967, the BBC Light and Home services were replaced by Radio 2 and Radio 4, with the introduction of Radio 1 for pop music. Radio 2 broadcast light and popular music, and music for specific tastes like jazz, folk, and country. Radio 4 carries more intellectual programs of current affairs, news, documentaries and dramatic plays. Radio 3 presents 'good' music from brass bands, plus opera and more serious music with the great popular works of classical and romantic composers. There are also drama, poetry, interviews, and talk programs. The Further Education programs, including the Open University broadcasts on Radio 3 are called 'Study 3'.

Commercial radio was introduced in 1972, when a group of sixty local stations were approved by Parliament under the Independent Broadcasting Authority. They owned the transmitters, with radio groups contracted to utilise them by presenting a commercial service to a specific locale. The first stations were two in London and one in Glasgow in 1973. 1974 saw stations in Swansea, Birmingham, Manchester, Newcastle, Sheffield, and Liverpool. 1975 saw stations in Edinburgh, Plymouth, Stockton, Nottingham, Bradford, Portsmouth, and Ipswich. 1976 saw stations in Reading, Belfast, and Wolverhampton. There were no more until the 1980s.

## **EARLY RADIO IN AMERICA**

American physicist Reginald Fessenden made the first radio voice broadcast in 1900. Until that time, messages had only been sent in Morse. In 1906 a ship's radio officer was astonished to hear through his earphones, not the usual Morse code, but a voice saying 'If anyone hears me, please write to Reginald Fessenden at Brant Rock'. Reginald had succeeded in broadcasting his voice out to a ship at sea. He also broadcast phonograph music – all of this nearly twenty years before radio broadcasting began.

In 1919 Westinghouse engineer Dr. Frank Conrad, broadcast music in Pittsburgh, and a David Sarnoff saw how this stimulated crystal set receiver sales. The Radio Corporation of America was formed by Westinghouse, General Electric, and the American Telephone and Telegraph Company to explore David's broadcasting suggestions, with David as General Manager.

On 2-11-1920, the first regular broadcast by a radio station was from KDKA in Pittsburgh. They commenced with the results of the Harding/Cox presidential election, which is now celebrated as the first big popular event in broadcasting history. Radio advertising began in 1922 when a Jackson Heights real estate firm sponsored the first commercial broadcast. By 1923 the names of radio personalities had become household words with over 500 stations broadcasting concert hall programs, theatre plays, and sports events.

By the 1930s radio had become part of life for people in Britain, Europe, America, and Australia. Technical competence had improved with regular and dependable broadcasts using a degree of fidelity. The listening audience had grown enormously with programs covering news, theatrical dramas, quiz shows, and classical and popular music. Advertisers became an integral part of production as increased running costs made radio stations dependent on commercial support. The network system in America and Australia developed, whereby stations across the country were linked together for national advertisers programs. The stations all shared the production costs with advertisers. In America, where broadcasting now plays so large a part in the national life, advertising was non-existent in 1924, but by 1930, nearly \$100 million a year was being spent on radio. At first, advertising was stilted and limited, and the prices of products were rarely mentioned. During the late 1920s listeners heard the sponsors name linked to programs, e.g. the 'Ipana Troubadours' and the 'General Motors Hour'.

Radio and the movies existed together without great opposition because radio was wholly aural and the movies essentially visual. Like the cinema, radio too had its great stars, who were paid enormous salaries and had an incredible number of fans. Some people were stars of both radio and cinema. The stars of vaudeville often became stars of radio, and many broadcasts were conducted in front of live audiences, with the sound of laughter and applause being an integral part of the early live radio broadcasts. Stars included Eddie Cantor, Burns and Allen, Al Jolson, Jack Benny, Amos and Andy, and Bing Crosby.

Radio started to reach a mass audience and was creating popular singers, orchestras, and sport stars. The dance band era of the 1930s was given great impetus by radio, with Tommy Dorsey, Benny Goodman, Guy Lombardo, and Glenn Miller being listened to by millions of people. It was also an era of exciting newscasts from Government leaders. Franklin D. Roosevelt grasped the potential of radio with his 'Fireside Chats' being heard by millions. On the day of his inauguration, Roosevelt had to avert a crisis in banking. He called for calm over the NBC and CBS networks and gave assurances that the monetary crisis would pass. His 'Fireside Chats' became a great success as the President seemed to be talking to listeners individually. These subdued 'Fireside Chats' contrasted sharply with the hysterical shouting of Adolf Hitler and Benito Mussolini in Europe, who used radio to promote their propaganda.

Radio grew as a source of news, and so did the role of radio journalists and commentators. By 1942 the voices of H.V. Kaltenborn, Ed Murrow, Lowell Thomas, Walter Winchell (and Richard Dimbleby on the BBC), were well-known. Radio kept people in touch with what was happening on the war front in Europe, but it also offered an escape into entertainment, music, and comedy.

As WWII came to a close in 1945, electronics firms returned to radio manufacturing. From 1946 to 1948, over 50 million sets were sold. As television was introduced into America, radio went through a depressed era of skeletal news services and sports commentaries, and disc jockeys simply played more records and less live performances. From 1960, radio gradually made a comeback, with more than 170 million radios being sold during the 1960s – 1970s. The growth of FM stations also added to the resurgence of radio. There is now a wide range of program formats available with different stations catering for diverse interests e.g. KADS broadcasts only advertisements, WSDM uses only female announcers, and several stations broadcast continuous news, the most notable being KNX in Los Angeles, using 50,000 watts. By 1980 there were over 350 million radios in use throughout America.

## **EARLY RADIO IN NEW ZEALAND**

New Zealand's first broadcast was on 17-11-1921 from the University of Otago by physics professor Robert Jack. Radio Dunedin (4XD) began transmitting in 1922 and is the longest continuously broadcasting station in the Commonwealth. By the end of 1923 stations were broadcasting from Dunedin, Christchurch, Wellington, Auckland, Nelson, Whanganui and Gisborne. All content had to follow a strict moral code; advertising was banned, and Sundays had to have substantial religious programming. In 1926 the Radio Broadcasting Company (RBC) was established to provide a national broadcasting service. The RBC's main revenue came from a compulsory annual radio licence fee. Existing independent stations became known as 'B' stations, in contrast to the RBC's 'A' stations. To avoid interfering with newspaper advertising revenue, advertising was prohibited on radio. Many of the 'B' stations only stayed on air because they were sustained by voluntary support or were subsidiary activities of radio and record retailers.

The 1920s saw the development of many standard radio features, including children's programs, plus school, sport, and religious broadcasts. In 1932 the RBC was replaced by the government's New Zealand Broadcasting Board (NZBB), which inherited the RBC's stations. The number of stations and range of programs increased, but the conservative nature of broadcasting did not change. Programs generally followed a formal structure resembling a concert. All stations closed no later than 2200. Many people then listened to Australian stations. The state controlled 'A' stations were often criticised for bland and unpopular programming.

The cash-strapped 'B' stations often relied on listeners to donate records. Many listeners preferred the livelier, independent B stations. They were subject to strict government inspection and were forbidden to run advertisements, but from 1931 programs were allowed to name a sponsor. In 1935 the NZBB absorbed all of the 'B' stations, other than Gisborne's 2ZM (renamed 2XM) and Dunedin's 4ZD (renamed 4XD). With these two exceptions, broadcasting became a state monopoly for the next 25 years.

From the 1930s to the early 1960s well-known announcers included Maud Basham (Aunty Daisy), Ian Watkins, Selwyn Toogood, Jack Maybury, Phil Shone, Winston McCarthy, Gary Chapman, and Grace Green. The National Broadcasting Service's (NBS) programming included pre-recorded talks, religious programs, comedies, sport, news (including the Maori language), and drama. Music included records plus live performances by brass bands, orchestras, instrumentalists and vocalists.

The 1950s saw three basic program structures emerging: Light, popular entertainment, based on the ZB commercial radio format: Mixed or middlebrow, based on the YA stations: Highbrow, the YC stations, modelled on the BBC's Third Program format.

In the early 1960s, commercial stations played popular music, but broadcast bureaucrats continued to resist pop music. In response a pirate radio ship was launched in November 1966. Radio Hauraki, broadcast from international waters, capturing Auckland's young listeners with its Top 40 programs during its 1,111 days at sea. In 1970 Radio Hauraki and three other private stations were granted licences. Changes in commercial radio formats followed as more private stations gained licenses. Music stations focused on popular music. The talk radio format was established, beginning with Auckland's Radio I. New stations focused on target audiences, determined by factors including age, gender, social status and lifestyle. The number of private radio broadcasters rose from five in 1972 to 22 by 1984. Popular radio personalities included Merv Smith (1ZB), Kevin Black (Radio Hauraki) and Barry Corbett (3ZB).



## RADIO RECEIVER LICENCES

Can anyone remember when the P.M.G. came around to check that you had a valid radio receiver and television licence? (The one millionth radio receiver licence was issued in 1937). During the 1930s the Radio Inspectors often took people to court who didn't have a licence. For those unlucky enough to be convicted of refusing to obtain a licence, there was a maximum 20 pound fine waiting for them. Considering that the weekly wage was around 14 pounds at the time, this fine was rather hefty - evasion was treated as a very serious offence in those days! Given that a licence for one receiver at the time cost around two pounds (the price varied depending on distance from the closest A Class station) it is hard to understand why people chose to try their luck. For most first time offenders, the usual fine was two pounds plus court costs.

During the 1950s the fee for radio receiver licences was two pounds five shillings. With the commencement of the official transmission of television in Australia came the need to add a television licence to your radio receiver licence. From 1-1-1957 television viewers were required to pay five pounds annually for their viewing pleasure in addition to the radio receiver licence. Non-payment was a punishable offence with fines increasing up to fifty pounds.

The Post Master General often placed advertisements in newspapers across Australia warning that house-to-house inspections by Radio Inspectors were imminent. Many people hid their radio and television aerials in attics and chimneys, and radio and television receivers were often hidden in cupboards in an attempt to fool the Inspectors.

Commonwealth agents used a device to measure RF frequencies generated by radio equipment which operated in a similar way to how radar detector detectors work. Reliability isn't great but when there is a signal coming from a house with no antenna, officers were entitled to be suspicious. There was, however, little way for officers to know that more than one receiver was being used in the same house without an inspection of the house. Another way for listeners to avoid detection was to use crystal sets - receivers that didn't use electricity to operate but merely soaked up radiation from the airwaves by the use of a crystal diode and a pair of very sensitive headphones. Crystal sets couldn't be detected.

By the 1970s, combined radio and television receiver licences could be bought for \$26.50, however the end was nigh. On the 18-9-1974 the Federal Government decided to drop licence fees due to the high cost of monitoring compliance. The ABC, which had been financed by the licence fees, was then funded by general taxpayer revenue. A plan to reintroduce a combined radio and television receiver licence in 1975, costing \$70, was considered but dropped.

### **WHEN THE KNOCK COMES**

(and it could be tomorrow)



**will you have your  
RADIO LICENCE?**

**Why take a chance?**

Any person who owns a radio receiver and does not possess a licence is breaking the law and runs the risk of a heavy fine.

A Broadcast Listeners' Licence is obtainable from any Post Office for £2.15.0 a year.

Inspectors are constantly checking so get your licence now.

**Get your Radio Licence  
now . . . from any  
Post Office**

**POSTMASTER  
GENERAL'S  
DEPARTMENT**

CANBERRA TIMES  
18-10-1958

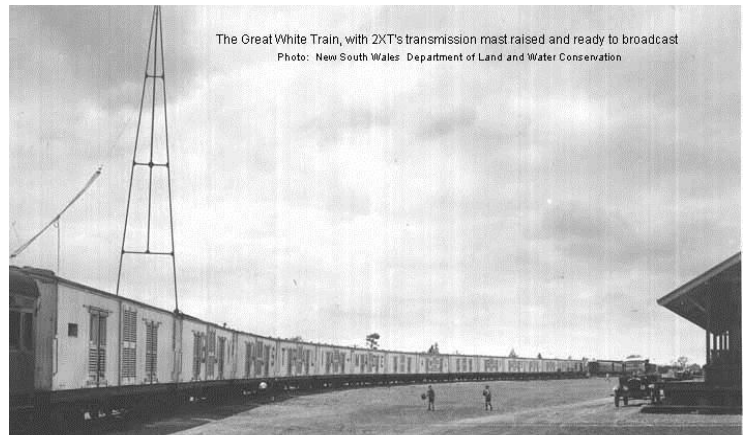
PLEASE DO NOT PIN OR STAPLE <small>(Please use Block Letters)</small>		DO NOT COMPLETE IF NAME AND ADDRESS SHOWN BELOW IS CORRECT	
<b>Commonwealth of Australia</b> Subject to the provisions of the Broadcasting and Television Act and the regulations for the time being in force thereunder		<h2 style="margin: 0;">A BROADCAST LISTENER'S LICENCE</h2>	
Mr. _____ Mrs. _____ Miss. _____ St. _____ Town & _____ Postcode _____		<b>is hereby granted to:</b>  <div style="font-size: 1.2em; letter-spacing: 0.5em;">MRS K. HOLLOWAY</div> <div style="font-size: 1.2em; letter-spacing: 0.5em;">4 OZONE ST</div> <div style="font-size: 1.2em; letter-spacing: 0.5em;">NORTH MANLY 2100</div>	
<b>LICENCE NUMBER</b> <div style="font-size: 1.2em; letter-spacing: 0.5em;">2100 1 24 26166</div>		<b>LICENCE NUMBER</b> <div style="font-size: 1.2em; letter-spacing: 0.5em;">24 26166</div>	
<b>RENEWAL DATE</b> <div style="font-size: 1.2em; letter-spacing: 0.5em;">HOLLOW 23 12 72</div>		<b>EXPIRY DATE</b> <div style="font-size: 1.2em; letter-spacing: 0.5em;">23 12 73</div>	
<b>FEE</b> <div style="font-size: 1.2em; letter-spacing: 0.5em;">K DO NOT STAMP HERE \$ 8.00</div>		<b>FEE</b> <div style="font-size: 1.2em; letter-spacing: 0.5em;">\$ 8.00</div>	
Issuing Officer _____		Signature of Issuing Officer _____ Time Issued _____ A.M. _____ P.M. _____	
<div style="border: 1px dashed black; border-radius: 50%; width: 100px; height: 100px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">             DATE  STAMP           </div>		<div style="border: 1px dashed black; border-radius: 50%; width: 100px; height: 100px; margin: 0 auto; display: flex; align-items: center; justify-content: center;">             DATE  STAMP           </div>	
<small>In respect of that address for the period ending on the expiry date shown above, RECEIVED FEE PRINTED ABOVE ON BEHALF OF THE POSTMASTER GENERAL</small>			
<small>Not valid unless the office date stamp imprint and signature of Issuing Officer or cash register imprint appear hereon.</small>			
<small>IBM-4395F</small>			



# AUSTRALIAN RAILWAY RADIO STATIONS

## 2XT

The first radio station in the world in an operational train, was A.W.A. station **2XT**, travelling around New South Wales. **2XT** was part of a mobile "Australia Made" exhibition known as the "Great White Train". A.W.A. used one of the 15 carriages for their studio, transmitter, A.W.A. product exhibition, plus staff accommodation. The **2XT** transmitter was rated at 500 watts and operated on 1175 KHz. The train travelled 72,000 kilometres from November 1925 to December 1927, stopping at over 100 towns for five days each (Gosford was the first).



**2XT** broadcast pre-arranged local advertisements each day from 4PM to 5PM and from 7PM to 8-30 PM, and conducted public tours through their studio. In most towns they also broadcast welcome speeches from local dignitaries. Their antenna was a single wire 20 metres long on a 13 metre high mast mounted on top of the carriage. The railway tracks were used as an earth. The mast was folded down along the carriage during transportation. Reception reports were received from all over Australia, plus New Zealand and New Guinea. Pictured is a promotional leaflet distributed in each town visited. The above photo was taken on 9-1-1926 at the Merrygoen railway station. The **2XT** Sales Manager, Charles Coldwell, was later the first Station Manager at **2GF** Grafton.

.....

## 3YB

**3YB** was a mobile radio station touring regional Victoria from October 1931. They started with a model "T" Ford housing a spring-loaded 25 watt transmitter on 1145 KHz., towing a trailer with a power generator, and a model "A" Ford with the studio (both painted scarlet). Vic Dinenny was manager, announcer, and cook; Bert Aldridge was their technician, driver, and mechanic; and Bert Rennie looked after sales, schedules, and copy-writing. Their temporary tower was often knocked down by cows.



From 17-10-1932 they rented the Royal train carriage for twelve pounds per week. The carriage housed their studio, 50 watt transmitter on 1060 KHz., and beds for the staff. They also had a power generator for use if local power was not A.C. It took 13 minutes to raise the antenna system, and attach earthing and power to go on air. **3YB** had 1,000 records and used a six metre collapsible tower at each end of the carriage. Their licence allowed them to operate anywhere in Victoria, at least 50 kilometres from any other station and 3 kilometres from any Post Office. They were on air 1830-2230 daily for one week in each town with the same program. An agent visited each town in advance to arrange advertising. Listeners were always invited to visit the station. Requests were welcome, with listeners being asked to make a donation to their local hospital. All programs were live, including the participation of visitors. News and feature programs were broadcast via landline from Melbourne. Their opening broadcast was from Creswick. They also operated from Colac, Yarram, Trafalgar, Horsham, Clunes, Traralgon, Warrnambool, Bairnsdale, Warragul, Leongatha, Wonthaggi, Korumburra, Camperdown, Port Fairy, Mortlake, Rushworth, Seymour, Murchison, Shepparton, Numurkah, Yarrawonga, Cobram, Echuca, Kyabram, Rochester, and Terang.

**3YB** closed on 15-11-1935, and were then granted two licences (**3YB** Warrnambool 18-1-1936 and **3UL** Warragul 18-5-1937).

## **COMMERCIAL LICENSES THAT NEVER WENT TO AIR**

**4CH** Charleville: 28-8-1930. R.W. Gaskin. This callsign was later granted to the A.B.C.

**5MG** Mount Gambier: May 1932. Mount Gambier Broadcasting Company P/L.

**5MC** Adelaide: 1925. James Marshall and Company. Company closed in 1928.

**5EP** Port Lincoln: Date unknown. Radio Advertising Company (in Adelaide). In 1932, this company was also granted a licence for Bunbury in Western Australia (callsign unknown) which never went to air.

**2LE** Meadow Flat: 1933. Radio Corporation Limited. Their studio was installed in Sydney. They falsely believed that they would be able to cover all of New South Wales from this location.

**2SI** Singleton: 1937. Jointly owned by Alex Mather (VK2JZ) and the *Singleton Argus* newspaper. The licence was moved to Lochinvar as 2HR before opening.

**6XY** Perth: 1927. Licensee unknown.

**2NZ** Narrabri. Licensed in 1935 for 2,000 watts. Licence was owned by 2GZ. The licence was later changed to **2IN** but still didn't go to air despite the studio being installed in the "Courier" newspaper building.

**5MA** Adelaide. Millswood Auto and Radio Co. (A.W.A. retailers). First went to air with an experimental broadcast licence in 1921. Issued the first Adelaide commercial licence on 2-11-1923. They then tried but failed to sell the licence without having gone to air.

**4MB** Brisbane. 1926. Radio Manufacturers Brisbane.

**3FB** Melbourne. 1925. Berkery and Picken P/L.

**2CS Casino**. 1938. Transcontinental Broadcasting Corporation. A joint project by 2KA Katoomba and 2KM Kempsey.

**Other examples of commercial licences that never went to air, allocated to commercial (pre A.B.C.) stations:**

2FC was issued with a second Sydney licence as **2FL**.

2FC was also issued with licences for 6 NSW country towns which never went to air.

2BL was issued with a licence for Newcastle in 1925 which never went to air.

3AR was issued with a licence for Ballarat in 1926 which never went to air.

3LO was issued with a second Melbourne licence as **3FC**.

4QG was issued with a licence for Rockhampton in 1926 as **4RK**. This callsign was later launched at Rockhampton on 29-7-1931 with programming by the privately owned Australian Broadcasting Company, until taken over by the A.B.C. on 1-7-1932, relaying 4QG with some local programs.

\*\*\*\*\*

## **FUNERAL ANNOUNCEMENT ANECDOTES**

\* **2RG** Griffith had a high percentage of Italian listeners so funeral announcements were also read in Italian.

\* When John Scott, owner of **2XL** Cooma passed away, his wife received a bill from the undertaker which included the cost of broadcasting his funeral announcement. The cost was much larger than the usual **2XL** charge for funeral announcements.

\* A closed circuit station **3PD** in Pentridge Gaol, operated by Henry Gay, was asked to play a record called "The Swinging Kid" for a prisoner due to be hanged the next day. Henry refused and grabbed a record at the last minute to fill. It was called "Still Life".

\* Alan Hubbard ordered a milkshake in a Dubbo café and **2DU** was then heard to broadcast their funeral announcements. The waitress heard the intro music and stopped the milkshake blender as a sign of respect until the funeral announcements were over.

\* **2MG** Mudgee once played "Ding Dong, the Witch is Dead" immediately after their funeral announcements.

\* Peter Van Hauen on **3YB** Warrnambool once mixed up the Protestant and Catholic announcements. He stated that the funeral in the Presbyterian Church would include the use of the Rosary.

\* Alan Hubbard walked out of **2KM** Kempsey after starting the funeral theme and ahead of the 6PM news. He learnt that management was approaching staff with allegations that they had stolen money from the front desk. Alan decided that he didn't want his honesty questioned. When the manager, with little on-air experience, entered the studio and questioned him, Alan handed him the earphones and said "I no longer work here". He didn't know if the funeral announcements or news got to air, and couldn't care less.

\* Bob Caldicott on **5AN** finished announcing the death of Martin Luther King then played the record "Old Black Joe".

\* A **3YB** general manager played "Don't Worry, Be Happy" after their funeral announcements.

\* Chris Isley on **6VA** Albany finished a burial announcement by playing the song "Down Down".

\* **4BC** Brisbane, after announcing the death of Pope John Paul 1<sup>st</sup>, played the song "Down Among the Dead Men".

\* **2UW** Sydney, after announcing the death of a Pope, played the song "Take My Hand, I'm a Stranger in Paradise".

\* Rob Elliott on **2VM** Moree, attempting to sound sympathetic after a funeral announcement, played the song "Life Gets Better".

\* Dave Eyles, acting on the advice of the stations birthday register, sang happy birthday to a man. His wife then phoned in tears to say that he had passed away. The birthday register was immediately updated.

\* One announcer mentioned the death of Bing Crosby then grabbed a Bing Crosby record and played "Heaven...I'm in Heaven".

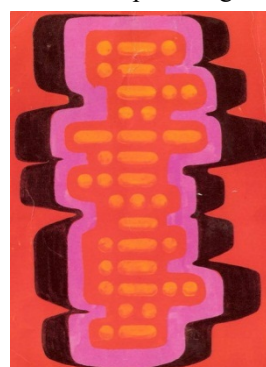
\* Peter McMaster back announced "Elton John, Candle in the Wind, dedicated to Princess Diana", then played a Neilson Funeral Services advertisement.

\* Mel Little did a long emotional chat with a suicide bereavement group, then played "Knocking on Heavens Door".

# EARLY AUSTRALIAN SHORTWAVE BROADCAST STATIONS

The era of experimental shortwave broadcasting in Australia extended from 1924 to 1939. In September 1939 the Australian Government cancelled 4CM-TV and all experimental radio licences, including shortwave, due to security concerns with WWII.

- \* Australia's first fully licensed broadcast (non-commercial) station, **2CM** Sydney (1-12-1922) moved to shortwave on 21-2-1924.
- \* When commercial station **2KY** in Sydney was opened on 31-10-1925, the original press release included the planning of a shortwave transmitter to cover all of Australia and overseas. The P.M.G. never approved this idea.
- \* Another attempt at obtaining a shortwave license was implemented by commercial station **5CL** in Adelaide in 1928. They sought a license allowing them to cover all of South Australia, but the P.M.G. also refused this application.
- \* In 1925 Walter Coxon, the Chief Engineer of then commercial station **6WF** in Perth, relayed their programs through his own shortwave station **6AG**. The purpose was to allow **6WF** to be heard throughout all of Western Australia. **6AG** started with 50 watts; later increasing to 200 watts.
- \* In 1926 Ray Allsop, the Chief Engineer of then commercial station **2BL** in Sydney, relayed their programs through his own shortwave station **2YG**. The purpose was to allow **2BL** to be heard throughout all of Eastern Australia and New Zealand.
- \* In 1928 **2GB** decided to test shortwave transmissions with the idea of relaying their programs to other stations around Australia, instead of paying for expensive landlines. These tests were never approved by the P.M.G.
- \* Also in 1928, L.G. Glew, the Chief Engineer of commercial station **3UZ** in Melbourne, relayed their programs through his own shortwave station **3LG**. The purpose was to allow **3UZ** to be heard throughout Victoria and Tasmania. The **3LG** transmitter started with 150 watts and soon increased to 500 watts, operating on 9,725 KHz.
- \* In these early years, A.W.A. operated three shortwave stations:
- \* The first A.W.A. shortwave broadcast station appears to be **2ME** in Sydney. On 5-9-1927, with a 20,000 watt transmitter, they relayed the first Empire Broadcast from **2FC** in Sydney. This program was received and then relayed on mediumwave stations throughout India, South Africa, the United Kingdom, Canada, and the U.S.A. Also in 1927 they were the first Australian station to experiment with F.M. (mono only, using shortwave 9 MHz.)
- \* Also in 1927, **2UW** in Sydney used **2ME** to relay their programs to their temporary Wagga Wagga station **2UX** one day each week.
- \* The second A.W.A. shortwave station was **3ME** in Melbourne, which actually started on mediumwave. From 1927 they relayed the then commercial station **3LO** until A.W.A. established their own studio and programming. Their target audience was international. Centenary celebrations in 1934 from Ballarat were broadcast by **3DB** in Melbourne and also relayed on shortwave through **3ME**. **3ME** was also the forerunner of 'Radio Australia' (which was first known as 'Australia Calling').
- \* In 1928 **3LO** Melbourne experimented with shortwave by covering all of Victoria every Monday.
- \* **3UZ** Melbourne experimented with shortwave broadcasts for brief periods in 1930 and 1931 using 150 watts.
- \* The third A.W.A. shortwave station was **6ME** in Perth. They first went on air on 27-1-1936 with a 200 watt transmitter. Their programming came from their own A.W.A. studio and was designed to target an international audience.
- \* Between 1937 and 1939 commercial station **5AD** in Adelaide covered all of South Australia on shortwave using the callsign **5DI**.
- \* **2BH** Broken Hill broadcast several WWII Relief Concerts which were relayed on shortwave by the Royal Flying Doctor Service.
- \* **6KG** Kalgoorlie was heard experimenting on 4,835 KHz. in a failed attempt to cover Perth.
- \* Finally, an unusual shortwave event. H.M.S. Grenville, while patrolling the Pacific in 1946, relayed **2KY** Sydney using a shortwave transmitter. The purpose was to provide some entertainment to other H.M.S. ships throughout the Pacific.





# WHAT MAKES RADIO TICK?

Condensed article from "*Let's Look at Radio*" (1949) published by the Federation of Australian Radio Broadcasters.

When radio as we know it was born after the First World War, the only previous experience upon which the engineers of that day were able to draw was that associated with telephone communication and the then recent introduction of radio telephony for wartime communication purposes. The equipment which had been satisfactory for vocal communication was pressed into service for the transmission of musical and other entertainment, even though its shortcomings for this purpose were many. For example, studio microphones were telephone handsets. However, these went largely unnoticed by the early listeners who accepted the necessity of sitting patiently round a crystal set, with headphones clamped tightly on, while the expert of the circle twiddled a dial and searched for a sensitive spot on the crystal with a 'cats whisker'. Early broadcasting stations usually consisted of two rooms; one housed the radio transmitter, and the other was the studio.

The transmitter usually consisted of a simple iron or wooden frame which supported the necessary valves, coils, and other components which were rearranged from time to time, mostly by 'cut and try' methods, in an effort to improve results. There were none of the modern instruments available and little authentic literature to enable the engineer to work with any degree of certainty or precision. It was customary to line the studio with heavy draperies to damp the reverberant effects which gave the impression that the announcer was speaking in an enormous empty room. This was caused by the then highly omni-directional microphone patterns. The announcer usually doubled as a programme director and control operator, and sometimes even tended the radio transmitter while records were playing, since he seldom had more than one assistant, and sometimes none at all.

The transmitter aerial usually stretched above the building between two tall wooden masts, seemingly obsessed with the idea of crashing through the studio roof if given the slightest excuse. Broadcasting station owners initially operated at their own expense so they were, of necessity, also the riggers for their aerial systems. High masts were expensive to build and maintain and it became the practice to locate transmitting stations on the highest convenient hill to gain increased elevation for the aerial system at minimum expense; a practice which was later found to be quite wrong for the wavelengths used in present day broadcasting. With the passage of time and the encouragement and advertisers support that resulted from listeners appreciation of the service being rendered, facilities were gradually but continuously improved. New studios, designed specifically for the job they were required to perform, replaced the makeshift arrangements first used. Measuring apparatus was developed and new transmitters and studio equipment having known standards of performance became available and were quickly adopted by the stations. Increased revenue was put back into new plant, and engineers and technicians added to the staff. Today's modern broadcast station has a complete engineering department charged with the responsibility of providing and maintaining facilities for the most elaborate programmes.

**The Broadcast Process:** Before proceeding with a description of some of the engineering features of a modern station, it may be helpful to describe briefly the processes involved in transmitting sound from the studio to the listeners' home. When an artist performs before a microphone, its diaphragm is caused to vibrate by the sound waves. The vibrations are converted by the microphone into a correspondingly varying electric current in much the same way as one's ear converts the sound waves into nervous stimulations which the brain understands as sound. The feeble electric current is amplified in the control room and mixed with the outputs of other microphones as required, and the whole is then sent to the transmitter via a pair of telephone wires. At the transmitting station the electric current is further amplified and then fed into the radio transmitter. The broadcast transmitter generates an oscillation commonly termed a 'carrier wave' which is continuously radiated by the aerial to all points of the compass. The varying current which originates in the studio microphone is used to mould. Or, to use a technical term, modulate the steady carrier wave so that it is modulated in conformity with the currents produced by the microphone.

One may well ask, why bother with the carrier wave? It is used, as the name implies, to carry the intelligence which is impressed upon it in the transmitter. If the varying current produced by the microphone was merely amplified and fed to the transmitting aerial, practically no radiation into space would occur. However, the carrier wave varies very rapidly, in the order of million times each second, and at this high frequency it is comparatively easy to arrange the aerial so that most of the energy fed into it is radiated. The use of carrier waves to convey the sound has another important advantage since many stations can operate simultaneously, each by using a carrier wave of different frequency. Thus, by tuning a radio set to the frequency of that desired, a choice of programme is made possible. The radio set converts the modulated carrier wave back into the same kind of varying current as was produced by the microphone in the studio, and the loudspeaker completes the process by changing this current back into sound waves.

**The Control Room:** As its name implies, the control room is the nerve centre of a broadcasting station. Various programmes which may originate in any of several nearby studios and other programmes from remote points such as concert halls and sporting fixtures all pass through the control room. Here the operator has at his disposal numerous amplifiers, volume controls, mixing circuits and elaborate switching equipment which are arranged to ensure that the desired programme is properly amplified and regulated before being sent on to the transmitter. There may be several programmes arriving at the control room from different sources, and it is most important that each is routed to its proper destination. Quite often it is necessary to 'split' certain programmes into several 'outputs', each of which is sent on by P.M.G. telephone landlines to broadcasting stations in other cities. The purpose of the 'splitting amplifier' is to prevent a fault, such as a short circuit on one landline, from disturbing the transmission in other directions. The quality of reproduction is continuously checked on a high grade loudspeaker and its volume is also kept at the proper level by means of a volume indicating meter which is much more accurate for this purpose than the ear.

**Recording Equipment:** Since it quite often happens that the artists or speaker cannot come to the studios at the time a broadcast is due on the air, facilities are provided for making recordings. The recording machines are installed either in the control room, or, in larger stations, in a separate room. The records most commonly used for this purpose are aluminium discs coated on both sides with a special lacquer. The disc recording machine cuts a spiral groove which is deflected from side to side by the varying current produced by the microphone and which is amplified until it is powerful enough to control the movement of the sapphire stylus which cuts the groove on the record surface. These records, known as 'transcriptions', are usually 16 inches in diameter and play for 15 minutes. They are ready for use as soon as they are removed from the recording machine. Other types of recording equipment are also used. One of the most popular being the magnetic recorder. These instruments magnetise a very fine steel wire or tape as it passes over a recording head. In this type the intensity of magnetisation is governed by the amplified current produced by the microphone. Magnetic recorders can be very compact and are easily carried to outside locations for programme material that cannot be brought to the studio, such as newsreel interviews. As much as one hour of programme material can be recorded on a single spool of wire.



**Outside Broadcasts:** At certain times, quite a large part of the programme comes from places that are remote from the studio. Broadcasts from theatres, meetings, and sporting fixtures must originate on the spot, so that microphones and portable amplifier equipment are sent out and set up at each place required. The prepared telephone lines which are rented for this purpose from the P.M.G.'s department. At times, the programme consists of broadcasts from one outside point after another, with the studio and control room acting as the clearing house. This usually happens on Saturdays with broadcasts coming from first one racecourse, then another, followed perhaps by commentary on a cricket match and so on. On such occasions, skilled technicians are kept busy seeing that each crossover is smoothly coordinated, but it all flows so smoothly from the radio that it sounds very simple indeed.

**Studios:** Whereas very little was known on the subject of acoustics when the early studios consisted of a room heavily draped with curtains, the position today is vastly different. The modern station has several studios of various sizes to suit the different types of programme broadcast. In place of draperies, the walls are scientifically treated with special sound absorbing materials. As these materials are soft and porous, they are usually concealed behind perforated sheets of fibro cement or plywood which is treated to conform to the architects' decorative scheme, and is capable of withstanding the heavy wear and tear of constant use. The sound waves pass through the perforations and the desired proportion absorbed. In the early days the object was to absorb as much of the sound as possible, but it was later realised that this took away all the brilliance from music and speech. The shapes of studios are also given much consideration, and the trend is toward using irregularly shaped rooms with the walls and ceiling broken up with heavy columns and beams. Some American studios have been built with opposite walls sloping inwards toward one another, and the ceiling set at an angle to the floor. The result looks unconventional to say the least, but it works well, which is most important.

**The Auditorium:** Perhaps the most popular programmes of all are the audience participation shows which come from the Auditorium. Here a stage is set for the performers and provision is made for about 300 guests who provide the applause and the laughter so necessary to artist and comedian alike if they are able to give their best performances. A separate booth is provided in part of the Auditorium from which the producer and technicians view the performance through double plate glass windows. This booth is quite soundproof and the programme is heard from a loudspeaker which enables the producer to know exactly how the programme will sound in the listeners' homes. During the rehearsal of big shows, which may take many hours to prepare for a half hour broadcast, the technicians are busy deciding the best microphone for each purpose and adjusting its position until the producer is satisfied that the balance is as perfect as can be achieved.

As many as nine or ten microphones may be set up on the stage for use at different times during the show. They are delicate precision instruments, costing from £20 to £80 each, which are ruined if dropped or knocked over, and are therefore handled with great care by the expert technicians who understand their various characteristics. To guard against accidents, two microphones are often mounted side by side at important places so that if one microphone fails, which rarely happens during a performance, another can be substituted by simply switching the connections in the control booth. This can be done so quickly that no one is likely to detect the change. The amplifier equipment in the control booth is usually duplicated too, with both equipments operating at all times so that even a major breakdown is unlikely to cause any interruption to the programme, although the effect of the nervous strain is plainly evident on the faces of the producer and technicians at such times.

**Transmitting Stations:** As with the control room and studios, the modern transmitting station contrasts sharply with those of the early days of radio. The site for a station is chosen so that it is as near as possible to the centre of population of the district to be served, providing that the other requirements necessary for efficient transmission can be met. Housed in a building designed for the purpose are the transmitter itself and various other items of auxiliary equipment. There are also facilities for the comfort and convenience of the technicians who are always on duty while the station is operating. The transmitter is a self-contained unit in a lacquered steel cabinet. Meters on the front of the cabinet give a continuous indication to the technician of the performance of the various circuits, and controls are provided for operational adjustments.

Personnel are protected from injury through accidental contact with high voltage circuits within the transmitter by safety doors which automatically disconnect the power if opened while the transmitter is in operation. The operator is provided with a desk on which are situated the more commonly used controls, together with a microphone and phonograph pick-up and turntable for the provision of announcements or emergency programme in the event of the lines from the studio failing. The auxiliary equipment often includes a stand-by transmitter for use if the main transmitter should fail, plus a petrol or diesel driven generating set to guard against a failure of electric power supply, and sometimes a complete studio for use in emergency or on special occasions.

**The Aerial System:** After leaving the transmitter the signal passes along specially arranged wires known as a 'transmission line' to the aerial system which is the most conspicuous, and in some ways, the most important part of the equipment of a radio station. The function of the aerial system is to radiate the carrier wave containing the programme material in all directions, concentrating the greater part of the energy along the surface of the ground where it will be most useful in providing a strong signal at the listeners' homes. The aerial itself is usually a tall steel tower or mast which, being an electrical conductor, also serves as an aerial. This is a departure from the early practice of using two wooden masts to support the aerial which was suspended between them.

The height of the mast varies according to the wavelength used by the station and is usually either a quarter or a little more than half the wavelength; thus a station operating on 1,000 kilocycles per second, which corresponds to a wavelength of 300 meters, could use an aerial tower either 75 meters or somewhat more than 150 meters high. The higher one is slightly more efficient for certain purposes which are too involved for detailed discussion in these pages, and the cost of construction is naturally very much greater. Generally speaking, the extra cost of the very high aerial is warranted for higher power stations, especially when it is desired to minimise night-time fading and distortion which is common at a distance of from 50 to 100 miles from the transmitter.

Although the tall tower is the conspicuous part of the aerial system, it could not operate efficiently without the earth system which, though invisible, is nevertheless very important. It usually consists of 120 wires, each at least as long as the aerial is high, buried a few inches under the ground and extending in all directions from the base of the tower or mast. The work entailed in laying such an earth system is not apparent until it is realised that there is more than 11 miles of wire to be laid out and buried to complete the installation. Fortunately, rocky mountain tops are no longer used for transmitting station sites, since it is known that low-lying marsh lands or swampy areas provide the best conditions for good radiation. Wet ground provides a good return path for the currents which are radiated by the aerial through space above the ground and which must return to the base of the tower through the earth.

As the radio programme leaves the aerial, the engineers and technicians who have guided it through the various stages, beginning in the studio, are relieved of their responsibility. It then becomes the prerogative of the listener to decide if their work has been worthwhile.

# **RADIO 2UW PORTABLE OUTSIDE BROADCAST - 1932**

**By Donald Knock – ex B.B.C. Engineer.**

Condensed article “The Roving Mike” from *Radio Monthly* 21<sup>st</sup> April 1932.

For weeks Australia had been talking about the forthcoming opening of the Sydney Harbour Bridge. Rumours of extensive plans for broadcasting during the big day of celebration culminated in radio 2UW being entrusted the big job of letting the rest of Australia know what was happening. Everyone interested in radio broadcasting today knows what a great success the undertaking proved to be. Through March 19th, 2UW, through a chain of 23 stations, kept thousands of listeners throughout Australia fully informed. Mr. Oswald Anderson, manager of 2UW, decided to develop a new innovation, the “Roving Mike” as an outside broadcast from separate celebrations at the Manly Corso.

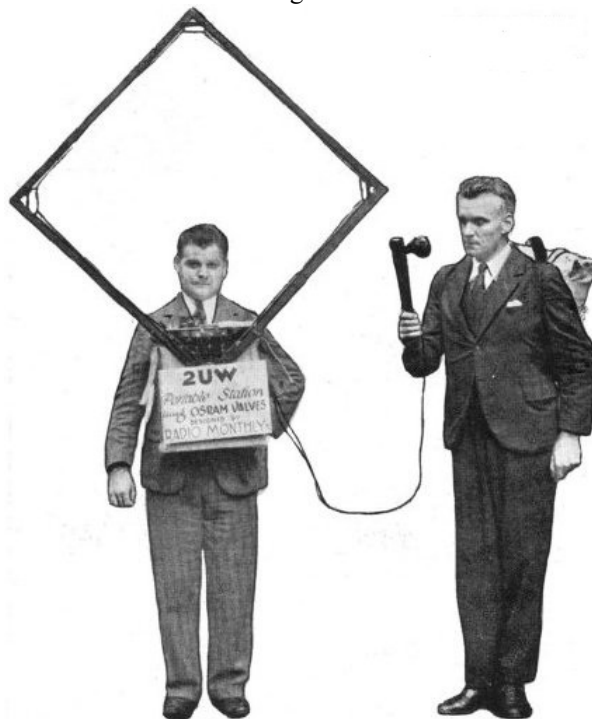
It was decided to build a portable shortwave transmitter which could send the signal to a receiver at the Manly Corso wharf. The signal would then be fed into a landline to the 2UW studio for retransmission to listeners. It was necessary to design the transmitter so that everything could be carried by two persons and yet provide freedom of movement and access to the microphone. The photograph shows how this was achieved. Your writer carried the transmitter, and Mr. Buckell, the announcer, carried the microphone and the B batteries supplying plate current. The transmitter was designed to fit into an army pack which the writer carried on his chest, and the B batteries were stored in another pack on the back of the announcer. Two lengths of double flex between announcer and operator provided for connection to the plate supply and microphone. The microphone was a Stromberg-Carlson solid back Post Office telephone type.

Standard Telephones Ltd. sent along one of their public address systems, which provided four hefty exponential speakers overlooking the Manly Corso wharf. The output from the shortwave receiver was taken through a line transformer to the landline and also shunted across the public address system. The result of this was that the P.A. system speakers told of the “Walking Broadcaster’s” doings, and that 2UW could take the transmission over the landline in the control room as required.

During the morning, between live broadcasts from the Sydney Harbour Bridge, the Manly Corso “Roving Mike” was used to interview well known Manly residents. Then followed a description of a procession from the oval. The afternoon found us again at the oval where several Olympic sports were in progress. This gave us the opportunity to interview prominent members of the forthcoming Olympiad, due later in the year at Los Angeles. We were then offered the opportunity to be taken around the bay in a speed boat with the “Roving Mike”. We naturally agreed, and with fears for the safety of the loop aerial, hung on for dear life as the aquaplane roared away from the jetty. Mr. Buckell, in between taking showers of spray, persisted with his running commentary despite the boat just missing the bow of the ferry Curl Curl. After arriving back at the wharf, we were greeted with cries of “*Wonderful! Everything came through perfectly. The best stunt yet!*”. This was great news, except that we were very sorry that at the time, 2UW was temporarily off the air for a respite after their hard day with a very full programme.

Crowds gathered around the “Walking Broadcaster”, as a little later on we started along the front towards the baths for the next big event, as by this time in the evening the unusual stunt had caused a great deal of comment. 2UW was again taking us, and the 23 stations in the Trans-Australia link also. All went well until we had difficulties getting the loop aerial through the turnstiles. While at the baths, an official obliged us by describing the events for us as we were not conversant with many of the contestants. At 11 P.M. the swimming came to an end, and we continued our way back to the wharf. We then broadcast a final “*good night*”, switched off our equipment, and willingly removed our now pressing encumbrances. The experience had turned out to be an assured success, and we packed the gear up with a glow of satisfaction and the knowledge that a lot of useful ideas and modifications had been gleaned for the future.

On the way home, we approached the Harbour Bridge at midnight with the fact that we had overlooked that thousands of cars were waiting to make the first dash across, the moment this great structure was opened. It took us over an hour to cross amid the smell of exhaust fumes and burning clutches. Still, that bridge is something to be proud of, and the celebrations of that day gave us a new interest in the utility of shortwave transmissions for outside broadcasts with a “Roving Mike”.



The “Roving Mike” photographed above.  
Mr. Buckell, on the right carries the high voltage supply in his pack.  
Otherwise the entire short-wave transmitter is contained in the extremely small outfit carried by Mr. Knock, along with the frame antenna.

## MIRACLE MEN of RADIO are NEVER HEARD.

Condensed article from *The Queenslander* 3-11-1937 compiled by M.J. McDonald.

The key men of radio are not those who supply the words and music – the singers, musicians, actors, commentators, and announcers. Not one of them could be heard farther than he could shout, were it not for the engineers who hurl the sound to listeners through space. The engineers are the real miracle men. The master mind is the M.C. – master control operator – a fast thinking, quick acting chap whose day is just one crisis – or averted crisis – after another, and who holds the fate of the various programmes at his fingertips, despite rarely having the time to listen to any programme. The M.C. operators of big broadcasting networks are radio's "split-second" men, for it's their job to co-ordinate the activities of several stations, to prevent and correct operating mistakes with lightning decisions, and to dove-tail different groups of stations when the timing goes completely amiss.

If you get jittery when telephones jangle and typewriters rattle, you wouldn't make a good M.C. A man of iron nerves and cool head, the M.C. sits at the master control desk in a room about the average size of an office. In his ears blare different programmes at the one time. At his elbows, several telephones constantly bring messages from different broadcasting points. At his fingertips are buttons controlling P.M.G. lines feeding affiliated stations. Because some commercial broadcasters utilise only part of the stations of a network, fill-in programmes must be transmitted to the others.

An example was the Golden Casket draw broadcast by the *Courier Mail* stations 4BK and 4AK. A feature session prior to the drawing of the casket had to be transmitted to 4IP Ipswich, and immediately at the end of this session the M.C. had simultaneously to switch in 4WK Warwick, 4AY Ayr, 4MB Maryborough, 4TO Townsville, 4BU Bundaberg, and 4CA Cairns. At the conclusion of the draw, all these stations had to be cut off while at the same time sustaining the continuity of the programme to 4IP, to which the next session, "Dad and Dave", had to be relayed. It is not difficult to imagine the number of things that could go wrong in such a relay; especially as the timing is a matter of seconds.

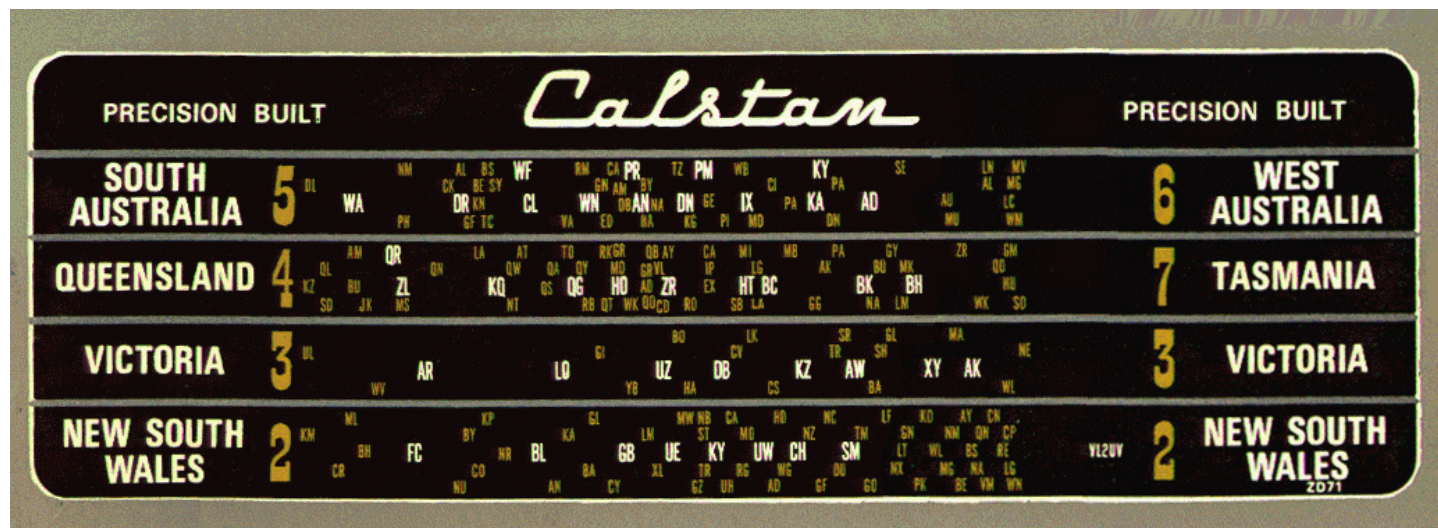
The M.C. gets his real test when an unexpected broadcast comes to hand, such as important news. With one or two more relays in progress, and others scheduled to follow, the harried M.C. must juggle his time in frantic long-distance calls to other control points, expanding or condensing individual broadcasts to bring them all back into synchronised timing for the next period. Day and night the M.C. fights the clock. Each 15 minutes or so programmes are scheduled to begin, and a dozen things may happen to keep them from starting. A battery may go dead or a valve may burn out. Once a studio engineer dropped dead at the controls. Whatever the case, the M.C. has no warning until the actual failure occurs. Then things happen, with signal warnings flashing, buzzers activating, telephone bells clamouring, and producers raving. However, the M.C. coolly substitutes a standby programme, issues instructions to engineers, receives calls from those trying to locate the trouble, and jots down a few notes on his running log. And so it goes on, day after day and night after night, emergency after emergency; each handled in his stride by the master control man.

Working under such conditions, it is only natural that the M.C. should be resourceful. However, despite elaborate precautions, the M.C. does have embarrassing moments. Once a telephone man plugged in the wrong cable, and several minutes of a programme intended for one network went out to another before anyone noticed. The engineers were jolted into action when they heard a well-known cheese brand being broadcast on their headache powder programme.

While the M.C. is the "split-second" man, the remote operator is the "minute man of the air". The remote operators cover events taking them away from their studios. They often travel hundreds of miles for short broadcasts, and sometimes have many unusual or thrilling experiences. One was transmitting from a café when two men were shot, with the shots being heard by thousands of listeners. Few listeners knew what the sounds were, for the engineer quickly motioned to the orchestra leader and the latter laughingly announced that the drummer had fallen into the bass drum.

Unsung are the praises of the men who hold radio's drab job – maintenance. Each night they check every piece of equipment to forestall possible failure. Day after day they check microphones and controls, tap valves, look over signal lights, shake and rattle cables, polish plugs and sockets, and correct clocks. Most of these miracle men of wireless telegraphy are so steeped in radio that they are no longer able to leave it alone. Their days off are typical "busmen's holidays" – spent beside an experimental transmitter as they communicate with amateurs the world over.

\*\*\*\*\*



# AUSTRALIA'S FIRST LICENCED TELEVISION STATION

Reprinted from the Melbourne "*Herald*", Thursday 5<sup>th</sup> December, 1935.

In an old windmill tower, a relic of the days when Brisbane was a tiny penal settlement for "thrice convicted felons", I witnessed a convincing demonstration of television. The tower is the studio of Mr Thomas Elliott, who claims to be Australia's first television transmitter. From this novel studio, Mr Elliott daily transmits his images. In and around Brisbane, a dozen enthusiasts who have constructed receiving equipment are "looking in" every day. After only three years of experimenting, Mr. Elliott is able to transmit images that, in my opinion, are suitable for public exhibition.

As every broadcasting station checks its transmissions with a receiver that indicates what is being heard by its listeners, so in this studio a monitor television receiver reproduces the images and indicates what is being reflected on the screen of the lookers-in. These screens range in size upwards from two inches by five inches. Any distortion in transmission is revealed on the screen of the monitor.

A switch clicked, electric motors whirled, huge valves blinked dully, and the television station was on the air. A cataract of flying white dots on the screen resolved itself, as the transmitting apparatus steadied and equalised into the clearly defined, smiling face of Janet Gaynor. The picture was followed by a dozen others, all equally clear and all as sharply defined. Then there flashed on the screen the crossword puzzle from a local newspaper, on the page of which all the dark type headlines could be read. All that I saw on this screen was being seen as clearly on the screens of the receiving sets away in the suburbs. The equipment used for these transmissions is a scanning disc electrically controlled to ensure synchronisation. The subject is illuminated by a whirling dot of light produced by a powerful arc lamp behind the disc. This light is placed so that its reflection on the image influences photo cells connected to electrical amplifiers, thus ensuring perfect frequency response.

So delicate is this equipment – it is even more delicate than broadcasting equipment – that the slightest degree of distortion blurs the picture. Passing through the ether as electrical impulses, the image is re-converted into light by the receiving set. Eighteen months ago Mr. Elliott's 30 line (low resolution transmission) television was being received, though in an indistinct form, in Melbourne. To increase the definition of the reception it has been necessary to reduce the wavelength, and 180 line transmissions are being made on an ultra-short-wave of five to seven metres, with a radius of 25 miles. A new machine, known as the mirror drum and similar to others in use in England and Germany, is being constructed by Mr. Elliott, which, while requiring less arc power, will provide an even greater illumination and sharper definition. His transmitted images are surrounded by a slight whitish border not unlike a water mark, and which, with lettering resembles the shadow effect used in sign-writing. In England and Germany a similar deficiency is being experienced, and nothing, so far, apart from the re-touching of the subject, has been discovered to overcome it.

Experimenters abroad also find that the result of the direct transmission of a human face is an image half negative and half positive, indicating the need for heavy make-up. Sharp, almost perfect definition is possible only when the lips and eyebrows are painted a very dark brown. Until this difficulty is overcome, the direct transmission of more ambitious subjects will be unsatisfactory. In England, the system of achieving animated pictures by means of films dried by a rapid drying process in eight seconds, and projected through a biograph attached to the television equipment is now being superseded by an iconoscope which has a direct camera pickup. The scope of this method, however, is also limited, because of the mystifying haze which permits its use only where the object to be televised has the benefit of exceptional illumination.

The most gratifying feature of Mr. Elliott's research is the comparison of his results with those obtained in Germany, where one million pounds has been spent, and in England, where television research has cost hundreds of thousands of pounds. While the images received abroad are shaded pink, violet, and pale green, those in Brisbane are black and white – the result of a lamp Mr. Elliott has invented to give this effect. This lamp; a rare gas vacuum modulating tube, on which a patent is pending, is used instead of the system which, abroad, is producing false coloured images.

In March, ten television stations are to be established to service all England, and it is possible that next year equipment will arrive in Australia from England or Germany. Even now, Mr. Elliott claims that his experiments have reached a stage where it would be possible satisfactorily to transmit televised images to the greater part of Australia. In Victoria, for instance, he told me that with an ultra-short wave station in the highest point of the city, preferably the tower of the Manchester Unity Building, it would be possible for Melbourne to have television. As one of the inexplicable characteristics of this 7 metre wave length is that its radius is equal to the focus of the human eye, it would be possible, with other stations on Mt. Dandenong, Mt. Macedon, and the You Yangs at Little River, to re-transmit these images by reflectors to the country districts within the ambit of these points. Similarly, a short wave station in the Blue Mountains could satisfactorily serve Sydney. Australian wide television of low definition would be possible today, Mr. Elliott contends, if all the radio stations of the Australian Broadcasting Commission were inter-linked. Only one studio would be needed to enable national transmissions to be made over the ordinary landline through the national network.

**Notes from researcher** (Dr. Bruce Carty): 4CM testing included Mickey Mouse in a cartoon, followed by film star Janet Gaynor on 10-4-1934, using a Baird 30 line system. 4CM then launched one hour a day of television transmissions including silent movies, using all home-made equipment. On 6-5-1934 a demonstration of their television system was conducted for Federal and State politicians. This resulted in **4CM being granted the first television licence in Australia** on 1-7-1934 using 2,200 KHz. By then they were transmitting 180 lines, with their 100 watt converted radio transmitter. Their telecasts were seven days a week for one hour from 7-30 P.M. The scanning wheel system being used operated at 750 revolutions a minute in an anti-clockwise direction with vertical scanning being employed. For the first ten minutes a black triangle was transmitted and this was followed by a black spot. This allowed viewers time to synchronise their receiver with the transmitter to obtain the best definition. 4CM-TV presented **the first Australian news telecast**, being several *Courier Mail* pages on 9-10-1935.

By 1939 there were 18 home built television receivers in Brisbane, and their television signal was often received in Melbourne. Their television licence was cancelled in 1939 when WWII started, due to security concerns. The original television equipment used by Thomas Elliott and Dr. Val McDowall used to be on display in the 1960s at Newstead House in Brisbane. A recent photograph of the dismantled equipment on a storage rack at the Queensland Museum has surfaced. Thomas Elliott also experimented with x-rays, was a radiology consultant to the Queensland Government, and the first Chief Engineer of commercial station 4BC.

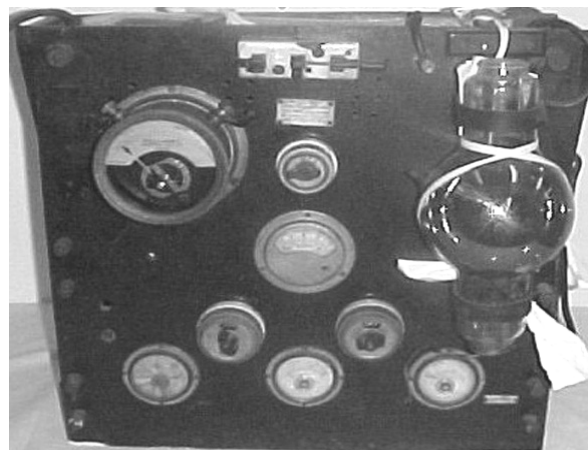
Bruce Gyngell, often promoted as the first face on the first licensed Australian television station, (TCN-9) admitted that this was not correct, and praised the pioneering achievements of licensed amateurs experimenting with 4CM-TV during an A.B.C. radio interview.



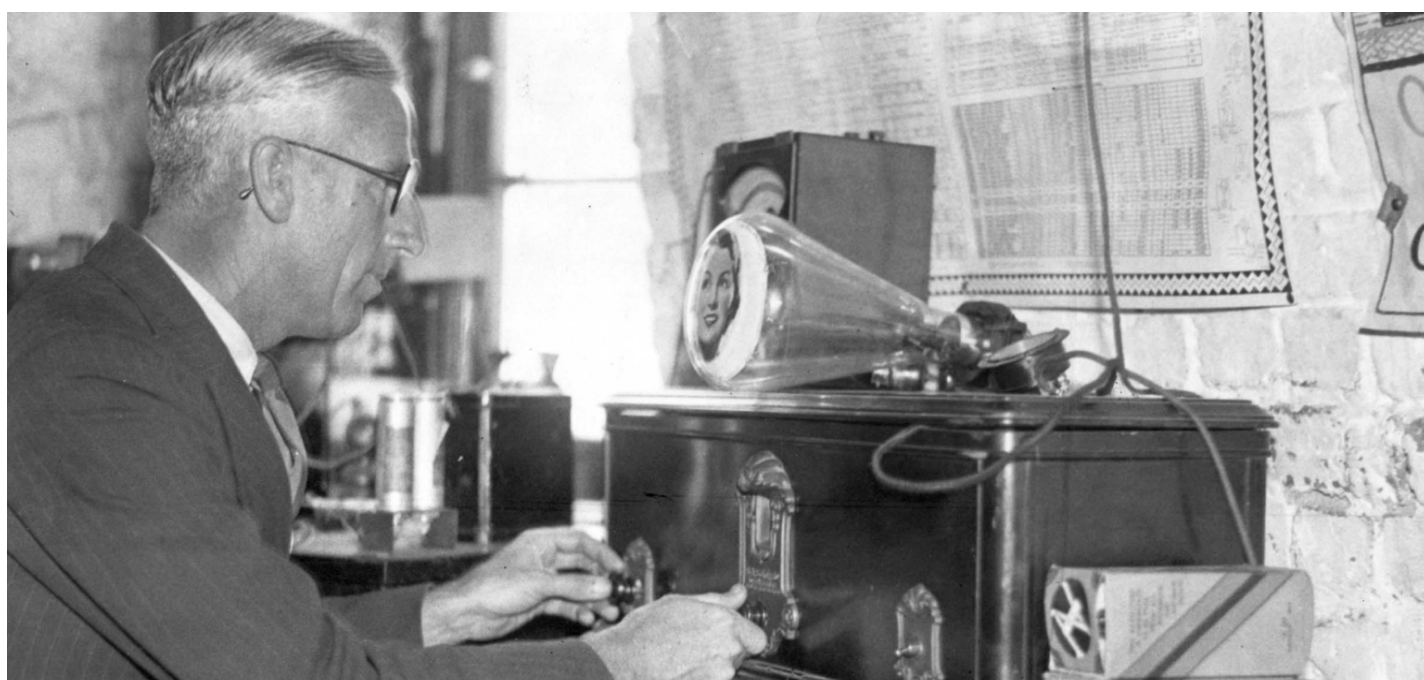
John Logie Baird visited Sydney in 1938 for the World Radio Convention. He hoped to create interest in the establishment of a television station in Sydney at a cost of £250,000. He admitted that a high power television transmitter would weigh around 50 tons. **John demonstrated colour television in Australia for the first time** while in Sydney. He used a scanning disc with three sets of holes covered red blue and green, instead of one set of holes. The basic theory of Baird's initial mechanical television tests, and the basic design of the scanning disc and its magnetic synchroniser, using a Faraday cell, was first published by the German Paul Nipkow, in his German patent 30105 application dated 6th January 1884.



4CM television equipment in storage at the Queensland Museum



The 180 line TV transmitter at radio 4CM.



Thomas Elliott in 1934 monitoring the first transmitted picture of a person on Australian TV (actress Janet Gaynor).

\*\*\*\*\*

## **OTHER EARLY TELEVISION EXPERIMENTS BY RADIO STATIONS**

- 5CL:** Manager A. Brown experimented with 'Telephotography' (sending still pictures by wireless) in 1928.
- 2UE:** Chief Engineer, Cecil Stevenson, first experimented with television (earlier called 'radiovision') in 1929. Cecil finally stopped only due to a lack of suitable receivers.
- 3AR:** Their Chief Engineer, Donald McDonald, for the Television and Radio Laboratories P/L, used the transmitters of 3UZ and 3DB late each night in 1929 for television experiments. One transmitter was used for sound and the other simultaneously for 24 line vision. Donald also experimented with Baird's Televisor system (first theorised by Paul Nipkow using a Faraday cell).
- 5DN:** Their 1929 application for the first television licence in Australia was rejected.
- AWA:** In 1930 they announced that 2FC and 3LO would soon launch television transmissions. They even ordered 5,000 receivers from the U.K.
- 3KZ:** In 1932 they stated that "*Television will never be introduced into Australia*".
- 2BV:** The Waverley Amateur Radio Club in Sydney experimented with transmitting television from North Bondi to Waverley in 1933. This amateur radio club still exists as VK2BV. Development was conducted by A.V. Pickering (VK2KI), using a 30 line system on 2,200 Khz. The screen size was two and a half inches square.
- AWA:** They sent the first black and white wireless picture from Australia to England in 1934, and the first colour picture in 1946.
- 2KY:** General Manager Emil Voigt stated in 1935 that "*Australian commercial and Government radio stations will shortly introduce television transmissions*".
- 6GS:** In 1936 licensed amateur Blake Horrocks experimented with a 30 line system (88 lines by 1939), using plans drawn up by Ballarat experimenter Henry Sutton. He also developed a one inch cathode ray tube.
- 3JU:** Owner Ross Hull died in 1938 by electrocution off his experimental television receiving equipment. He was earlier editor of "*Wireless Weekly*".

# ELECTRIC TELEVISION

Reprinted from the “Daily Standard” (Brisbane) 2-5-1925.

The problem of reproducing visible images at a distance by electrical means is one that has appealed to the inventor as the logical outcome of the transmission of speech and music, which is now so popular a development of wireless telephony. The man in the street has a most confused idea as to what television really is, which, after all, is not surprising. There has been a quite understandable mistake current in the confusion of electric telephotography, being the mere copying of a fixed picture, and television, which is, of course, the art of seeing the living scene in its actuality.

Years ago photography was a great marvel, and the ultimate development of the art has materialised in the production of living pictures. These, as is well known, are a reproduction of past scenes, and bear the same relationship to television as the gramophone does to wireless telephony; i.e. the reproduction of permanent records of bygone events.

What the inventor is attempting to achieve is the simultaneous transmission in intensity, in proportion to the intensity of the light waves. These feeble currents are passed through six stages of low frequency amplification, and if a telephone is placed in circuit, varying notes are audible, ranging from a deep note at the darker end up to a shrill whistle at the lighter end of the scale. If a neon or other suitable lamp is put in circuit in place of the telephone, a pulsating illumination is set up, varying in intensity with the light which is reflected from the various portions of the transmitted image. At this point we naturally receive only a series of light waves which, while representing the light values of the image, convey no meaning to the eye. To build up the disintegrated image we have to fall back on the physical property of the human eye known as "persistence of vision".

Just as in radiotelephony we must have the “electric ear” – the microphone – so in television we require the “electric eye” which is bestowed upon us in the element selenium. This mineral possesses the remarkable quality of changing its electrical resistance in response to the action of light; very much as the microphone varies in resistance in response to sound. Very considerable progress has been made in the Baird system of television, which in its present state is capable of transmitting images and reproducing them in visible form by electric means.

In the Baird system, the image is picked up by a revolving disc, on which is mounted an optical system of 16 lenses arranged in spiral form. These lenses traverse the image and feed it piece by piece through a revolving serrated disc, which sets up “beats” of light on a light sensitive cell. A local battery in this circuit therefore sends feeble currents which naturally vary as does cinematography, which gives the beholder the impression of “living pictures”. A third revolving disc is employed in which slots pass in rapid succession between the eye and the illuminant. This “integrating” disc builds up the image again which, after being passed through the circuit as a series of electrical impulses, appears to the eye in its original form.

So far as the principle has been seen demonstrated by the writer, conductors have been used between the transmitter and the receiver. The system, however, has been reduced to two wire working, and, as it is only necessary to send "notes" representing light values, the transmission of the image by wireless over distances within the bounds of pure telephony appears to be perfectly feasible.

For projection on a screen, the slots in the integrating disc would be replaced by an optical system similar to that employed in the transmitting disc, and a high power illuminant used. This, briefly, is the principle of this interesting contribution to the science of television, which, in the near future, promises to bring the distant scenes into our homes by the agency of wireless.

In conclusion, it should be noted that the system described is capable of transmitting images by reflected light, rather than only silhouettes or shadows. This elementary stage has been passed and, while the results are at present admittedly crude, and produced by apparatus which leaves much to be desired, the system does at least demonstrate the practicability of its claims in reproducing actual images. These crude facts are worth any amount of academic speculations often voiced by the high-brow and the dreamer.



**Some examples of early Australian television station logos.**



## A.W.A. Broadcasting Station 9MI (M/V KANIMBLA)

The M/V Kanimbla, built in Belfast in 1936, was the only ship at the time constructed with a full broadcast radio station. A.W.A. technicians shipped their broadcasting equipment to Belfast for installation while the ship was under construction.

The "Kanimbla" was granted a broadcast licence by the P.M.G. department, with the callsign 9MI. The radio station consisted of two studios; one for group broadcasts, and the other for announcer presentation. The crystal controlled transmitter was rated at 1,000 watts, but technical problems resulted in a usual output of only 50 watts. It was designed to operate on any wavelength between 20 and 50 metres.

The first test broadcast from 9MI was on 21-4-1936 during sea trials in the Firth of Clyde. The delivery voyage from Northern Ireland to Australia began at 0400 on 26-4-1936. 9MI made four test broadcasts each day during their 15,000 mile voyage.

The official launch of 9MI was made in a special broadcast to Australia while the ship was south of the continent in the Great Australian Bight, 1,000 miles from Sydney. At 2000 Sydney time, 9MI went on the air on 11,710 KHz. The program was received by the A.B.C., and relayed throughout their network.

The "Kanimbla" was a 453 passenger ship with a route connecting Fremantle, Adelaide, Melbourne, Sydney, Brisbane, and Mackay with 400 berths. Regular broadcasts commenced on 6,010 KHz. with one hour programs several evenings each week, with their announcer and singer Eileen Foley. They also had a female orchestra with a pianist, violinist, and cellist performing on air, and at nightly on-board dances. The 9MI broadcasts were received and then relayed by A.W.A. stations 3BO Bendigo, 2GN Goulburn, 3HA Hamilton, 2AY Albany, 2GF Grafton, 4WK Warwick, 4TO Townsville, and 4CA Cairns.

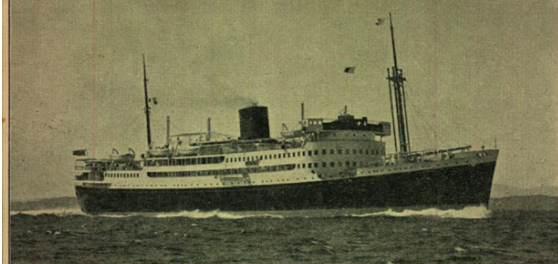
On 4-11-1936, while in Fremantle, the "Kanimbla", assisted by 9MI, held a ball open to the public, raising funds for various charities.

At the outbreak of WWII in 1939 the 9MI transmitter licence was cancelled and the "Kanimbla" became a troop carrier, first known as HMS Kanimbla, then HMAS Kanimbla.

M/V "KANIMBLA" 11,000 TONS.			
MARINE BROADCASTING STATION.			
Call Sign—9MI. Wave Length, 6010 K.C. — 49.917 metres.			
McILWRAITH McEACHARN LTD. MELBOURNE.			
Owners and Operators.			
PROGRAMME OF BROADCASTS.			
(Subject to alterations and additional delays from time to time).			
Date	To Station	Time (E.S.T.)	Position of Vessel Between
Fri. May 6th	3BO, Bendigo	10.00 to 10.30 p.m.	Fremantle and Adelaide.
Sat. May 7th	2GN, Goulburn	10.00 to 10.30 p.m.	Fremantle and Adelaide.
Tues. May 10th	3HA, Hamilton	5.15 to 5.45 p.m. (Children's Session).	Adelaide and Melbourne.
Tues. May 10th	2AY, Albany	10.00 to 10.30 p.m.	Adelaide and Melbourne.
Sun. May 15th	2GF, Grafton	10.00 to 10.30 p.m.	Melbourne and Sydney.
Wed. May 18th	4WK, Warwick	10.00 to 10.30 p.m.	Sydney and Brisbane.
Sun. May 22nd	4TO, Townsville	10.00 to 10.30 p.m.	Brisbane and Mackay.
Fri. June 2nd	4CA, Cairns	10.00 to 10.30 p.m.	Mackay and Brisbane.
Sun. June 5th	2GN, Goulburn	10.00 to 10.30 p.m.	Brisbane and Sydney.
Wed. June 8th	3HA, Hamilton	5.15 to 5.45 p.m. (Children's Session).	Sydney and Melbourne.
Wed. June 8th	2AY, Albany	10.00 to 10.30 p.m.	Sydney and Melbourne.
Sun. June 12th	3BO, Bendigo	10.00 to 10.30 p.m.	Melbourne and Sydney.
Wed. June 15th	2GF, Grafton	10.00 to 10.30 p.m.	Sydney and Brisbane.
Sun. June 19th	4WK, Warwick	10.00 to 10.30 p.m.	Brisbane and Mackay.
Thurs. June 23rd	4TO, Townsville	10.00 to 10.30 p.m.	Mackay and Brisbane.
Sun. July 3rd	4CA, Cairns	10.00 to 10.30 p.m.	Brisbane and Sydney.
Wed. July 6th	3HA, Hamilton	5.15 to 5.45 p.m. (Children's Session).	Sydney and Melbourne.
Wed. July 6th	2GN, Goulburn	10.00 to 10.30 p.m.	Sydney and Melbourne.
Sun. July 10th	2AY, Albany	10.00 to 10.30 p.m.	Melbourne and Sydney.
Wed. July 13th	3BO, Bendigo	10.00 to 10.30 p.m.	Sydney and Brisbane.
Sun. July 17th	2GF, Grafton	10.00 to 10.30 p.m.	Brisbane and Mackay.
Thurs. July 21st	4WK, Warwick	10.00 to 10.30 p.m.	Mackay and Brisbane.
Sun. July 24th	4TO, Townsville	10.00 to 10.30 p.m.	Brisbane and Sydney.
Wed. Aug. 3rd	3HA, Hamilton	5.15 to 5.45 p.m. (Children's Session).	Sydney and Melbourne.
Wed. Aug. 3rd	4CA, Cairns	10.00 to 10.30 p.m.	Sydney and Melbourne.
Sun. Aug. 7th	2GN, Goulburn	10.00 to 10.30 p.m.	Melbourne and Sydney.
Wed. Aug. 10th	2AY, Albany	10.00 to 10.30 p.m.	Sydney and Brisbane.
Sun. Aug. 14th	3BO, Bendigo	10.00 to 10.30 p.m.	Brisbane and Mackay.
Thurs. Aug. 18th	2GF, Grafton	10.00 to 10.30 p.m.	Mackay and Brisbane.
Sun. Aug. 22nd	4WK, Warwick	10.00 to 10.30 p.m.	Brisbane and Sydney.
Thurs. Aug. 26th	4TO, Townsville	10.00 to 10.30 p.m.	Sydney and Melbourne.
Tues. Aug. 30th	3HA, Hamilton	5.15 to 5.45 p.m. (Children's Session).	Melbourne and Sydney.
Thurs. Sep. 1st	4CA, Cairns	10.00 to 10.30 p.m.	Melbourne and Sydney.
Sun. Sep. 4th	2GN, Goulburn	10.00 to 10.30 p.m.	Sydney and Brisbane.
Tues. Sep. 6th	2AY, Albany	10.00 to 10.30 p.m.	Brisbane and Sydney.
Sun. Sep. 11th	3BO, Bendigo	10.00 to 10.30 p.m.	Sydney and Melbourne.
Wed. Sep. 14th	2GF, Grafton	10.00 to 10.30 p.m.	Melbourne and Adelaide.
Fri. Sep. 16th	4WK, Warwick	10.00 to 10.30 p.m.	Adelaide and Fremantle.
Sat. Sep. 17th	4TO, Townsville	10.00 to 10.30 p.m.	Adelaide and Fremantle.
Sun. Sep. 18th	4CA, Cairns	10.00 to 10.30 p.m.	Adelaide and Fremantle.
Mon. Sep. 19th	3HA, Hamilton	10.00 to 10.30 p.m.	Adelaide and Fremantle.
Fri. Sep. 23rd	2AY, Albany	10.00 to 10.30 p.m.	Fremantle and Adelaide.
Sat. Sep. 24th	3BO, Bendigo	10.00 to 10.30 p.m.	Fremantle and Adelaide.
Sun. Sep. 25th	2GF, Grafton	10.00 to 10.30 p.m.	Fremantle and Adelaide.



M/V KANIMBLA in FREMANTLE



**9  
MI**

M.V.  
**KANIMBLA**  
11,000 Tons

McILWRAITH  
McEACHARN  
LTD.  
Melbourne  
Australia

THE FIRST SHIP'S BROADCASTING STATION—

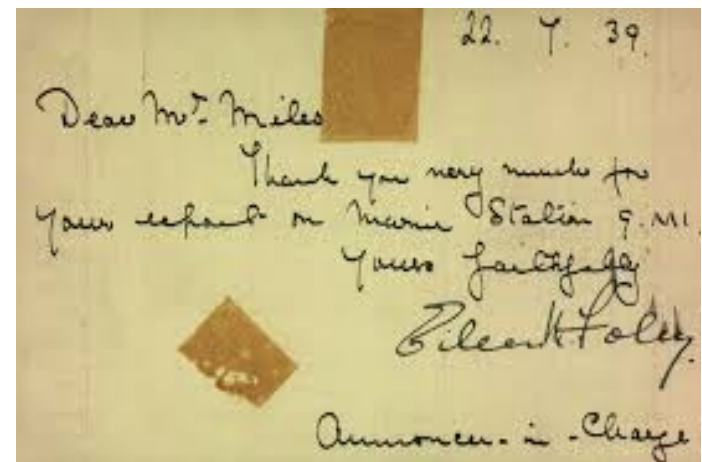
CALL SIGN - V K 9 MI

FREQUENCY - 11710 K.C. (25.619 METRES)  
6010 K.C. (49.917 M.)

POWER - 50 WATTS AERIAL RATING

TRANSMITTER - A.W.A. HIGH FIDELITY

SCHEDULES - VARIOUS



QSL (Reception Confirmation) letter from Eileen Foley.



## RADIO 2GB PROGRAM GUIDE 1926.

### *Programme of 2GB*

The following is a summary of  
the weekly transmissions from the  
Theosophical Broadcasting Station  
2GB, Sydney.

(Wave-length 316 Metres.)

Monday, Wednesday, Friday, 6.45  
p.m.: Children's talk by the  
"Man from Dreamland," or "The  
Dream Fairy."

7.30 to 10 p.m.: Studio vocal  
and instrumental concert and  
special talks.

Saturday, 8 p.m. to 10 p.m.: Re-  
quest night. The station will  
endeavour to broadcast any  
item asked for by listeners.

Sunday, 10.30 a.m. to noon: Morn-  
ing service of St. Alban's  
Church, Redfern.

6.45 p.m. to 8 p.m.: Lecture by  
the Theosophical Society, from  
Adyar Hall, Sydney.

8 p.m. to 10 p.m.: Grand con-  
cert from Adyar Hall, and band  
concert on alternate Sundays.

Wednesday, 3.30 to 5 p.m.: Spe-  
cial talks to women.

## RADIO 2GB PROGRAM GUIDE 1939.

6.00	Mon. to Sat.	Robin Ordell.	7.00	Sundays	I Want a Divorce.
7.00	Mon. to Sat.	Here's Health—Dick Fair.	7.15	Mon. to Th.	Fu Manchu.
7.40	Mon. to Sat.	Morning News Service.	7.30	Mon. to Th.	Love Time.
8.45	Mon. to Fri.	Hymns of All Churches.	7.30	Saturdays	Cabaret of the Air.
9.00	Saturdays	Uncle Frank's Cheer-up Session.	7.30	Sundays	Famous Australians.
9.00	Sundays	Immortal Stories.	7.40	Mon. to Th.	Spot of Humour.
9.30	Mon. to Fri.	Ellis Price, Storyteller.	8.00	Sundays	Lux Radio Theatre.
9.45	Sundays	Little Country Church.	8.10	M. and W.	Three Minute Mysteries.
10.00	Mon. to Fri.	Goodie Reeve Morning Session.	8.15	Tu-Th-Sat.	Frank and Archie.
10.15	Sundays	Your Favourite Hymn.	8.15	M-W-F.	Those Happy Gilmans.
10.15	Mon. to Fri.	Dorothy Jordan—Banish Drudgery.	8.30	Wednesdays	Kraft Dilly Revue.
11.00	Wednesdays	Houses in Our Street.	8.30	Saturdays	Cupid's Conquests.
11.30	Wednesdays	Housewives' Association Session	8.30	Tu-Th-Mon.	The Game of Life.
12.00	Mon. to Fri.	John Dease.	8.30	Fridays	Old Folks at Home.
12.00	Wednesdays	Girls of 2GB.	8.45	Tu. and Th.	Thrills.
p.m.			8.45	Mondays	The Play Goes On.
12.30	Wednesdays	2GB Community Singing.	9.00	Wednesdays	The Broken Idol.
1.30	Mon. to Fri.	Mrs. Stelzer's Happiness Club.	9.00	Thursdays	What Do You Know?
2.30	Saturdays	For the Blind.	9.00	Saturdays	Saturday Night Radio Game.
2.45	Mon. to Fri.	Life's Problems.	9.00	Sundays	World Famous Tenors.
3.00	Saturdays	Air Your Grouch.	9.15	Tu-Wed-Th.	Guests with Comedy Harmonists.
3.30	Tu. and Th.	The Good Health Club.	9.30	Fridays	Mathematical Jackpots.
3.30	Sundays	Tales of the Fur Trail.	9.30	Thursdays	Tongue Twister Jackpots.
3.30	M. and Sat.	The Consulting Room.	9.30	Tuesdays	Spelling Jackpots.
4.00	Mon. to Sun.	Astrology—Features.	9.30	Sundays	The Grand Parade.
4.45	Sundays	Radio Sunday School.	9.30	Saturdays	Milestones of Melody.
5.00	Mon. to Sat.	Children's Hour.	9.45	Thursdays	Lionel Bibby—Gun Smoke.
5.30	Sundays	Advent Radio Church.	9.45	Mondays	The Joy of Living.
6.00	Mon. to Sat.	Charles Cousens' Radio Newspaper.	9.45	Tu. and Fri.	Presenting Jack Lumsdaine.
6.00	Sundays	The Old Concert Master.	10.00	Sun. to Fri.	2GB News Review.
6.30	Th. and Sat.	Oscar Lawson's Sporting Session.	10.30	Mondays	N.R.M.A. Service to Motorists.
6.30	Sundays	Talk.			
6.45	M-W-F.	Charlie Chan.			
7.00	Mon. to Fri.	Radio Rhythm Revue.			



# RADIO 2GB PROGRAM GUIDE 1954.

P.M.	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
5.45	<b>UNDERCOVER CARSON</b>				KEITH WALSH presents <b>TEEN TIME</b>	<b>New Releases</b>	Tony Howards <b>JUST FOR YOU</b>
6.00	<b>"Eyes of Knight"</b>				Richard Gaze presents <b>Millards Microgroove</b>	LEICESTER WARBURTON <b>The RADIO RAMBLER</b>	LEON BECKER <b>HIT PARADE</b>
6.15	<b>SUPERMAN</b>				CLIF CARY'S <b>Racing Preview</b>	Old Camps <b>FINAL SPORTING RESULTS</b>	Watch this tune Christie's Motor Auctions
6.30	Tom Corbett <b>SPACE CADET</b>	<b>STRANGE STORIES OF THE SEA</b>		<b>Sportsman's Choice</b>			
6.45	<b>THE MACQUARIE NEWS SERVICE</b>						WITH AUSTRALIA'S LEADING NEWSREADER JAMES DIBBLE
7.00	<b>HOPALONG CASSIDY</b>	<b>Western Trail</b>	<b>FRANK AND ARCHE</b>	<b>Counterfeit</b>	<b>CLIF CARY'S Horses to WIN</b>	<b>SONS OF THE SEA</b>	<b>OLD TITLES and New Covers</b>
7.15	<b>VINCENTS</b>	<b>Presented by Taubman</b>	<b>MYNOR</b>	<b>HERE'S YOUR SONG</b>	<b>The Accused</b>	<b>JOHNNY O'CONNOR</b>	<b>THE IPANA SHOW</b>
7.30	<b>THE CADBURY SHOW</b>	<b>THE ATLANTIC SHOW</b>	<b>BONNINGTON'S Bunkhouse Show</b>	<b>Harry Dearth SAYS... Leave It to the Girls</b>	<b>You're on Velvet</b>	<b>THE GEORGE WALLACE SHOW</b>	<b>John Dease and THE QUIZ KIDS</b>
8.00	<b>"Give it a Go"</b>	<b>Jack Davey SAYS... ASK ME ANOTHER!</b>	<b>Jack Davey's QUIX SHOW</b>	<b>TERRY DEAR presents... Australia's Amateur Hour</b>	<b>Jack Davey's AMPOL SHOW Number Please</b>	<b>Dragnet</b>	<b>CALTEX THEATRE</b>
8.30	<b>THE GLADYS MONCRIEFF SHOW</b>	<b>THE PRESIDENT PROGRAMME</b>	<b>THE GENERAL MOTORS HOUR</b>	<b>THE WRIGLEY'S STORY JOHN STAFFORD'S FAMILY</b>	<b>"The Shadow"</b>	<b>WORLD'S GREATEST PLAYS</b>	<b>CALTEX</b>
9.00	<b>"Teller of Tales"</b>	<b>CRIME DOES NOT PAY</b>	<b>THE HARDY FAMILY</b>	<b>THE AMAZING Mr. Malone</b>	<b>THE WITCHES TALES</b>	<b>WORLD FAMOUS TENORS</b>	<b>JOHN DEASE</b>
9.30	<b>THE DARK STRANGER</b>				<b>Book Parade</b>	<b>Festival of Melody</b>	<b>Theosophical Society</b>
10.00	<b>Eric Baume says... "This I Believe"</b>					<b>Ma's Friends with Music</b>	<b>Italy Calling</b>
<p>MEET SOME MORE OF YOUR FAVOURITE 2GB PERSONALITIES</p> <p>Stay tuned to 2GB</p> <p>JOHN PEARCE   ERIC PARRANT   GARRY BLACKLEDGE   HARRY HAMBRIDGE   DES HOYSTED   JOHN HUDSON   BETH NICOL   KEITH EADIE   BILL WEIR   TED HARRIS</p> <p>KEEP THIS PROGRAMME CHART FOR FUTURE REFERENCE</p>							



# RADIO 2GB PROGRAM GUIDE 1978.

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
AM 5.00 8.30	<div>2GB BREAKFAST</div> <div> <b>TRAFFIC COPTER</b></div> <div> <b>GORDON ELLIOTT</b></div> <div> <b>2GB MUSIC</b></div> <div> <b>News on the Hour &amp; Half Hour</b></div>					<div>SATURDAY BREAKFAST with <b>ROB MAYNARD</b></div>	<div>SUNDAY BREAKFAST with <b>IAN MARSHMAN</b></div>
8.30	<div>2GB Half Hour NEWS</div> <div> with <b>BARRIE FREEDMAN</b></div> <div><b>8.55 AM</b> <b>SIR JOHN GORTON COMMENTS</b></div> <div></div>					<div>9.30 3-State Turf-Talk</div> <div> <b>Johnny Tapp</b> <b>Vince Curry</b> <b>John Russell</b></div>	<div>2GB SUNDAY MUSIC</div> <div> <b>ROB MAYNARD</b></div>
9.00 11.30	<div> <b>2GB'S JIMMY HANNAN SHOW</b></div> <div><b>JIMMY HANNAN'S GREAT RADIO QUIZ SHOW</b>   <b>CASH PRIZES</b>   <b>EVERY DAY AT 9.15 AM</b></div> <div><b>2GB NEWS 9-10-11</b>   <b>2GB NEWS FROM THE SUBURBS 10.03-11.03 AM</b></div> <div><b>KEN CALLENDAR'S RACE TIPS</b>   <b>DR MACQUARIE ON MEDICAL MATTERS</b>   <b>9.30-10.00AM FRIDAY</b></div> <div><b>RACEDAYS 9.55 AM</b></div>					<div>Ken Callendar's</div> <div> <b>10.00 RACE-LINE</b></div>	<div>The hits of the 1940's to today's 'Top 40'</div> <div> <b>SAM GALEA</b></div>
11.30 2.30 PM	<div> <b>2GB'S BILL DOWSETT SHOW</b></div> <div><b>INCLUDING 12 NOON 2GB HALF HOUR NEWS</b> with <b>BARRIE FREEDMAN</b></div> <div></div>					<div>2GB MID-DAY NEWS</div>	
2.30 3.30	<div> <b>2GB'S DITA COBB SHOW</b></div>					<div>2GB RACING SERVICE</div> <div><b>Damien Raedler</b> <b>Johnny Tapp</b> <b>John Russell</b> <b>Vince Curry</b> <b>Ian Marshman</b></div>	
3.30 6.00	<div><b>2GB DRIVETIME WITH DAVID BUNT</b></div> <div> <b>TRAFFIC QUIZZES AND COMPETITIONS</b></div> <div><b>NEWS</b> 4.00 4.30 5.00 5.30</div>						
6.00	<div><b>2GB HALF HOUR NEWS</b></div> <div> with <b>COL HUMPHRIES</b></div> <div><b>SIR JOHN GORTON COMMENTS REPEATED AT 6.25 PM</b></div>					<div>2GB 6.00PM WEEKEND NEWS</div>	
6.30 9.00	<div> <b>ROB MAYNARD</b></div> <div> <b>SAM GALEA</b></div> <div> <b>2GB NEWS ON THE HOUR</b></div> <div><b>THE JOHN PEARCE SHOW</b></div> <div><div><b>MONDAY</b> 1. The next NSW 3 years. 2. More and more cars. 3. In search of beauty.</div><div><b>TUESDAY</b> 1. The Church and elections. 2. The swimming pool. 3. Elegance.</div><div><b>WEDNESDAY</b> 1. What's wrong with gambling? 2. Young love. 3. On being faithful.</div><div><b>THURSDAY</b> 1. The great communist plot. 2. A retail tax? 3. Child power.</div><div><b>FRIDAY</b> 1. Aboriginal land rights. 2. The secret confessional. 3. Make your own music.</div></div>					<div>2GB MUSIC</div> <div>with <b>SAM GALEA</b></div> <div></div>	<div>7.30 DOUBLE TOP TEN</div> <div>THE TOP 10 RECORDS FROM 2 SEPARATE 2GB TOP 40's OF THE PAST</div> <div>9.45 Theosophical Talk</div> <div>10.00 2GB ON SHOW</div> <div>Re-broadcast of the Week's highlights from 2GB programmes</div> <div>11.30 P.M. 'THE SPOKESMEN' Church leaders present the Christian message</div>
12.00	<div> <b>THE MIDNIGHT 2GB NEWS</b> </div> <div><b>PLUS ARMCHAIR DETECTIVE</b> YOU SOLVE THE CASE - IF YOU CAN!</div>						
12.00 5.00 AM	<div> <b>CHRIS CURTIS</b></div> <div> <b>2GB MUSIC</b></div> <div> <b>CHEERIO CALLS</b></div> <div> <b>IAN MARSHMAN</b></div> <div> <b>2GB NEWS ON THE HOUR</b></div>						



# TALKBACK TRASH and TREASURE ANECDOTES

Compiled by Stephanie Marsden and Bruce Carty

**Alan Jones – 2UE:** I wish that I could claim that I have never been conned. But I can't. 2UE program director John Brennan deserves the credit for this very clever scam. He informed me that Nana Mouskouri was on the line re an earlier discussion I had with her, to do some charity appearances. The "imposter" at the other end of the line was a professional English actress and she did a phenomenal job. I said *"lovely to hear your voice again, let's play some of your beautiful music"*. I had been caught hook, line, and sinker. Despite being cautious, if your staff are devious enough, you can be conned. I claim it will never happen again, but my staff might not agree.

**Howard Sattler – 6PR:** My co-host Despene, also known as Anne Tenna, was our breakfast television critic and a former sub-editor of the West Australian newspaper. Our subject on this day was "The First Time". Callers were asked to describe how they lost their virginity. The first caller was Tony, who revealed the details, in all their glory, of how he deflowered our blushing Despene. OOPS!

**Tony Pilkington – 3YB:** My program director, David Swanson, advised me that the funeral announcements I was about to read were to be treated with the utmost respect. The local undertaker paid one guinea each, so in no circumstances was the announcer allowed to deviate from the script or ad-lib. After the funeral announcements, I had time to fill before the next program so I grabbed a record without checking, and played *"So long, it's been good to know you"*. I started at 2QN one week later.

**Greg Carey – 4BC:** By phone I was talking on air to Rugby League Coach Tommy Raudonikis. A few minutes after the interview he rang back with a problem. During our talk on air he had taken his false teeth out and put them on top of a car. The car then drove off. What followed will go down in airwave annals as *"The Tracking of Tommys' Teeth"*. Thanks to countless alert listeners, thirty minutes later a car proudly bearing a set of dentures on its roof was spotted. Coach and choppers were reunited.

**Bob Francis – 5AA:** As regular listeners know, I don't have time for wankers and scumbags on my talkback program. However, I do enjoy fulfilling the more reasonable requests. Having pioneered talkback in South Australia in 1967, you'd think by now I could spot a screw-up coming. Not so. A caller had set up a Christmas light display outside his house. To complete the show he needed a friendly Santa Claus to add some HO HO HO to the magic. Two months later I recognised the callers' voice again and asked him if I had found a suitable Santa for his display. He said *"Oh yes, he was an excellent Father Christmas. Very jolly, and he ran off with my wife"*.

**Neil Mitchell – 3AW:** It was the first week of the AFL football finals. I was outraged. Outraged because there would be no football game in Melbourne this Saturday. My radio editorial thundered *"This is the home of football. Don't these people understand you can't insult Melbourne like this? The interstate teams are taking over. There are games in Perth, Adelaide, and Sydney, but the Melbourne supporter stands insulted"*, and so it went on. I was merciless. I ended with a savage sting and crossed live to football commentator Rex Hunt who seemed oddly hesitant. He said *"Er, well Neil, it looks like I might be a bit lonely because I thought I was going to the MCG on Saturday to see the game"*. I had misread the game fixtures. The major game that weekend was in Melbourne. I was completely and unbelievably wrong and found myself grovelling. Rex tried to help. *"I think what you probably mean is it's a pity there're not more games in Melbourne"*. I said on air *"No Rex, I stuffed up"*.

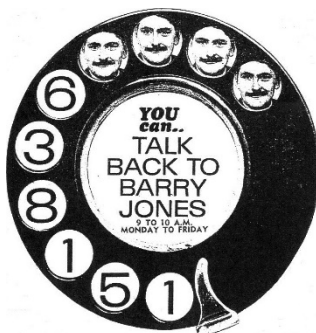
**Jeremy Cordeaux – 5DN:** The morning weather report on the Cordeaux show was always presented by a Bureau of Meteorology spokesman. My producer phoned the duty forecaster, and put her name, Louise, up on the studio monitor. On air I said *"Louise, it's so nice to have a lady on the line for a change. What's in store for us weather wise?"* For a meteorology official her personality was unusually bubbly and even flirty when we explored what else she could see from her window besides cold fronts. What her answers lacked in facts and figures, they certainly made up for in entertainment. The next day I was instructed that Bruce was on the line with the weather. I said *"Bruce, that's two new forecasters in a row; is the Bureau expanding?"* Bruce said *"Oh no, yesterday you spoke to my wife"*. Then like Louise, he provided us all with a delightfully casual if unscientific view of the weather. I then learnt the truth. My producer had dialled the wrong number. By amazing good fortune, the couple she reached were incredibly helpful people who were determined not to let down some strange man on the radio.

**Terry Laidler – 3LO:** I interviewed the 'Chief Frog Keeper' about a colony of frogs being repatriated to Hong Kong. We then offered a family pass to the zoo for the caller with the best or funniest frog call. People phoned in with the usual 'rivets' and 'knee deeps' plus a few amusing originals. I said *"Our last caller is Anna. Hello Anna, how old are you?"* She replied *"I'm eight"*. *"And what does your frog say?"* Anna said *"Pobble-bonk, pobble bonk"*. I said *"Very good Anna, but we wanted to know what your frog said, not what it did. We will announce the winner after the news"*. During the news the switchboard went berserk. How was I to know that the most endangered frog in Victoria was the Pobble-bonk, so called because of its' distinctive call? Another zoo family pass was then arranged.

**John Vincent – 2RE:** As a young green announcer in the 1960s, I was unaware of the malevolence lurking in the panel of knobs and switches before me on ANZAC day. All I had to do was put the large black record with the next pre-recorded program onto the turntable, cue up the needle, make the announcement, and get on with my other chores. It was a special feature to mark the day; a moving mix of war memories and music. My mistake was assuming it would be okay to take a toilet break. Speakers were located in all the corridors but not in the toilet, so I failed to hear when the needle got stuck. And what word was repeating over and over again? 'BLOODY'.

**Dita Cobb – 2GB:** Dita was taken off the air after a talkback discussion about cinema sex scenes. She said *"The idea of watching mens' white bottoms bobbing up and down would be ludicrous"*. (The Australian Broadcasting Control Board wasn't amused).

**Lew White – 3DB:** I was on night duty when the phone rang and the voice said *"Robert Menzies here"*. Suspecting a hoax I replied *"The Arch Bishop of Canterbury here"*. However, it was Menzies, and I had to do some fast talking to save my neck.



## **50 GOLDEN YEARS of BROADCASTING:**

### **The Amateur Contribution - By G. Maxwell Hull (VK3ZS)**



*This 1972 W.I.A. article celebrates the 50<sup>th</sup> year since formulating the first regulations governing broadcasting back in 1922, following the insistence of the broadcasting companies, the retail and wholesale traders, and the W.I.A. Without such regulatory control, chaos was reigning with both commercial and amateur experimenters transmitting at any old time and anywhere on the available wavelengths. Without regulatory control, the envisaged advantages to peoples all over the world would have been useless. Amateur experimenters were the only people who understood the 'secrets' of wireless, and they were composed of professional engineers, chemists, accountants, manufacturers, salesmen, draughtsmen – in fact, from every walk of life came those who participated in this new found science. The electrical and mechanical engineers perhaps had the advantage of greater insight over some of those from other professions; nevertheless, hundreds of people entered the fascinating field of wireless. The W.I.A. is proud of its association with all people who played such an historic part in what can only be described as one of the greatest achievements of mankind. It is certain the broadcast industry has benefited from the dedication of those amateur transmitting licensees it employs.*

Great advances had been made in 'wireless' technology during WWI to the advantage of the Navy, Army, and the Australian Flying Corps. The wireless experimenters who went to war, and those who stayed at home, were anxious to recommence where they left off in 1914, but the possibility looked forlorn. The authority to control radio was given to the Australian Navy Radio Commander. His first work was that of organising the Commonwealth Radio Service on naval lines and under naval discipline. In 1920 only 21 land stations existed and they were under the control of the Government; there were no private land stations or experimental stations. There were a number of ship stations on Government vessels as well as on vessels privately owned. In the same year, the Radio Commander issued temporary permits to use Wireless Telegraphy apparatus for the purpose of receiving wireless telegraphy signals. The permits were issued pending legislation on the issue of licences to amateurs to conduct experiments in transmitting.

This was a bitter pill to the many anxious experimenters who, before the outbreak of war in 1914, had licences granted to them by the P.M.G. to conduct experimental transmissions. With typical aptitude, they experimented with receiving equipment, organising themselves into clubs (including W.I.A. Divisions) and using every avenue to gain permits for transmitting. Although by 1922 several licences to transmit had been issued, it was not until July of that year that amateur experimenters were granted general licences. With a joint move by the W.I.A. and commercial interests, the Prime Minister, Billy Hughes, was persuaded to act in the interests of promoting the tremendous advantages seen in the newly developed science of wireless, experimental facilities for which had been available to overseas experimenters for some time. The "Wireless Weekly" number 1, (4-8-1922), carried the good news stating the Prime Minister had said that facilities granted in other parts of the world would be given to amateurs here under proper control. No restrictions except those to prevent interference would be imposed. One can imagine bells being rung on that occasion.

The first broadcast transmitting licence was granted on 1-12-1922 to Charles MacLurcan of Strathfield; a renowned engineer (as were many of the early experimenters). This followed the Australian government issuing "The Regulations – Radio Laws for the Amateur" which stated "*a broadcasting station licence may be granted in respect of a station operated for the purpose of disseminating news service or entertainment. The licensed station shall be operated by a certified operator and shall not be used for broadcasting advertising matter*". Previously, Charles MacLurcan was one of the first to transmit music and live programs in Sydney from 1921 on a wavelength of 1400 metres. With the announcement of a general licence by the Prime Minister Hughes, there followed tremendous activity. Experimenters everywhere took out licences, including commercial interests, and, as far as the general public were concerned, broadcasting was born. The experienced engineering amateur soon demonstrated his ability in the newly developing field of wireless. His transmissions were logged and reported by the listening enthusiasts. His experiments included the playing of gramophone records, and, on occasions, live artists. He tried various kinds of aerial systems and read avidly of his transmission reports to assess the coverage. He also developed useful forms of microphone designs to improve the quality of his transmissions.

By 1923 there were severe interference problems between transmissions on similar and adjacent wavelengths, and complaints of amateur transmissions interfering with commercial operations. By pressure from public organisations, and those representing the trade, and professional and amateur licensees, statutory regulations governing broadcasting were drawn up by the Postmaster-General's department, having taken over again from the Naval department, and these became law on the 1<sup>st</sup> August 1923. The "*definite rules of the road for using the common highway, and some authority to see that the rules were observed*", had come into being; (the wise words of Ernest Fisk in 1919).

The public and commercial enterprises looked to the amateur experimenters for advice and guidance because they were the only people who understood wireless. Almost every publication dealing with the subject was written or edited by amateur experimenters (excluding engineering text books) and many of these in magazine form were, at times, the official organ of the W.I.A., which was the largest of the many representative associations. The amateur experimenter had trodden a hard road to reach the position of public acceptance achieved by 1924, and were most definitely a vital part in the early progress of the broadcast industry. Through the years from 1924 to 1929 he was in everything to do with wireless. Every newspaper and periodical wrote about the amateur experimenters and their achievements. He was employed by commercial stations (and later by the Government owned A.B.C.) and experimented with his own wireless station at home in his spare time. He went into manufacture; producing many component parts, speakers, and wireless receivers of improved standards. He even designed, built, and installed many of the first broadcasting stations.

The W.I.A. organised the first Wireless and Electrical Exhibition at the Melbourne Town Hall in 1924. They also organised a huge exhibition in the Sydney Town Hall in 1925. These exhibitions received the support of most of the commercial manufacturers of wireless reception. Thousands were fascinated by the numerous demonstrations of live broadcast receptions from both commercial and amateur stations situated remote from the exhibition sites; the ability of some receivers to 'give good loudspeaker strength' of signals from other States instead of having to use headphones; and the 'high fidelity' of one transmission compared with another.

These were the golden days of broadcasting. The country was crazy with "wirelessmania". It had captured the minds of the populace to the point where unskilled people of all ages would have a go at building a crystal receiver to attempt to listen-in to broadcasts. It



rapidly reached the stage in 1925 where there were thousands of listeners-in who had paid high prices for their receivers, and the reception of programs was now a part of living. The listeners became critical of transmission quality when sometimes it was the fault of a poor receiver. They criticised the lack of live artists and the 'canned music' they had to suffer. By 1926 a Listeners League was formed, claiming that if you owned a receiver, you owned part of the ether and were a shareholder in one of the greatest enterprises of the times. The League's objectives were for better programs by greater co-operation between listeners and broadcasters.

These were perhaps the problem years. References were made to the poor quality of receivers. Many listeners wrongly blamed the broadcasters for the quality of their reception. Aerials had been erected by amateurs (this time the literal meaning) and insurance companies in Victoria set a standard for the safe erection and installation of this part of listeners receiving apparatus. The broadcast stations also had financial problems. In 1925 the listener licence fee was 35/- (\$3.50) and the broadcast station relied on part of this for its finance. Many people purchased receivers but didn't pay the licence fee; hence the stations were not receiving the finance required to improve their programs as demanded by the public. However, the general standard was slowly improving. Engineers were devising new ideas, and new useful products were appearing on the market. New techniques had been developed overseas, and system engineers were able to travel overseas, and return with new ideas for their station. By 1932 many changes had taken place. Modern transmitters using the latest techniques were being built. Amateur experimenters had kept up with modern trends, and were sometimes ahead of the commercial broadcasters, often being praised in the press for the superior quality of their transmissions.

There were many notable contributions by amateurs to broadcasting, including the Holst brothers. Their station, 3BY, transmitted a very high quality signal. They designed and rebuilt 3DB in 1929, which for many years was reported as the station with the highest modulation quality anywhere in Australia. They were exceptionally fine engineers, being the manufacturers of transmitting and audio equipment which was highly respected by the industry. The Listeners League suggested that amateur experimenters should make representations to the Government for encouragement with their experiments, because in the League's opinion, the broadcasting stations had improved because of the work of distinguished amateurs. The meeting was reminded that the quality of transmission from the high class amateur stations was of a considerably better performance than from many of the "A" class stations.

However, amateur stations were in peril of being closed because the Government was due to take over these bands. The W.I.A. had established itself as the governing body of Australian amateurs, having encouraged most clubs to affiliate with it in order to speak with one voice. Therefore, the W.I.A. was successful in getting the Government to agree to amateurs continuing to broadcast on Sunday mornings before "A" and "B" class stations came on the air, and after about 10 PM when the "A" and "B" class stations had closed. Thousands of people will remember the very excellent programs transmitted by some of these amateur broadcasters.

In 1939, with the outbreak of WWII, all amateur stations were ordered closed for reasons of military security. Following the resumption of amateur transmitting stations in 1947, applications for broadcast band permits were refused. The reason was the Government was faced with applications for commercial licences from hundreds of private companies. With the knowledge and expertise which amateur experimenters gave the broadcasting industry, it survived the many problems of its infancy, and went on to develop from 13 licensed stations in 1925 (not including broadcasting amateurs) to some networks in excess of 181 stations in 1972.

1930 saw the depression years when the industry went through difficult financial times. Engineers worked long hours with less pay. However, there had been interesting technical advances. The electric pickup had been developed in the late 1920s, and this dramatically changed music broadcasts, compared with the old method of placing a microphone in front of a gramophone horn. A.W.A. had commenced making quality transmitting valves which were essential when WWII started, as replacement parts were difficult to obtain due to defence requirements. These days, transcription discs rotated at 33 r.p.m. and standard discs at 78 r.p.m. Record needles were scarce so stations had to re-sharpen them or use cactus needles. Then came wire recorders, which revolutionised broadcasting as dramatically as the electric pickup had done. Then tape recorders and stereo records, with higher quality sound.

Many of the early engineers, including amateur broadcasters, have passed on or retired, but can vividly recall their experiences in broadcasting development. A few broadcasting amateurs are still the Chief Engineers of the modern station where only memories remain of the early broadcasting days. The broadcasting industry is certain to enjoy another 50 Golden Years, but will it be the same as the first 50? Transmitters are now using very reliable components, with equipment remotely controlled. The studio equipment is now mostly solid state. The industry today has to bear the fierce competition of television and other entertainment media. That it will survive and continue to flourish, there seems no doubt. Whilst the Government continues to encourage amateur radio, there is also no doubt that the technological ability of many licensed amateur transmitters will continue to be of benefit to the broadcasting industry.

The W.I.A. wishes the broadcasting industry the continued success it has earned, for it has indeed been a magnificent '50 Golden Years of Broadcasting'.

\*\*\*\*\*

PLEASE DO NOT PIN OR STAPLE (Please use Block Letters)		DO NOT COMPLETE IF NAME AND ADDRESS SHOWN BELOW IS CORRECT	
Surname Initials		Commonwealth of Australia	
Mr. _____ Mrs. _____ Miss. _____ St. _____ Town & _____ Postcode _____		Subject to the provisions of the Broadcasting and Television Act and the regulations for the time being in force thereunder	
<b>A BROADCAST LISTENER'S LICENCE</b>		<b>A BROADCAST LISTENER'S LICENCE</b>	
is hereby granted to:		is hereby granted to:	
LICENCE NUMBER 2 1 0 0 1 2 4 2 6 1 6 6		LICENCE NUMBER 2 4 2 6 1 6 6	
RENEWAL DATE H O L L O W 2 3 1 2 7 2		EXPIRY DATE 2 3 1 2 7 3	
FEE K \$ 8 . 0 0		FEE 2 1 0 0 \$ 8 . 0 0	
DO NOT STAMP HERE		DO NOT STAMP HERE	
DATE STAMP		DATE STAMP	
Issuing Officer _____		Signature of Issuing Officer _____	
		Time Issued _____	
		A.M. _____ P.M. _____	
		Not valid unless the office date stamp imprint and signature of Issuing Officer or cash register imprint appear hereon.	
		IBM-4395F	