THE DAWN OF AUSTRALIA'S

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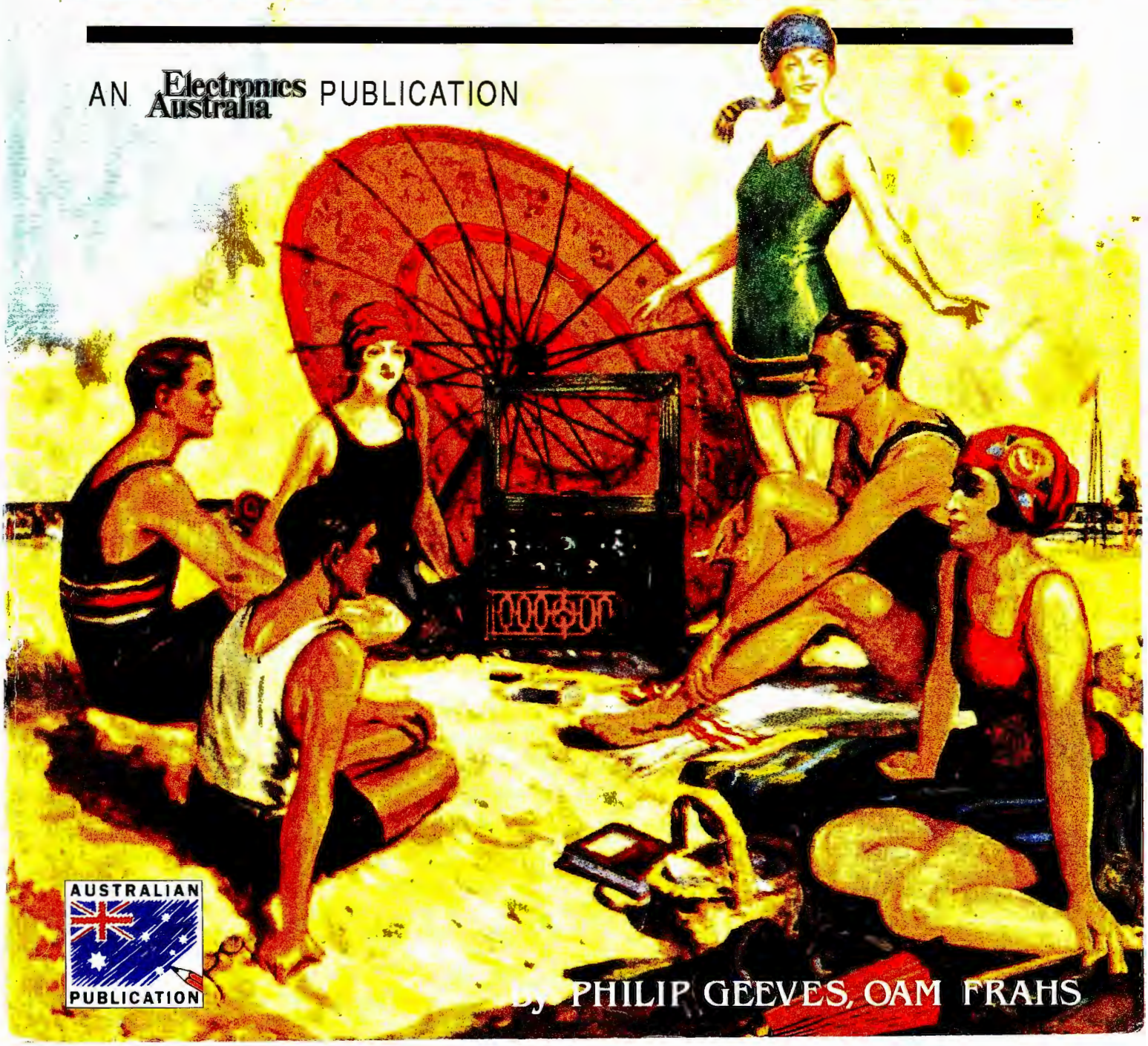
RADIO BROADCASTING

AN Electronics Australia PUBLICATION



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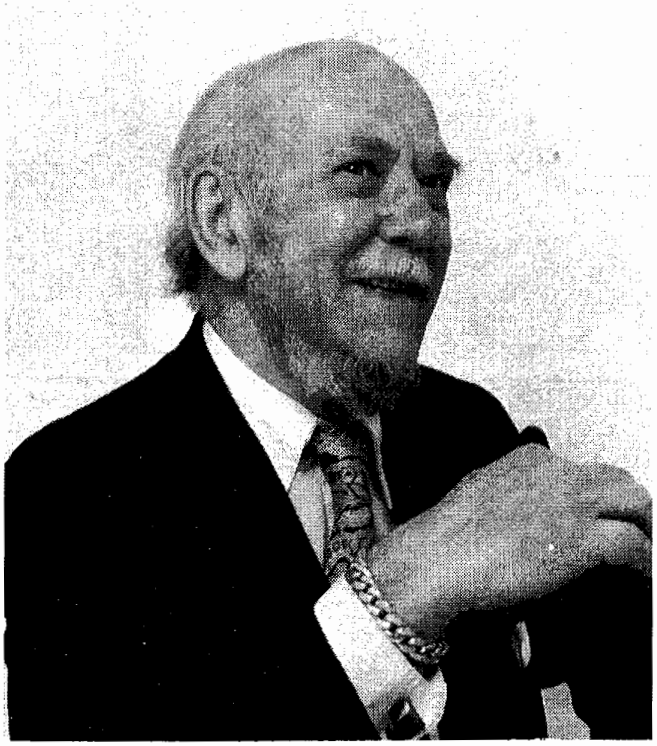
THE DAWN OF AUSTRALIA'S RADIO BROADCASTING

by PHILIP GEEVES, OAM FRAHS

An Electronics Australia Publication

FOREWORD



Philip Geeves, OAM, FRAHS.

It's unusual for a book to be published 10 years after the death of its author, so a few words of explanation are perhaps in order.

During a recent visit to Mrs Leona Geeves, in search of historic pictures, I learned that not long before his death her husband Philip Geeves had finished the manuscript for 'part one' of a projected history of radio broadcasting in Australia. Perhaps because the remaining part or parts would never be written (at least by the original author), the manuscript had remained unpublished.

Curious, I borrowed the manuscript and read it over the next few days. It immediately struck me that the work *deserved* to be published, despite its incomplete nature, so that the result of Mr Geeves' efforts would become available to anyone interested in this rich area of Australia's cultural heritage. Quite apart from this it is of course another highly readable example of his writing, and one that I'm sure will be treasured by many of those who read his earlier works and heard him on the radio.

Philip Geeves was undoubtedly in an ideal position to write a history of Australian radio broadcasting. Not only had he worked in the industry, as both an announcer in his youth and later as a Studio Manager/Programming Director for station 2CH in Sydney, but he was also one of Australia's best-known popular historians — and probably the man who uncovered more knowledge of our radio and electronics history than anyone else has done.

For some years he was in fact the official historian and archivist of AWA Ltd, the company which played such a key role in the development of Australian broadcasting.

In addition to writing and researching Australia's radio history, Mr Geeves was very active in other areas. He wrote a number of books on the history of various areas in Sydney, a book on the life of pioneer photographer Harold Cazneaux, and a weekly history column which ran for years in the *Sydney Morning Herald*. He also wrote some 137 historical feature programmes for ABC Radio and was the ABC's 'Resident Historian' for some years, being heard regularly on the programmes of Caroline Jones and Margaret Throsby.

Philip Geeves was awarded the Order of Australia Medal for his services to Australian history, and was a Fellow of the Royal Australian Historical Society. He died in 1983. The portrait reproduced here was taken by Gervaise Purcell.

In publishing this last of his writing projects, we gratefully acknowledge the permission and help of Mrs Leona Geeves. Thanks also are due to Margaret White, AWA's current historian, who allowed us to borrow some of the historic photographs we have used to illustrate the text.

Hopefully by publishing this book on the early history of Australia's broadcasting industry we will encourage one of its readers to complete the task that Philip Geeves began. If so, his original goal will have been achieved and an important facet of Australia's heritage recorded for future generations.

Jim Rowe

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AN ELECTRONICS AUSTRALIA PUBLICATION.

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Chapter 1

DAUNTLESS PIONEERS

In Australia, as in other countries, radio broadcasting was largely the outcome of experiments by dedicated men who had received their initial training in the young science of wireless telegraphy. It was their enthusiastic devotion which helped persuade the Federal Government to license Australia's first public broadcasting stations.

In beginning our story, it's worth noting that the term 'broadcasting' seems to have been adopted by overseas technicians to describe a mode of wave propagation which differed in essence from Marconi's World War I experiments in 'narrow casting' by means of radio beams and parabolic reflectors — the imaginative idea which reached its culmination in Beam Wireless.

During the first decade of this century, when the mysteries of wireless communication were being explored vigorously in Europe and America, a few Australians were already involved with wireless experimentation. Some were Post Office telegraphists or electricians, but others were attracted to the new medium by its novelty.

Because manufactured equipment was practically unobtainable in Australia, the experimenters built their own and applied themselves to their craft with almost religious fervour.

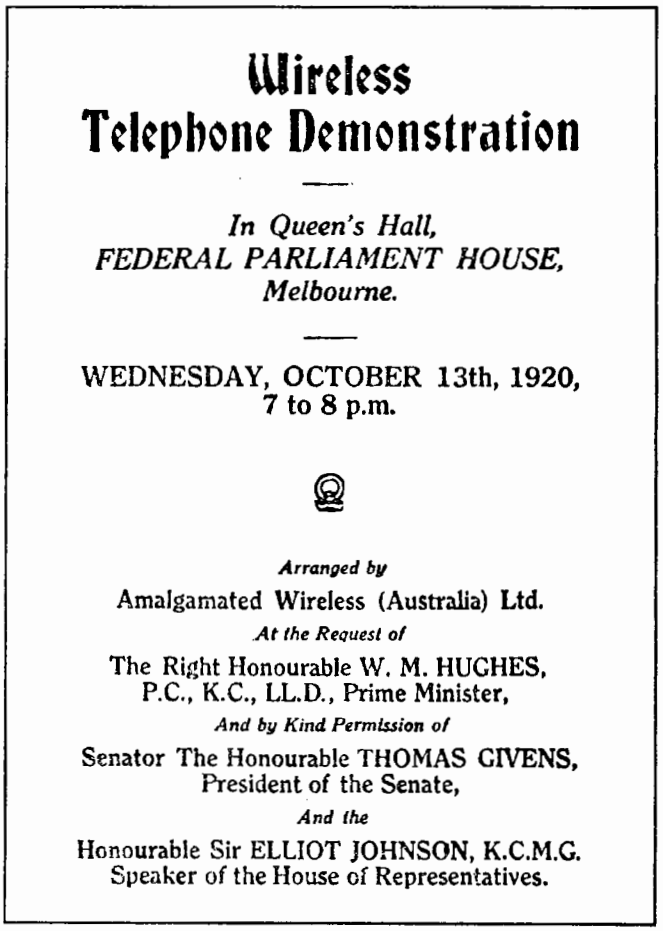
Prominent among these pioneers were Walter Jenvey of Melbourne; Walter Ernest Coxon, who formed the first radio club in Western Australia; John Graeme Balsillie of Queensland; and Charles P. Bartholomew, J.H.A. Pike, W.H. Hannam, Malcolm Perry, George A. Taylor, Frank and Harry Leverrier, R.C. Marsden, F. Basil Cooke and Charles D. Maclurcan, all of Sydney.

Officially these experimenters were tolerated, although scarcely encouraged, by the Wireless Telegraphy Act of 1905. However, the early wireless enthusiasts had their own brand of masonic solidarity for they conversed in strange, cryptic terms unintelligible to laymen and could interpret obscure diagrams full of cabalistic symbols.

Observing the achievements of Guglielmo Marconi in spanning progressively greater distances by wireless, far-sighted men recognised that this new means of communication offered promising possibilities for breaking down Australia's geographical isolation.

There were important defence considerations, too. In 1901 Australia had ceased to be a collection of British colonies and made her debut into the 20th century as an independent nation responsible for her own defence. The militaristic policies of Imperial Germany had their echoes in her Pacific colonies and German New Guinea was uncomfortably close to young, defenceless Australia.

About that time the Commonwealth Government placed orders with British shipyards for the first units of the future Australian navy, and called for tenders for



Wireless
Telephone Demonstration

In Queen's Hall,
FEDERAL PARLIAMENT HOUSE,
Melbourne.

WEDNESDAY, OCTOBER 13th, 1920,
7 to 8 p.m.

Arranged by
Amalgamated Wireless (Australia) Ltd.
At the Request of
The Right Honourable W. M. HUGHES,
P.C., K.C., LL.D., Prime Minister,
And by Kind Permission of
Senator The Honourable THOMAS GIVENS,
President of the Senate,
And the
Honourable Sir ELLIOT JOHNSON, K.C.M.G.
Speaker of the House of Representatives.

At the request of then Prime Minister W.M. ('Billy') Hughes, AWA's Ernest Fisk demonstrated the wonders of radiotelephony in 1920, to both Houses of Federal Parliament in Melbourne.

Originally a ship's wireless operator for the Marconi company, Ernest Fisk was one of the founders of AWA and for many years its Managing Director. Later knighted for his services to the industry, he played a central role in all aspects of wireless development in Australia.

two powerful wireless telegraph stations — one at Pennant Hills, near Sydney, to contact ships in the Pacific, and the other at Applecross, near Perth, to keep watch over the western approaches to the continent.

Maritime communication was then the prime role of wireless, and two technical systems soon emerged as being the most efficient — Marconi (British) and Telefunken (German). Ships fitted with these systems were plying to Australia in 1911 and both companies maintained installation and servicing facilities in Sydney.

Wireless assumed global significance in 1912, as a result of its heroic role in notifying the loss of *s.s. Titanic* during her maiden trans-Atlantic voyage, and the attendant publicity attracted many young men to seek careers in the new science. On the local scene, the Marconi and Telefunken interests amalgamated to provide Australia with a reservoir of technical expertise and on 11th July 1913 the merger company, Amalgamated Wireless (Australasia) Ltd, was incorporated in New South Wales.

Ernest Thomas Fisk was the company's technical manager and within a few years was appointed managing director. Born at Sunbury-on-Thames in 1886, Fisk joined the Marconi Company in 1905 and gained extensive experience in all branches of wireless.

After a visit to Australia in 1910 as ship's operator aboard *s.s. Otranto*, he returned the following year as Australian representative of Marconi's Wireless Telegraph Company. He was destined to wield an immense influence on all aspects of wireless development in Australia.

Shortly after AWA's inauguration, the firm established the Marconi School of Wireless at its new office in Wireless House at 97 Clarence Street, Sydney, and commenced training marine operators. A continuing succession of Marconi School's trainees have been concerned with every facet of broadcasting in Australia and elsewhere for upwards of half a century.

Meanwhile, following the completion of the stations at Pennant Hills and Applecross, Australia set about the task of studding her long coastline at strategic points with smaller wireless telegraph installations. This work was still in progress when the Great War burst upon the world in August 1914.

Under wartime regulations, experimental wireless transmissions were forbidden and all amateur apparatus was impounded. Many experimenters were quickly absorbed into the armed forces and merchant navy, where they had ample opportunity to develop their operating proficiency. From October 1915 control of wireless in the Commonwealth passed progressively to the Navy.

At that time facilities for transmitting the human voice by wireless, or *radiotelephony* as it became known, did not exist in Australia. Even overseas it was a highly experimental technique, depending as it did on the three-element (triode) thermionic valve or 'vacuum tube' which was still in the course of development. But the outbreak of war made such unprecedented demands on scientists that the use of radiotelephony for war purposes progressed dramatically between 1914 and 1918.

When the war ended it was already evident that radiotelephony, vacuum tubes and short waves would play vital roles in the future of radio. During their overseas war service many Australian wireless operators gained experience with valves and, on returning home, often brought one or two of the fragile glass tubes for their personal use.

Australia did not have to wait long to see the fruits of wartime research into electronics. There was widespread excitement when, on 22 September 1918, almost two months before the Armistice, the first direct wireless telegraphic messages from England to Australia were received at the Wahroonga (NSW) home of Ernest Fisk. This communications milestone foreshadowed the practicability of a future direct wire-

Before about 1920, 'wireless' tended to mean telegraphy ('Morse'), mainly for shipping. Here is the radio cabin of 's.s. Burwah', fitted with an AWA 500-watt quenched spark transmitter and panel receiver.

less service between Great Britain and Australia — a concept that eventually led to the establishment of Beam Wireless in 1927.

Early in 1919 AWA decided to test the local potentialities of radiotelephony, but first it was necessary to build a transmitter. This task was assigned to William Dowling Bostock, a decorated war veteran who had recently returned from service with the AIF, RFC and RAF, and was now second-in-charge of AWA's Technical Department.

Bostock rejoined the Air Force in 1921 and eventually became Air Officer Commanding RAAF. Retiring from the service with the rank of Air Vice-Marshal, he was elected to the Commonwealth Parliament as MHR for Indi, Victoria.

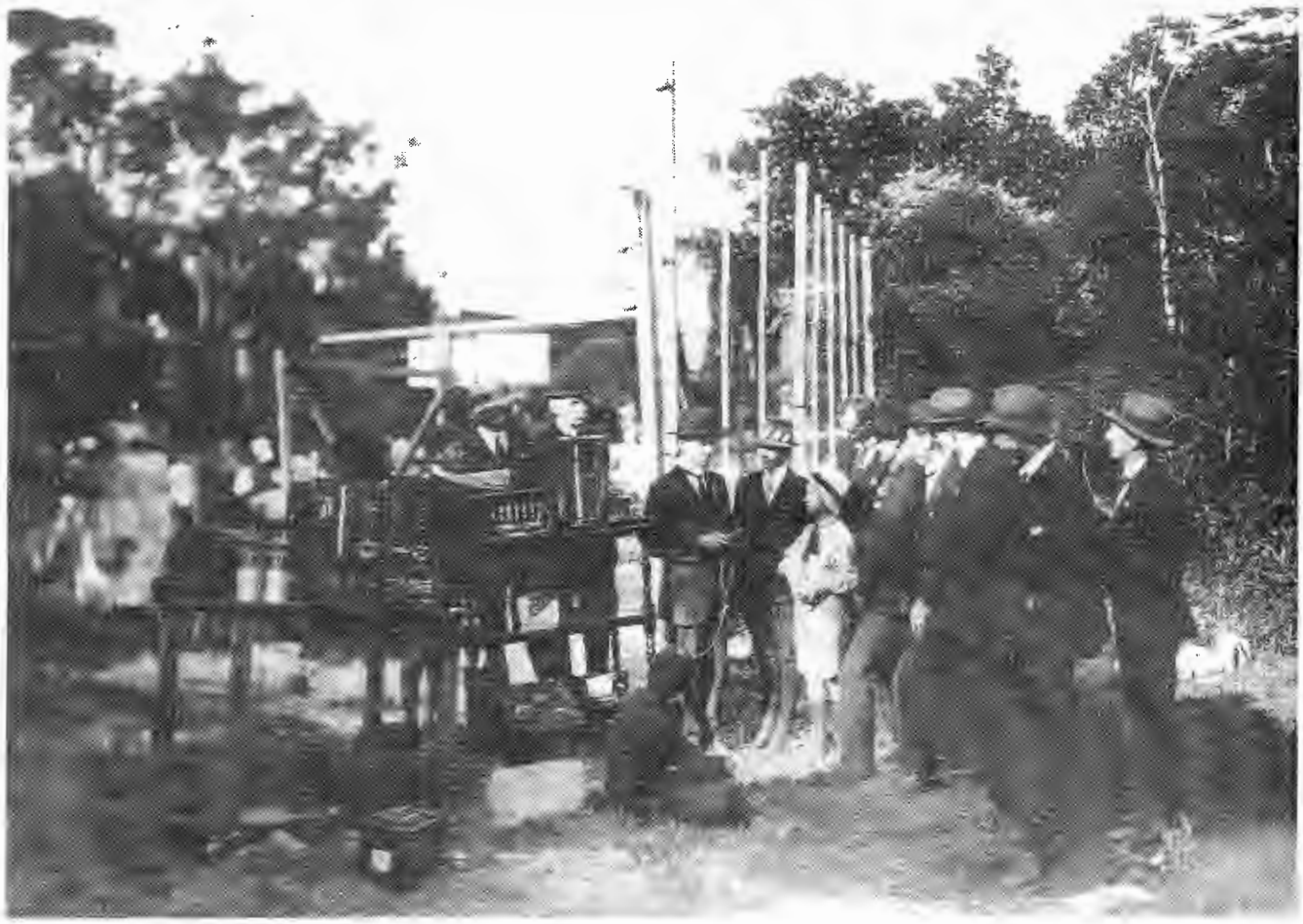
Bostock's little radiotelephone transmitter used a single Marconi 'Q' valve and Eric Burbury, one of the men concerned with this project, recalls "...in this valve the anode was some distance from the cathode, so it would stand up to considerable overload; and although the normal anode voltage was about 40 volts, we put some 240 volts on to it and hooked it up into an oscillatory circuit. The anode glowed a bright cherry red, but it radiated quite a bit of power".

This hastily assembled transmitter was installed in the coaster *Riverina* and tested for three weeks during April 1919. Later that year it was given further tests aboard *s.s. Bombola*. Everyone connected with the experiments was delighted, and not a little amazed, at receiving clear telephony in Sydney when the *Bombala* was as far south as Gabo Island.

Apart from a few marine operators, practically no one in Australia at that time had ever experienced the sheer wonderment of hearing speech and music transmitted by radio. AWA veteran Harry de Dassel has described for us how the uninitiated reacted:

"...my first experience of hearing radiotelephone signals was on the RMS *Moana* one day out from San Francisco. This was a transmission from the Fairmont Hotel, advertising its attractions and playing records. I invited the captain to listen to this new phenomenon, but his reaction was that the ship's engineers were playing a practical joke on me!"

That was in 1916, seven years before the estab-



AWA engineers David Wyles (centre) and Eric Burbury (extreme right) demonstrating the equipment used to receive the first direct wireless messages from Britain, in September 1918. The location was the corner of Stuart and Cleveland Streets, in Wahroonga NSW.

lishment of broadcasting in Australia. Following the successful experiments with the *Riverina* and *Bombala*, AWA considered that the time was ripe to stage a public demonstration of radiotelephony. The obvious setting for such a demonstration was before the members of a learned society, so there was a considerable flutter in scientific circles when it was announced that on Wednesday 13th August 1919 Ernest Fisk would address the Industrial Section of the Royal Society of New South Wales, and would include a practical demonstration of the new technique.

The lecture was given in the Royal Society's hall at 5 Elizabeth Street, Sydney, and the radiotelephone component emanated from AWA's premises in Wireless House (97 Clarence Street). The single valve transmitter used in the coastal tests was again pressed into service, feeding a 'T' aerial about 60 feet long on the roof of Wireless House.

As no loudspeakers were available, a number of Baldwin earphones were hastily converted for use in the Royal Society's hall. Eric Burbury remembers that:

"...the Baldwin earphone had a mica diaphragm, to the centre of which was fixed one end of a lever. The other end was attached to an iron armature, so these phones would tolerate quite a lot of volume. We then got an old tinsmith in Sussex Street to build up about 20 tin horns to surround the earphones and these were strung along the ceiling of the lecture room to act as loudspeakers."

At the conclusion of Fisk's lecture came the breathless moment when audible sound was received from across the city without connection wires — a recording of the National Anthem played at Clarence Street on a hand-wound gramaphone, the horn of which was placed directly in front of a solid-back carbon microphone. For the first time in history an Australian audience stood to attention as an unseen orchestra played the National Anthem by the magic of radio!

Although this first public demonstration of broadcasting in Australia made an unforgettable impression on those present, it attracted only scant publicity. Wireless was then competing with spectacular advances in other fields, such as aviation, about which journalists felt more confident of committing themselves in print. By misusing technical terms in press reportage they frequently attracted a spate of critical letters from wireless purists.

Perhaps the sharpest reaction came from the Govern-

ment, which immediately amended the Wireless Telegraphy Act to give the Commonwealth the same control over radiotelephony as it already had exerted over wireless telegraphy.

So Fisk's next exercise in electronics education was to convince Australia's legislators of radio's capability. This posed a considerable public relations problem because the Commonwealth Parliament, then located in Melbourne, was deeply involved with the important business of the young nation's postwar reconstruction. In any event, more professional apparatus than Billy Bostock's much amended one-valve transmitter was needed for an audition to Parliament.

Two Marconi 1/2-kilowatt speech transmitters were imported from England and one of these was installed at the Middle Brighton (Victoria) home of AWA's Melbourne manager, Lionel A. Hooke (later Sir Lionel Hooke, the Company's Chairman).

In the years that followed, Lionel Hooke was to devote himself unstintingly to demonstrating the versatility of electronic communication, for besides having a solid technical background, he was a man of action.

One of the first AWA employees and later its Chairman, Lionel (later Sir Lionel) Hooke gave pioneering demonstrations of the then-new wireless telephony in 1920, from his home in Middle Brighton, Victoria.

After joining AWA in its foundation year he accompanied Shackleton's 1913-14 polar expedition as wireless operator aboard *s.s. Aurora* and, on returning from Antarctica, was commissioned in the New Zealand Royal Naval Volunteer Reserve, serving in RN anti-submarine chasers and rescue tug patrols. Transferring to the RN Air Service as a pilot, he subsequently commanded the air station at Bude, Cornwall.

By request of the Prime Minister, W.M. Hughes, a radiotelephony demonstration was arranged for Members of both Houses of Federal Parliament in Queen's Hall, Melbourne, on the evening of Wednesday 13th October 1920. The demonstration was to be "the first of its kind ever to be given in the precincts of Federal Parliament House... intended to show Honourable Members the value of the great blessings conferred on Australia by science".

Fisk addressed the distinguished audience, explaining that wireless telephony could do much to destroy both the internal and external isolation of Australia. The man in the street could do business, receive the daily news, even hear music by means of wireless telephony, which was already practicable between Australia and Tasmania and even between Australia and New Zealand. Within a very few years they would listen to the human voice carried by wireless waves from the United Kingdom; it would then be a mere step to listening in Melbourne to grand opera in Paris, or a momentous speech in London.

An aerial on the roof of Parliament House was orientated to receive the maximum signal strength from Middle Brighton, where Lionel Hooke was stage-managing this historic demonstration broadcast. The transmitting antenna was in his garden, whilst at Queen's Hall the much-travelled Baldwin earphones and their amplifying horns, fabricated by the humble Sydney tinsmith and fed by an Australian-made valve receiver, were ready for duty.

A contemporary report relates that *Mr Fisk explained that the evening was particularly unfavourable for the experiment, as the air was full of static electricity.* Nevertheless, *precisely as the last stroke of seven echoed through the great Hall, the vestibule and corridors of the House reverberated with the orchestral strains of 'Rule Britannia'. So great a volume of melody could never have emanated from an ordinary phonograph, yet so perfect was the sound reproduction that every characteristic of this instrument could be heard, even the gentle grating of the steel needle against the surface of the record.*

Following a few instrumental selections the astonished audience was entertained with an actual reproduction of the human voice — the singer being Miss L. Walker, recent winner of the Melba Scholarship. To her fell the distinction of being the

first in Australia to perform to an invisible audience by the medium of wireless telephony: *...a truly wonderful soprano voice was heard in our famous national song 'Advance Australia', which was enthusiastically encored.*

It was a stroke of inspiration to feature Miss Walker in this historic programme. Only a few months before, Dame Nellie Melba herself had sung to a microphone for the first time during an experimental broadcast from the Marconi works in England, and now the proud Australian city from which Melba had adapted her stage name was able to hear the young voice of a Melba Scholarship winner wafted into the seat of the nation's government by invisible waves.

The distinguished listeners were enraptured by their first taste of radio broadcasting. Within a few years they would be called upon to legislate for its introduction. Meanwhile, the Prime Minister ordered a speech amplifier for his office at Parliament House, to enable him to monitor the progress of debates.

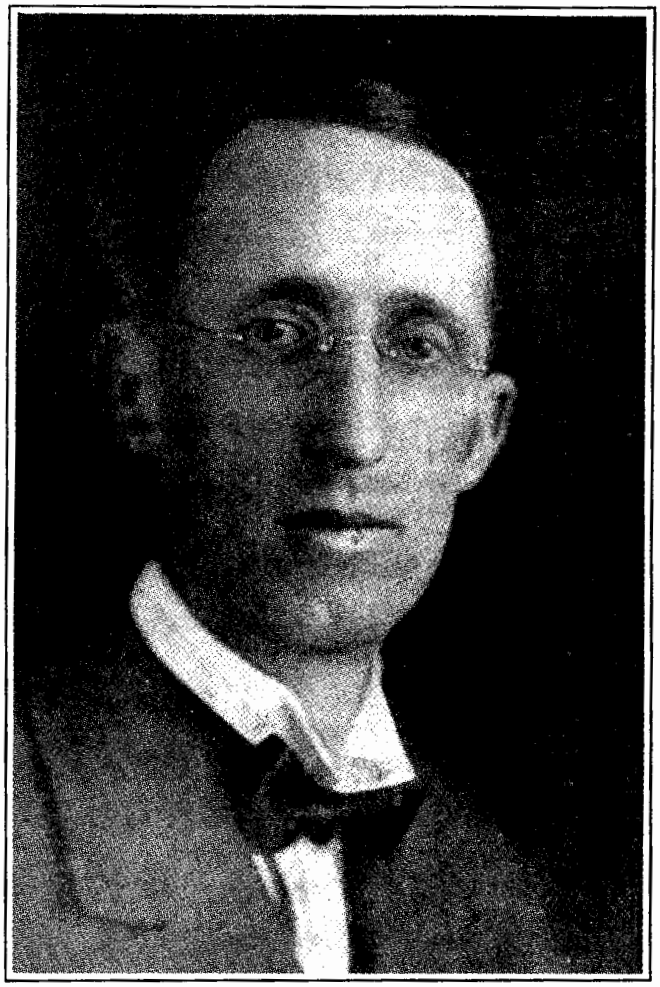
When wartime wireless restrictions were belatedly lifted, amateur experimenters multiplied rapidly. Some of the more advanced (and more affluent) 'hams' lost no time in converting their 'rigs' to valve operation using the Expanse B, the first Australian-made valve — production of which commenced in 1920 at the AWA Works in Sydney, under David G. Wyles.

It must be admitted that not all the early demonstrations of radio telephony were as successful as that in Queen's Hall. Shortly afterwards, when Ernest Fisk was demonstrating to Sydney pressmen in the Kembla Building, the main condenser of the transmitter at AWA's Clarence Street office failed to function at a critical moment and nothing came from the loudspeaker.

A more amusing fiasco occurred when Fisk was lecturing on wireless to a large audience in Farmer's Blaxland Gallery. The lecture was to terminate with the National Anthem transmitted from Clarence Street, but because there was no telephonic communication between the two places the transmission officer at Wireless House was instructed to play a recording of *God Save The King* continuously from the estimated end of Fisk's discourse.

Unfortunately, the lecture ran overtime and as the audience rose to its feet in patriotic silence, the astonished auditors heard a strident rendition of *Yankee Doodle Dandy* issuing from the loudspeakers. The bored operator at Wireless House, after playing the National Anthem continuously for about 20 minutes and assuming, quite incorrectly, that the demonstration had already ended, turned the disc over and played the reverse side — much to the consternation of the lecturer and his audience.

Early in 1921 AWA initiated a series of 'wireless concerts' for Melbourne experimenters and, due largely to the uncluttered airwaves of that time, these transmissions were often heard at considerable distances. The Melbourne *Argus* reported:

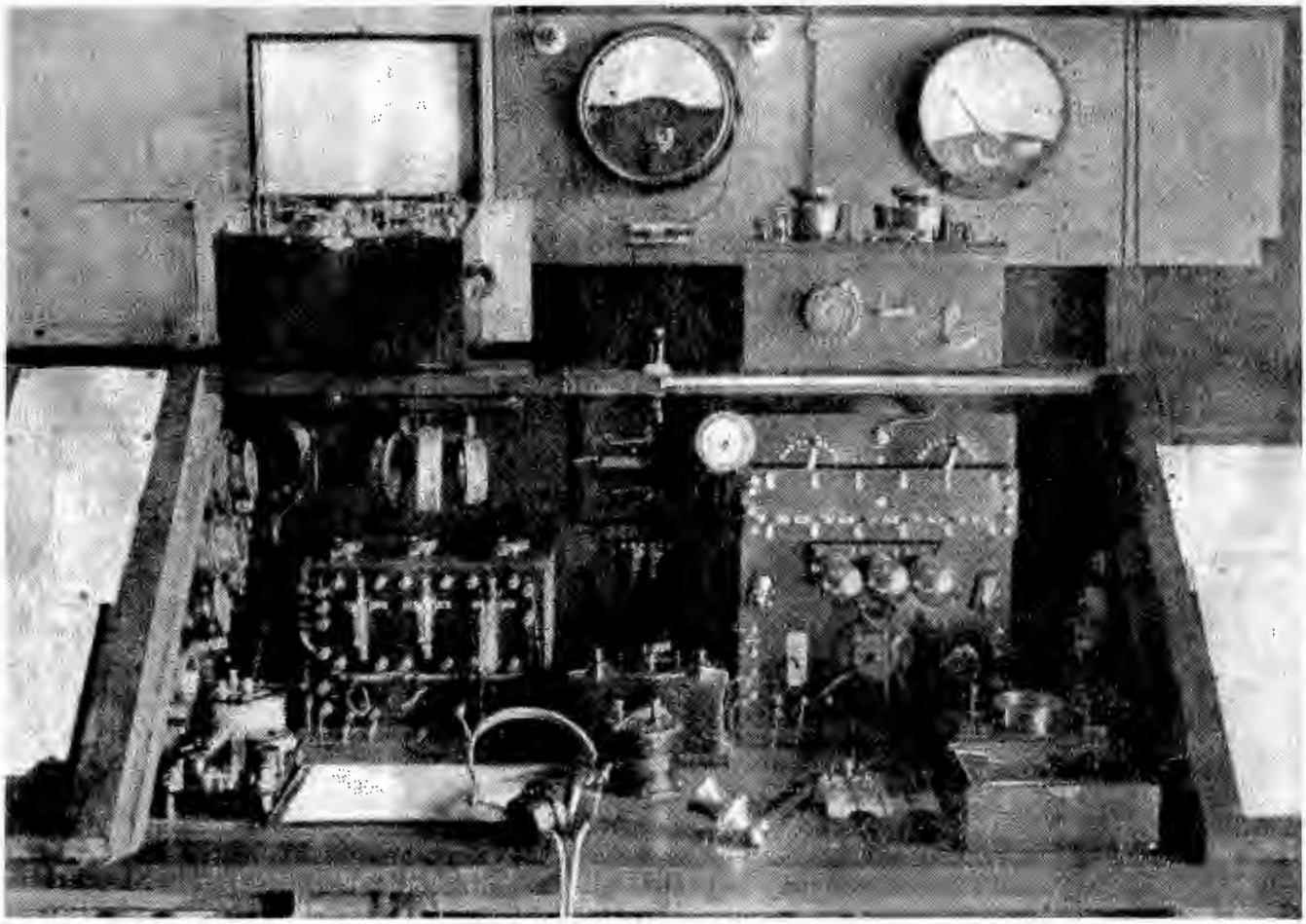


Probably the best-known of all Australian wireless experimenters in the 1920's was Charles Maclurcan, who built his first station on the roof of Sydney's Wentworth Hotel (which his family owned).

'...those on board the *s.s. Karoola* nearly 300 miles from Melbourne heard vocal and musical selections sent out from the Amalgamated Wireless Company's office during daylight hours. This is considered remarkable as the power used in Melbourne was only a fraction of a horse power (*sic*) and the whole of the installation is of a temporary nature. The concert was distinctly heard at the wharf in Burnie by the Union Company's *s.s. Oonah.*'

The Marconi 1/2-kilowatt transmitter used for these experimental broadcasts resembled a small piano in appearance. It was later moved to Sydney Newman's home at Canterbury (Victoria), whence he transmitted regular Monday night musical concerts by playing a hand-wound gramophone into a carbon microphone.

The average duration of each concert was about an hour, because after that time the actuating current made the microphone quite warm. One wonders if this was perhaps the origin of announcers' hoary jokes about slaving over a hot microphone!



This was Charles Maclurcan's wireless station '2CM' at his home in Agnes Street, Strathfield, in 1922. From this station he provided many early listeners in NSW with their first wireless entertainment.

These weekly concerts, incidentally, were originally broadcast on 1100 metres (270kHz) and later on 400 metres (750kHz). The call sign was 3ME, which in later years became familiar to worldwide audiences as VK3ME, one of Australia's most powerful shortwave stations.

Before the advent of broadcasting the practitioners of radio seized every opportunity of introducing the medium to their non-technical friends. For example, in June 1921 the same Syd Newman enlivened the Old Melburnians' annual smoke concert in the Melbourne Town Hall, with a demonstration of radiotelephony transmitted from AWA's office in Chancery Lane. So profound was public ignorance of radio, even among such an intelligent group as Old Melburnians, that the souvenir programme noted:

...it is quite unnecessary for any of the windows to be opened as the wireless waves are not hindered by obstacles, however thick. They will come through the brick walls and strike the frame 'aerial', bringing the whole set on the table to life.

A month previously, Lionel Hooke had conducted another telephony demonstration for a considerably more knowledgable audience — the Victorian Division of the Wireless Institute of Australia. At the Institute's monthly meeting in Chapel Street, Prahran, 'a programme consisting of gramophone selections, a song, a recitation from Shakespeare and a speech was transmitted from Little Collins Street and reproduced at Prahran by a seven-stage amplifier. The reproduction was further augmented by a loud speaking device which made the sound audible throughout the building'.

The enthusiastic activities of the Wireless Institute throughout Australia helped to swell the ranks of experimenters, but radio components were expensive and it is noteworthy that most of the amateur transmitting stations were located in the wealthier 'establishment' suburbs.

Many young men of modest means indulged their interest in the new medium by joining 'radio clubs', pooling their skills and resources to build club sets and spending their evenings by logging reception of other amateurs.

By September 1923, no less than 37 of these clubs were flourishing in New South Wales alone. Their first receivers were usually crystal sets — 'sliders', 'loose couplers' or 'variometers' — but as more material became available most radio clubs constructed valve receivers from diagrams in overseas magazines. One veteran recalls... "The English publication *The Wireless*

World was our Bible and every week it would come out with fancy new circuits, some 'dyne' or other. We would all rush home to change our circuits and try this wonderful new hook-up".

Gradually radio dealers began springing up in all Australian capitals, mostly electrical suppliers who stocked wireless components as a sideline. They also sold ready-made sets in various price ranges, and were glad to give beginners free advice or supply constructional information.

Among the amateur transmitters of the early 1920's, Charles Dansie Maclurcan was the acknowledged doyen of Australian experimental radio. His interest in wireless dated from about 1909 and his first station was on the roof of Sydney's Wentworth Hotel, which his family owned.

Years afterwards, Maclurcan said "I don't suppose I would ever have taken up wireless, only Jack Pike (another pioneer experimenter) and I were both rather keen on the same girl and, as he seemed to be getting more of her attention, I decided to make a noise like a spark gap in order to sidetrack her. I didn't succeed, but anyway she married someone else".

By the 1920's Maclurcan's station at Agnes Street, Strathfield, was the most consistent performer in the Commonwealth. In addition, Charles Maclurcan possessed fine programme sense and his regular Sunday night concerts of recorded music were an endless source of delight to countless listeners in the eastern states.

Some other amateurs of that period were destined to make notable contributions to radio broadcasting and to become respected figures in the industry: they included Raymond Allsop, Oswald Mingay, C.V. Stevenson, L.N. Schultz, Otto Sandel, W.E. Coxon, R.R. (Jack) Davis, Ross Hull and E.J. Hume, to mention only a few.

Interestingly enough, Cecil Vincent Stevenson, later the founder of Sydney radio station 2UE, was probably responsible for Charles Maclurcan's early conversion to radiotelephony.

Shortly after the Armistice Stevenson, an electrical and wireless trader, imported a small shipment of valves from the United States — only to discover that they were transmitting valves. He disposed of them to Maclurcan, who used them to build his first speech transmitter.

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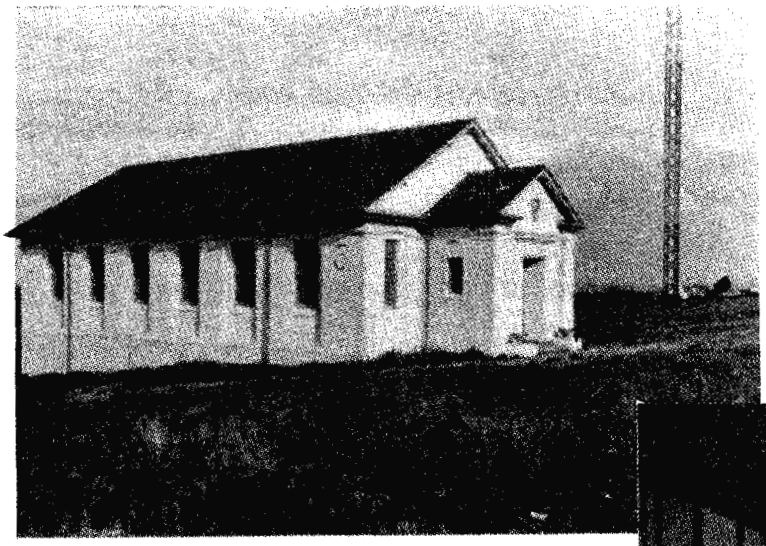
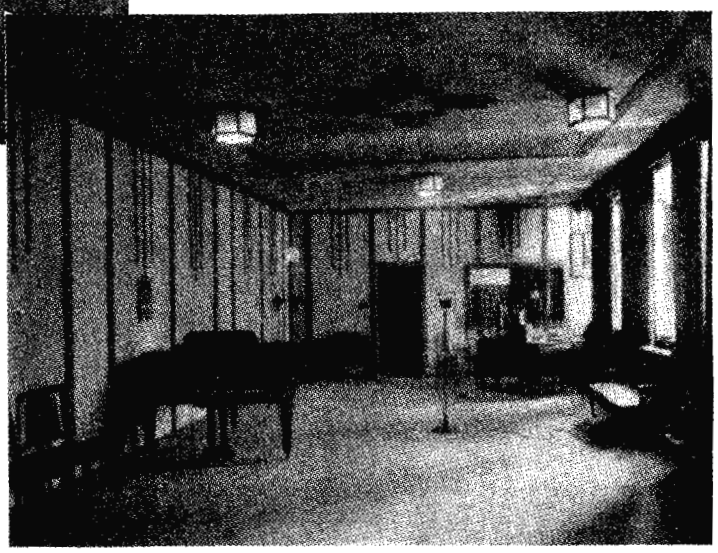


The transmitter building for Sydney station 2CH, pictured in 1935. It was located at Dundas, ten miles north west of the city. The output power was 1000 watts, fed to a 'T' antenna supported by two 310' steel masts spaced 600' apart.



The interior of 2CH's number one studio in 1935. The station boasted that this studio had 'controllable echo', which allowed excellent redition of voices and musical instruments by skilful blending of microphones.

Chapter 2

THE DAWN OF BROADCASTING

Despite the enthusiasm and activities of the pioneers, to the great mass of Australians — who had never spent an evening with earphones pressed to their heads and sitting stock-still to avoid disturbing the 'cat's whisker' poised gingerly on a piece of galena crystal — wireless in the early 1920's was hardly more than a voguish novelty that would inevitably go the way of all technical fads.

To counteract this widespread ignorance, a few men who lived and breathed radio gave freely of their time and talents to demonstrate its marvels to the uninitiated. Those who had the requisite influence to talk as equals to politicians and professional men lost no opportunity of doing so, pointing out the progress of broadcasting overseas.

David Sarnoff pictured in mid-1917, when he was commercial manager of the Marconi Wireless Telegraph Company of America. A far-sighted man who was one of the first to see the potential in radio broadcasting, he went on to head the Radio Corporation of America (RCA).

In the United States, for instance, radio had reached boom proportions. As early as 1916 David Sarnoff, then assistant traffic manager of the Marconi Wireless Telegragh Company of America and who had been experimenting with musical transmissions, wrote a historic memo to his general manager:

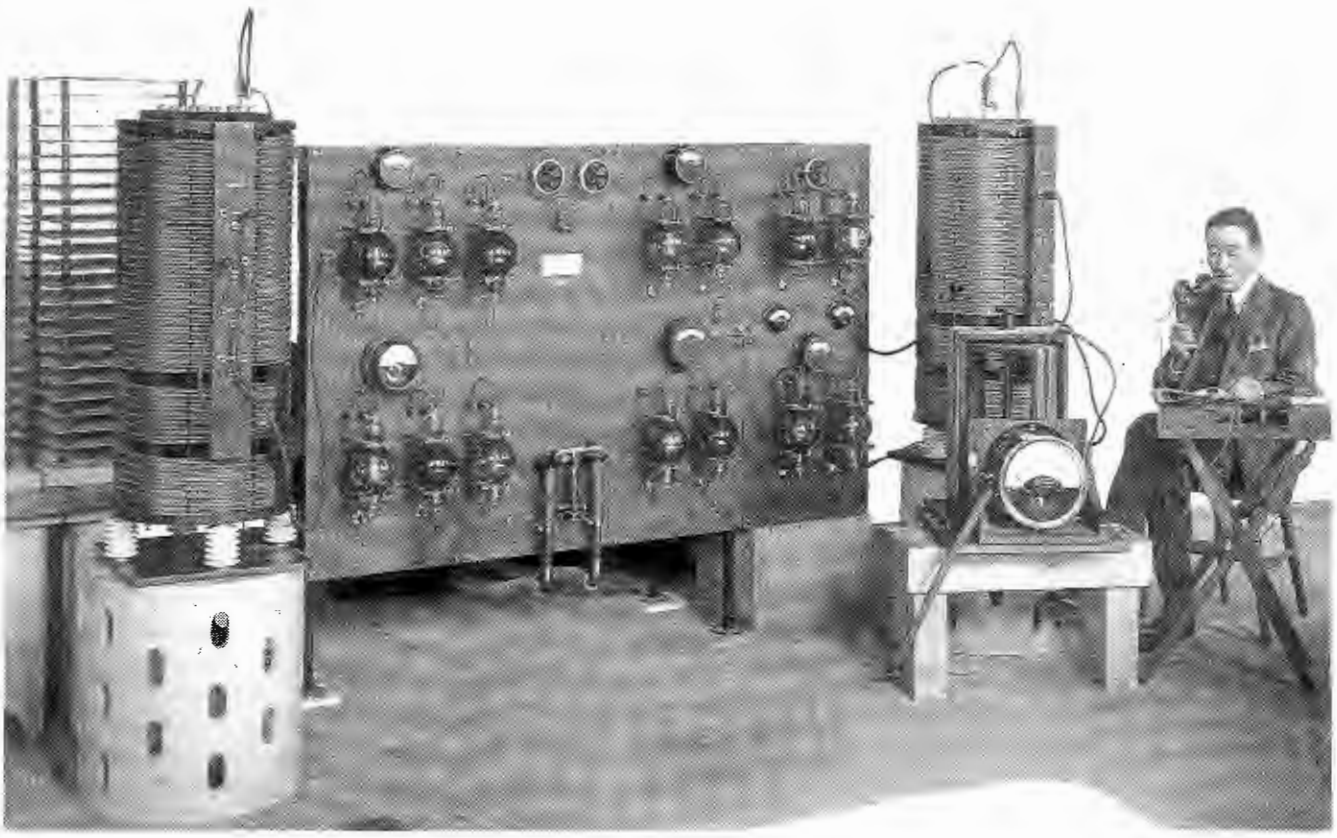
I have in mind a plan which would make radio a household utility in the same sense as a piano or a phonograph. The idea is to bring music into the house by wireless... For example, a radio telephone transmitter having a range of say 25 to 30 miles can be installed at a fixed point, where instrumental or vocal music or both are produced.

The receiver can be designed in the form of a simple 'radio music box' and arranged for several different wavelengths. The same principle can be extended to numerous other fields — as, for example receiving lectures at home, which can be made perfectly audible; also events of national importance can be simultaneously announced and received. Baseball scores can be transmitted in the air by the use of one set installed at the Polo Grounds.

Sarnoff went on to suggest that... "this proposition would be especially interesting to farmers in outlying districts removed from cities. By the purchase of a 'radio music box' they could enjoy concerts, lectures, music, recitals, etc., which may be going on in the nearest city within their radius".

David Sarnoff had thus envisaged the future possibilities of broadcasting, and he predicted that "it would seem reasonable to expect sales of a million 'radio music boxes' within a period of three years", at an estimated selling price of $75 per set.

Nothing came of this immediately because America



In early 1920, the Marconi Company experimented with broadcasting of speech and music at Chelmsford in the UK, using this 6kW transmitter. Engineer W.T. Ditcham is shown at the microphone. (Courtesy Marconi Company).

was soon drawn into World War I, but the relaxation of wireless restrictions after the Armistice was the signal for many experimental stations to come on the air.

At that time the United States was apprehensive about the predominantly foreign ownership of world communications and, following a Government request to suspend the sale of the Alexanderson Alternator to the British Marconi Company, the Radio Corporation of America was organised on 17th October 1919.

A month later RCA took over the assets and business of the Marconi Wireless Telegraph Company of America. This powerful new corporation, with access to the world's most important wireless patents, soon made its presence felt in radio development and in due course David Sarnoff, father of the 'radio music box', was given the task of guiding RCA's destiny.

In 1920, station KDKA at the East Pittsburgh plant of the Westinghouse Company began broadcasting regularly scheduled programmes of 50 watts of power. Its first major transmission on the evening of 2nd November carried returns of the presidential election, an occasion that is acknowledged to be the genesis of broadcasting as we know it. Then station WEAF, New York, was established by the American Telephone & Telegraph Company for the purpose of offering broadcast facilities on a time-rental basis, and so the planned use of radio for advertising was conceived.

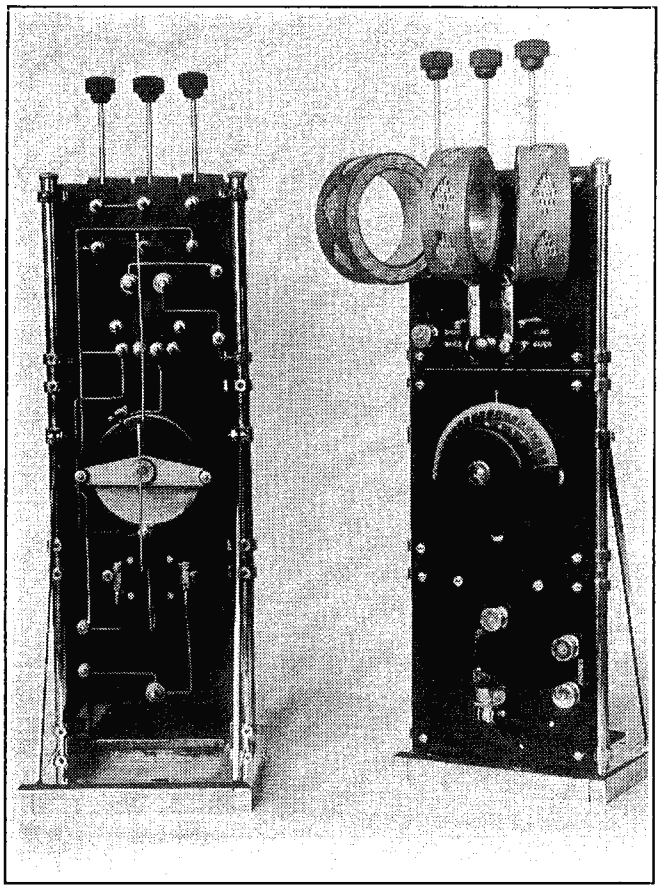
The first 'commercial' broadcast by WEAF was on the evening of 28th August 1922 — a 10-minute talk on tenant-owned flats, which cost the advertiser $50 and recouped $27,000 in sales.

Eight stations were operating in the United States by the end of 1921 but, as broadcasting developed into a craze, stations mushroomed to such an extent that within two years more than six hundred of them were battling to be heard on a narrow waveband.

The situation became chaotic and one Australian journal commented that *radio in the USA is drifting to destruction... business concerns are doing unwelcome advertising and filling up the intervals in their programme with canned jazz, conditions which it is hoped will be avoided in Australia.*

Observing the radio chaos on the other side of the Atlantic, England moved towards broadcasting with traditional conservatism. Early in 1922 the Radio Society of Great Britain obtained permission to transmit a programme of music and entertainment for half an hour each week from a 1/4-kilowatt station, 2MT Writtle — the first station to carry regular, scheduled broadcasts in the United Kingdom.

The British Broadcasting Company, forerunner of the



An AWA 'panel' crystal set of 1919, made initially for receiving Morse transmissions on ships, but later used by experimenters to listen to the first speech and music broadcasts. At the top are the tuning coils, with adjustable coupling; in the centre is the tuning capacitor, while at the bottom is the crystal detector. (Courtesy AWA).

BBC, started officially in November 1922, although since August of that year a station located on the roof of Marconi House, London, and using the call sign 2LO, had been radiating occasional experimental programmes simultaneously with 2MT. The newly-formed British Broadcasting Company absorbed 2LO, which became its London outlet.

Australia, of course, tended to take her cue from Mother England in matters of national importance. Even the most dedicated protagonists of broadcasting were loath to champion the excesses of American radio in the early 1920's. But the advent of broadcasting in Great Britain galvanised them into action and a small, vocal lobby in Australia began beating the radio drum more insistently. Meanwhile demonstrations of broadcasting continued and the more imaginative ones were accorded good press reportage.

Australia's most ambitious broadcast up to that time was organised by AWA's Melbourne manager, Lionel Hooke, on 31st March 1922 from the stage of Her Majesty's Theatre. Intended primarily for the enjoyment of convalescent ex-servicemen at the Anzac Hostel, Brighton, this daylight transmission was also heard by many amateurs and ships at sea. The programme featured live performances by Maud Fane, Alfred Frith, Madge Elliott and Cyril Ritchard — stars of the current J.C. Williamson show 'A Night Out'.

Visiting concert pianist Jascha Spivakovsky, who had recently taken Sydney by storm, made his Melbourne debut on the broadcast, which received considerable press publicity.

The next demonstration was even more significant. It took place on 23rd May at the Melbourne *Argus* office, for the education of the journalistic staff. Lional Hooke was again the entrepreneur, transmitting music and speech from his office in Collins House to the *Argus* building, where "a light, compact receiving appatatus, accommodated on a small table, took only a few minutes to install".

The real significance of this demonstration lay on Hooke's comments to the pressmen — the first hint that broadcasting was under active consideration in Australia. He said "It is the intention of our company to inaugurate the broadcasting of vocal and instrumental music throughout the Commonwealth. For a moderate annual charge receiving sets will be installed in clubs and private residences and maintained in good order". Hooke also revealed that AWA proposed prominent artists to supply the entertainment segments and hoped that "all arrangements for these radio concerts would be completed within a year".

The Argus was jubilant: *This opens up a fascinating vista, for it means that in the remotest backblocks one might enjoy the finest music.* The paper added *Parliamentary debates might be sent by broadcast through the land. Then it would be possible to hear Parliamentary oratory in all its original vigour.*

In August 1922 William John Maclardy, an amateur experimenter, launched *Wireless Weekly*, the first regular radio journal in the Southern Hemisphere. Published in Sydney, it continued to grow in importance and readership until it finally became a casualty of World War II — although the technical section, which became a separate monthly called *Radio and Hobbies* in April 1939, has survived to the present day as *Electronics Australia.*

Maclardy, who was later responsible for floating Broadcasters Limited and acquiring the original 2BL station licence, claimed that his interest in wireless dated back to 1898. In its second issue *Wireless Weekly* trumpeted that 'wireless telephony is now out of the experimental stages... and it is time the authorities came to realise this'.

The journal printed advance details of Charles Maclurcan's Sunday night concerts, conducted contests for the best amateur crystal and valve sets and also ran regular articles by leading experimenters couched in layman's language: How to Keep Your Crystal Clean, The Importance of a Good Earth, Preparing the Cat's Whisker, How to Wind Honeycomb Coils, a Home-Made Variometer — as well as trenchant advice to owners of

valve sets, such as Don't Overwork your Rheostat! Helpful suggestions for radio clubs were included: 'six persons may listen in to concerts simultaneously with rubber tube earpieces'.

Oswald Mingay, always a lucid writer, contributed informative articles on 'The Art of Tuning'.

Mingay's career had begun in the Postal Department at Lithgow, and he joined the Telephone Branch on his transfer to Sydney in 1911. After service with AIF Signals in France and Belgium, where he rebuilt the shattered telephone system of Charleroi, Mingay returned to Australia determined to concentrate on wireless.

As Secretary of the Wireless Institute he organised Australia's first radio exhibition in the Congregational Hall, Pitt Street, Sydney, on 22-23 September 1922. The function was given considerable *eclat* with a vice-regal opening, and attracted a contingent of curious visitors, many of whom heard radio music for the first time in their lives: "the music came in very strongly, especially that transmitted on Saturday afternoon by Amalgamated Wireless".

Interest in radio was also burgeoning on the other side of the continent, and on 12th December 1922 the first all-wireless exhibition in Western Australia was staged at the James Street State School, Perth, by the local branch of the Wireless Institute of Australia.

Although president of the Wireless Institute during its mushroom years of 1918-22, Ernest Fisk had made no public comment about the broadcasting proposals. This was for the excellent reason that he was in England, negotiating the complex details of something far larger: direct wireless telegraphic communication between Britain and Australia.

At the Imperial Conference of 1921 Australia's firebrand Prime Minister, William Morris Hughes, had roundly condemned the wireless relay scheme proposed by a prestigious British committee, whereby Australia would have become the last link in a fragile wireless relay chain stretching across the world.

Having already proved the practicability of direct communication, Australia was not prepared to settle for anything less, and certainly not for a scheme which depended on relaying messages through countries with a record of unstable government.

In March 1922 the Commonwealth Government signed an agreement with AWA to provide a direct wireless service and, coincidentally, acquired a major shareholding in the Company.

While Fisk was in England hammering out the machinery for the direct service, AWA was attempting to coax the Government into making a policy decision on the future of broadcasting.

Presumably the Company shouldered this responsibility at the behest of various amateur and dealer interests who, themselves, were not sufficiently influential and, in any case, had no cohesive organisation capable of lobbying in Queen's Hall.

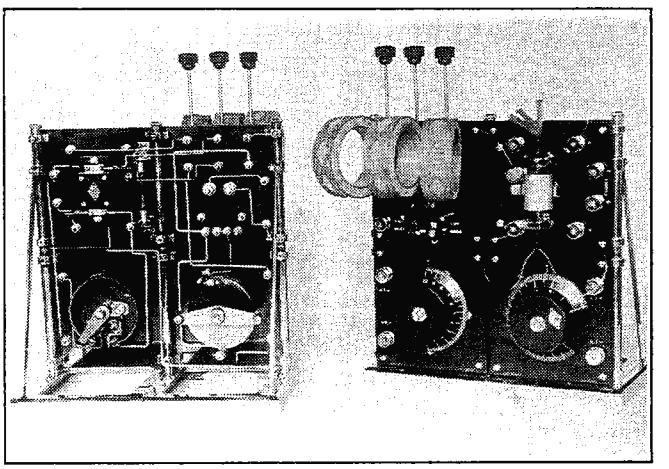
But this was no easy task. The nation's legislators lacked even an elementary understanding of the possible social implications of broadcasting and, as political historians have pointed out, Australian governments of that era, for want of any coherent long-term wireless policy, tended to solve problems as they arose on an *ad hoc* basis, often by compromise designed to placate the most vocal petitioners.

Perhaps the greatest difficulty was that a technological novelty like broadcasting seemed relatively unimportant to a thinly-populated nation that had lost the flower of its manhood on foreign battlefields.

The first proposal for systematic broadcasting was submitted to the Prime Minister's Department by AWA on 27th July 1922, when the Company expressed a wish to inaugurate a radio concert service in all States. In September 1922 the Chairman of AWA informed a shareholders' meeting:

"In addition to an up-to-date commercial wireless service, we are also making arrangements to establish what will be known as a Radio Concert Service, and what is known in other parts of the world under the peculiar term of 'broadcasting'. The Company, in conjunction with the Government, will establish this new service on such a basis that residents and settlers in all parts of Australia will be able to receive in their own homes vocal and instrumental music, lectures and other entertainments. We also hope to make arrangements with the principal newspapers by which their news services will be available to people in districts where daily papers are not available."

On 1st November 1922, AWA formally applied to the Government for permission to establish the stations and the Commonwealth issued revised wireless regulations creating a new licence category: Broadcasting Stations '...operated for the purpose of disseminating news service or entertainment service.



A more elaborate 'four panel' AWA receiver of the early 1920's using one of the first Australian-made 'Expanse B' valves — visible on the upper right-hand panel, with its 'flying leads' attached to the various screw terminals. (Courtesy AWA).

The licensed station shall be operated by a certified operator or by a competent person approved by the Controller (i.e., the Commonwealth Controller of Wireless, James Malone). The station shall not be utilised for broadcasting advertising matter or commercial traffic'. The licence fee was set at £5.

The way was now open for intending broadcasters to apply for a licence, and a number of firms hastened to do so. Having precipitated the official decision, AWA quietly retired into the wings, leaving the stage clear for the budding entertainers. However, those hopeful individuals who expected a comprehensive government policy announcement on the future of Australian broadcasting were sorely disappointed when no such statement was forthcoming.

The amateur radio fraternity redoubled their efforts to please their listeners. Charles Maclurcan (2CM) was still the undisputed leader in Sydney and N. Culliver (3DP) of Hawthorn was probably Melbourne's ace experimenter; while a Brisbane medico, Dr Val McDowall (4CM), was delighting Queenslanders with his broadcast musical concerts. But most 'hams' were content to spend their time in swopping technical details, DX-ing or testing the constant changes they made to their 'rigs'.

Wireless Weekly followed the amateur transmitters zealously, dispensing praise and criticism with fine impartiality: 'Those who have heard Mr Jack Davis (2DF) lately will notice the remarkable improvement: modulation vastly improved and hum practically eliminated... the voice of Otto Sandel (2UW) has been splitting the airwaves lately... Mr Mingay is to be congratulated on his transmitting: he is now giving lecturettes on wireless during each test'.

An interesting 'first' from that period occured when the Wireless Institute's station in Brisbane broadcast Federal election returns, which 'were heard quite plainly as far as 800 miles away'.

But the amateurs still needed an articulate spokesman to urge the Government into enunciating a broadcasting policy, and in December 1922 just such an apostle returned to Sydney from an overseas visit — George Augustine Taylor, pioneer aviator, wireless experimenter and generally a man of diverse talents.

As early as 1910, Taylor had demonstrated the use of military wireless to the Australian Army at Heathcote (NSW) artillery camp. The same year he founded the Wireless Institute of New South Wales, which eventually grew into a national organisation and changed its name accordingly. Now, having studied the wireless situation abroad, Taylor hoped to become the male midwife at the birth of Australia's broadcasting.

George Taylor was vaguely apprehensive that broad-

Inside a Sydney radio retail store in the early 1920's. A salesman demonstrates a receiver on the left, while counter staff attend to sales of valves, speakers and other spare parts on the right. (Courtesy AWA).

casting might become some form of monopoly, and convened a meeting in Sydney on 25th January 1923 at which was formed the somewhat pretentiously titled Association for Developing Wireless in Australia, New Zealand and Fiji. This association subsequently requested the Postmaster-General 'to call a conference of wireless experts in order that suitable broadcasting regulations might be devised to avoid the difficulties and mistakes of older worlds'.

The timing of this approach could not have been more opportune, for it coincided with the installation of a new Federal Government on 9th February 1923 — the Bruce-Page Ministry, in which William Gerrand Gibson was assigned the portfolio of Postmaster-General. One of the priority projects he inherited was the request from George Taylor's lobby for a broadcasting conference.

Another recent appointee was also observing the mounting pressure for broadcasting. During 1922, the Postmaster-General's Department had been beset with administrative problems so, to strengthen the Department, the British Post Office was asked to nominate an experienced administrator. In response to this approach, Harry Percy Brown arrived in Australia in January 1923 as technical advisor to the Commonwealth Post office.

William John Maclardy, who founded 'Wireless Weekly' magazine in 1922, and was also the driving force behind the setting up of Sydney radio station 2BL — later absorbed, along with 2FC, into the ABC network.

Brown had served the British Post Office for 25 years as staff engineer, and during the Great War had been responsible for the entire telephone plant of the United Kingdom, as well as superintending emergency defence communications. By the end of 1923 the Australian Government had confirmed Brown's appointment as Director-General of Posts and Telegraphs, and in the years that followed he was to exercise a potent influence on the development of Australian broadcasting.

It is apparent to any student of that period that, for lack of firm guidelines, the public was confused and the wireless traders — it would be too ambitious to refer to them collectively as an industry — were in a quandary. Editorials in the trade press spelled out the frustrations of those concerned with wireless:

...the amateur cries out for music in the air ...listen at any wireless shop and hear the complaints ...a certain dealer recently complained 'we are commencing to feel a slump and have sold little since the Christmas rush'. A little thought will reveal the reason. The wireless boom in Australia will synchronise with the advent of broadcasting... for far too long the Government has adopted a wait-and-see attitude. The policy of the Australian Government is naturally determined by affairs in England. Take up any American or English broadcasting magazine and note the complaints, particularly from the former, on the amount of interference by amateur transmitters, valve receivers and broadcasters. The aim of those in authority in Australia is to evolve a system by which interference will be at a minimum, while allowing a maximum of freedom to the amateur listener-in.

Even the most ardent protagonists of broadcasting could not agree on how the service should be financed. Maclardy tossed some suggestions into the ring... 'let all amateurs agree to pay for this year (1923), at least, an additional ten shillings broadcasting subsidy, and let this be supplemented by dealers to the extent of 10 per cent of their sales of complete sets'. This was the practice in England but, hitting the dealers' pocket nerve as it did, was unacceptable to Australian wireless traders.

Oswald Mingay, on the other hand, believed that broadcasting stations could support themselves from advertising revenue, provided permission to advertise was granted. He reasoned...'we go to the theatre, which is essentially an amusement place, and we do not complain about the advertisements used at the interval. With wireless, providing the broadcasting management uses discretion in regard to advertising, who should complain? If the listener-in does not wish to hear, he could easily turn off his filament'.

During those months of waiting for officialdom to move, there was no lack of activity on the radio front. Two new periodicals appeared within months of each other — the *Australasian Wireless Review* in January 1923, followed by *Radio in Australia and New Zealand*

in April. Both were produced in Sydney, the former by W. Pierpont Black & Co. and the latter by AWA's publishing subsidiary, Wireless Press.

In addition, a self-styled 'Radio College' opened in Lang Street, Sydney, offering a variety of short courses to introduce the public to various phases of wireless, e.g., '1 month course, fully illustrated, £1.10.0 : full 3 months course, including Morse and Telephony, £5.5.0'.

The principal of this college was F. Basil Cooke, son of the Government Astronomer of New South Wales, who prided himself on having been the second wireless experimenter in Western Australia. During the War Cooke had trained army wireless operators.

The price of receiving sets varied widely, depending on their complexity, selectivity and general workmanship. A slide-tuned crystal set cost £2.5.0 and a double slide receiver retailed at £2.14.0. A pair of good headphones added a further 30 shillings to the cost. Complete valve sets ranged from £12 upwards — a substantial investment in a day when the Commonwealth Basic Wage was £3.16.0.

Their tuned radio frequency circuits on a breadboard layout made them difficult to adjust and liable to the characteristic howl of oscillation, which did nothing to endear the sets' owners to their suburban neighbours. Valves consumed enormous amounts of current, consequently the filament accumulators needed frequent recharging.

A few of the more advanced receivers incorporated the regenerative principle discovered by the American inventor, Edwin Armstrong.

Grace Bros. became the first big store to open a radio department selling components, as well as complete sets, and offering free technical advice to the public. Early in February 1923 Grace Bros' sale was enlivened with demonstrations of radiotelephony, and it is interesting to reflect that the organisers of this and other demonstration broadcasts of that period opted for programmes of highbrow music:

Grace Bros. have been treating their customers to grand opera music by wireless. Such well known artists as Julia Caroli, Miss Ella Goodman, Countess Filipini and Jean Ethelstone were engaged. A single 5-watt tube was used for transmission and the station was heard as far away as Moss Vale on a valve, as far as Strathfield on a crystal.

Six sets were located in different parts of Grace Bros' store, and the concerts were heard by thousands of shoppers.

Not to be outdone, Charles Maclurcan arranged for Miss Josie Melville to broadcast to her devoted fans from 2CM on Sunday night, 18th March. Josie Melville was the current toast of the town, the star of the musical *Sally*, then in its eleventh week and playing to capacity houses at Her Majesty's Theatre, Sydney.

Fronting up to the 2CM microphone to sing 'Look for the Silver Lining', Miss Melville was probably the first Australian artist to confess to 'mike fright'. 'She was awestricken when she realised that her voice was travelling from that small piece of mechanism into hundreds of homes'.

Charles Maclurcan's first broadcast of a popular celebrity was heard by a large audience, including many listeners in country districts, and was remembered years afterwards as an imaginative landmark in Australian radio.

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Three personalities from Sydney station 2GB in 1935. At left is Jack Lumsdaine, centre is 'Uncle George' and at right is Cyril James — also knows as Squirrel.

Five more personalities associated with 2GB in 1935. At top left is George Edwards, then an actor but later a producer of radio serials; at upper right is Charles Cousens, production manager; centre is 'Uncle Frank' ; at lower left is Len Shultz, the station's chief engineer; and lower right is Managing Director A.E. Bennett.

Chapter 3

THE SEALED SET ERA

Thanks to the early pioneers and their programme efforts, the prevailing 'radio fever' in early 1923 took a noticeable leap in temperature.

The lyric of a popular dance tune reflected the rising mood of enthusiasm:

If you haven't got a wireless set
And fixed your mast upright,
You're losing half the fun we get
By listening in at night.
The world is mad about the game,
Why don't you start and do the same.

In Melbourne, Lionel Hooke continued to explain the possibilites of radiotelephony to business leaders with lectures and demonstrations. He arranged for a Rotary Club luncheon to hear "musical selections, news items, stock and share reports and weather forecasts on a small set equipped with a loop aerial.

The speech was magnified by a 'loud speaker' and all the room were able to enjoy the various items without leaving their seats. That the demonstration was an eye-opener to many men who had previously only a very hazy idea of what radiotelephony could accomplish, was evidenced by the expressions of surprise and pleasure heard on all sides".

Hooke's next demonstration involved duplex telephony. It was given at his office in Collins House to "a number of gentlemen interested in Northern Territory holdings. Conversations were carried on between Mr Durack MLA of Western Australia, Mr Massey Greene and Mr Conacher of Vesty's Ltd, Darwin, at Collins House and Messrs Miller and White at the Coastal Radio station, South Yarra. It was the first time any of those mentioned had ever operated a radio set, but as evidence of the extreme simplicity of doing so, not one of them experienced the slightest difficulty".

In the weeks since taking office, Australia's new Postmaster-General W.G. Gibson had been preparing the ground for the long-awaited broadcasting conference. A preliminary announcement set the date for Monday 9th April 1923, but the conference was postponed at short notice when it was learned that Ernest Fisk would soon be returning from London — "from the aerial seat of war", as George Taylor put it. Primed with all the latest information from the heart of the British Empire, it was apparently felt that Fisk would be able to contribute a clear blueprint for Australia's entry into broadcasting.

Long before the vital conference *Wireless Weekly* foreshadowed some of its ultimate decisions with astounding clairvoyance:

...official broadcasting is bound to come in the near future. To every licensed experimenter we will have at least 1000 subscribers to the Wireless Broadcast Service. These subscribers will be unable to listen to broadcasting owing to the howling of valves. Who goes out — subscribers or experimenters? Amateurs — what is going to happen if you cause interference? What are you going to do with all that gear you have? Sell it and pay for the hire of a Broadcast Receiver sealed on a set wavelength?

With Fisk back in Australia the postponed broadcasting conference began at the Postal Institute Hall, Melbourne, on a significant date in May 1923 — Empire Day — attended by 'all who were in any way interested in the subject'.

During his opening address Postmaster-General Gibson stated that "any bona fide company desirous of broadcasting would have no difficulty in obtaining a licence". The chair was ceded to George Taylor, whose insistent campaigning had been responsible for the convocation, and the Postmaster-General advised the conference "to discuss the matter fully and, if possible, present him with a workable scheme to provide effective broadcasting services for Australia".

Despite his declared wish "not to be the only tea leaf in the sink", Ernest Fisk found himself the central figure at the conference and it fell to him "to explain what broadcasting meant and what was being done in other countries", because "concrete ideas on the subject were not plentiful".

Taylor said later that "the business opened with the request as to whether anyone present had any clear-cut scheme they desired to submit, Mr Fisk pointing out that he did not wish to be the only one, as it was open for anyone to submit propositions. The conference, however, desired to hear Mr Fisk's scheme and to utilise it as a base".

Fisk explained that the cost of broadcasting would be proportionate to the area covered and to the quality of programme provided. It was unthinkable that a broadcasting service should cater exclusively for the principal cities and ignore people on the land so, having regard to Australia's geography, a large number of small stations

W.M. Hughes performing the official opening of the 2FC transmitter at its radio centre in Pennant Hills, on March 29, 1926. Seated behind Mr Hughes on the right is George Wright, managing director of Farmer & Company, while standing at the rear are (left to right) Sir Frederick Stewart, Oswald Anderson, Andrew MacCann and A.S. Cochrane.

or a few very powerful stations would be necessary. He warned, however, that if many small stations were licensed to broadcast, as in the United Stated, the cost of supplying them with entertaining programmes would be prohibitive.

Fisk went on to say that if broadcasting services were to be financed from the sale of receivers, very few would be operated and these would only be of small power: "When the boom in the sale of apparatus disappeared the public would be left with no entertainment, after having a large sum invested collectively in receiving equipment. The best and apparently the only method of providing suitable services was to arrange for competitive broadcasting to be established, with both high and low power stations, and that the services could obtain a continuous revenue so long as they satisfied the public."

The conference unanimously adopted what became known as the Sealed Set Scheme. Briefly, it proposed that the Government should license various broadcasting companies of proven financial standing to transmit on approved wavelengths. A licensee could apply to use any power between 500 and 5000 watts, subject to the PMG's discretion. As well as paying a license fee to the Government, listeners would subscribe to one or more companies of their own choice, their receiving sets being 'sealed' by the PMG's Department to receive only the programme or programmes to which they subscribed. A choice of stations would involve increased payment.

This plan received powerful support from Stanley Eric Wilson of Farmer & Co, soon to be concerned with the 2FC licence. Wilson insisted that a duly licensed broadcasting service must be protected from people who did not subscribe to it, adding "it is no use a firm investing £20,000 in a broadcasting service if the public can purchase an instrument which will enable them to chop over from one service and take advantage of another".

George Taylor and his supporters, who had feared that broadcasting might become a monopoly of large interests, were placated by the competitive aspect of the Sealed Set Scheme and applauded the comment which

On the inauguration of station 2FC, Palings' concert manager Oswald Anderson became its manager. He took direct responsibility for planning its programmes, and this 1927 picture shows him with an assistant selecting musical items for the next week's schedule.

summarised the spirit of the conference... "if we attempt to go in for a concentrated service supplied by one company, as is done in London, we shall create a very dangerous monopoly".

The two-day conference produced no alternative to the Sealed Set, although it did show that Australian press interests were already alive to the possibility of conflict with broadcasters. An executive of the Melbourne *Argus* stated that newspapers were concerned that broadcasting stations might pirate their news without payment.

The detailed recommendations of the conference were immediately submitted to the Postmaster-General and the delegates seemed convinced that they had produced a historic blueprint for the national good. The trade press echoed their jubilation: 'It appears to be a pleasant dawn for Australia's entrance into the Broadcasting field and it seems that both England and America might well examine Australia's Broadcasting Regulations when they are issued'.

The committee's draft, incidentally, suggested that the regulations should be administered by a board representing the Government, broadcasters, radio dealers, equipment manufacturers and the press; but this suggestion was not adopted.

The Government's belated move on broadcasting was the signal for the more advanced amateurs in each State to emulate Charles Maclurcan by converting their 'rigs' to telephony and transmitting recorded music. In May 1923, a Sydney journalist commented "six months ago we had only 2CM transmitting music on Sunday nights. Now any night in the week you can have a choice of at least three sending music in New South Wales".

Sydney's leading music firm, W.H. Paling & Co, having contact with the finest musical talent in Australia, decided to organise a series of broadcasts from their concert hall in the heart of the city. The inspiration for this stemmed from Paling's concert manager, Oswald Anderson, an accomplished musician and an authority on pianolas. Joining forces with Raymond Allsop, technical manager of New System Telephones, Paling's obtained a temporary licence to transmit nightly concerts. The two men involved with these pioneering live presentations of professional artists were both to play important roles in the subsequent development of Australian broadcasting.

Born in Sydney and educated mainly in Victoria, Oswald Anderson joined Paling's in 1919 and became the firm's concert manager. On the inauguration of 2FC he managed Farmer's Broadcasting Service, and when 2FC and 2BL merged into the New South Wales Broadcasting Company, Anderson was appointed general manager. He went on to direct the extended programme activities of the Australian Broadcasting Company until March 1930, when he resigned to become general manager of 2UW.

Raymond Cottam Allsop, a brilliant engineer, was born at Randwick, NSW in March 1898 and as a schoolboy studied wireless under Father Archibald Shaw, 'the wireless missionary'. At the young age of 13 Allsop already had a transmitting licence, and later saw active service in the Great War as a marine operator — escaping with his life when the transport *Argyllshire* was torpedoed.

In 1923, Allsop was instrumental in setting up the original 2BL equipment and subsequently became the station's chief engineer. Perhaps his greatest personal achievement was his invention of the Raycophone system for sound film projection. The trade name Raycophone was compounded from Allsop's two Christian names. Another landmark in his productive career was the first Australian demonstration of stereophonic sound in 1938.

After distinguished service in the Royal Australian Navy during World War II, Allsop campaigned vigorously for the establishment of Australian television and was also an ardent protagonist of FM broadcasting. Prior to his death in 1972 he was honoured with the OBE.

Years after those historic concerts, Oswald Anderson recalled... "I was able to gain the approval of Mr Walter Dibley, managing director of Paling's, to carry out a series of broadcasting tests. We knew how radio was developing in other parts of the world and during the weary months of waiting until operations actually commenced in the Commonwealth, many hundreds of people installed wireless sets but had nothing to fill their loudspeakers. Mr Dibley was good enough to set aside an amount of money for these experiments and I remember how tremendously enthusiastic we all were."

Paling's experimental concerts began on Tuesday 5th June 1923 and proved an immediate success: "At last something definite has been commenced so that the great number of owners of receiving sets can have the satisfaction of keeping in touch with musical activity of the city and find recompense for their trouble in installing these sets."

Ray Allsop had been busy with the technical arrangements... "In Paling's concert hall microphones have been secreted, the wires carried upstairs to the top of the building, where a room has been erected and the aerials put up." Transmitting on a wavelength of 215 metres (1395kHz) and a power of 10 watts, Allsop promised the public "to send out something every day". He used, incidentally, a parabolic reflector microphone — the first known application of such a device in Australia.

The featured soloist in the inaugural broadcast was composer Roy Agnew, who played a 15-minute bracket of his own compositions. Then "at a quarter to eight the Philharmonic Society, who were rehearsing in the hall for the next performance of *Elijah*, sang under the baton of Mr Joseph Bradley several of the choral numbers and all this was given out with very fine effects. Paling & Co. reports that wires were received from their Queensland branches next day saying that the transmission was excellent".

Heartened by the plaudits of their listeners, Anderson and Allsop promptly applied themselves to providing more ambitious programmes. The next evening the star artist was Madame Emily Marks, who had just returned to Australia after 10 years abroad — during which time she had the distinction of being the first Australian to broadcast in America. This broadcast was also well received: "'The Prayer' from *Tosca* and Tosti's 'Good-Bye' were sung with wonderful effects, and in the last number she altered the song by taking the part an octave higher, as arranged with her and Tosti in Italy some years ago. The clapping of the audience after the number was so deafening at Mr Len Schultz's home at Longueville that for a few moments they could not imagine what had happened."

Raymond Cottam Allsop, who was instrumental in setting up 2BL's first transmitter in 1923 and became its founding chief engineer. He later developed and manufactured motion picture 'talkie' equipment, and many Australian cinemas were fitted with his 'Raycophone' plant. The first to demonstrate stereo sound, he was also the driving force behind FM broadcasting in Australia.

During the succeeding weeks Oswald Anderson excelled himself in procuring a star-studded lineup of talent, including visiting celebrities such as the American duo Lee White and Clay Smith. Miss White made the first radio charity appeal in this country in the course of a recital on Sunday 1st July 1923, when she urged listeners to contribute to St. Margaret's Hospital for Babies.

Some days later radio was given another novel application at a charity function held in the New Cinema, Bur-

Another picture of 2FC's founding manager Oswald Anderson, taken from the May 6, 1927 issue of Wireless Weekly.

wood (NSW). Miss Hilda Walker, a local soprano and thus well known to the audience at the charity screening of silent films, sang from AWA's studio in Knox Street, Sydney, and her recital was picked up and amplified throughout the cinema. The singer was then put into an open touring car and driven at high speed to the theatre, where she materialised through the curtains in a dramatic entrance. This occasion was publicised as 'Australia's first public wireless concert and pictures". Miss Walker, now Mrs Bongers, was still living in Sydney when this was written.

In retrospect it seems significant that the advent of radio broadcasting led some politicians to regard it as as ideal medium for airing parliamentary debates. When one member suggested that "a transmitting set be installed at Parliament House, Sydney, to enable members' speeches to be broadcasted to listeners-in all over the State", newspaper critics poured scorn on "the idea that anyone wished to hear more of members' utterances than they read in the press".

All this activity occurred during the gestation period of the Sealed Set Regulations, which were finally promulgated on 25th July and came into force on 1st August 1923. Even before their gazettal, trade interests in Melbourne had sought to broaden the regulations by suggesting that, in addition to large stations financed by listeners' subscriptions, there should be provision for stations in each State erected by wireless dealers and maintained by limited advertising. This proposal thus foreshadowed the creation of two distinct classes of stations, which ultimately became the pattern of Australian broadcasting. However, nothing came of the suggestion at that time because the Postmaster-General refused to entertain any last minute amendments to the scheme.

Under the Sealed Set Regulations, approved receivers were defined as responding 'to the wavelength indicated or to any wavelength not differing more than ten per centum from that specified'. They stated, *inter alia*, that 'no person, except an authorised officer, the maker, or an accredited agent shall break or interfere with the seal'. It is pertinent that from the very beginning, Australian broadcasters accepted without question the principle of programme censorship by the Government: the Sealed Set Regulations stipulated that... 'all matter broadcasted shall be subject to such censorship as the Minister determines', a broad stricture which had been agreed unanimously by the conference delegates.

Australia's first tentative step into public broadcasting was essentially a compromise between the existing British and American systems — sealed sets and unrestricted free competition respectively. Station licensees could decide their own charges for listeners' subscriptions, in addition to the PMG's statutory licence fee of 10 shillings. The licence of a broadcasting station was to be valid for five years and the station was required to provide a guarantee of £1000 that it would maintain a satisfactory service.

To celebrate 'the inauguration of Australian Broadcasting' Oswald Anderson arranged a memorable concert, *Ethereal Harmonies*, which was transmitted from Paling's concert hall at 9.00 - 9.45pm on 1st August, the day the regulations became effective. It was intended primarily for a select group at Government House, Sydney, but, of course, the transmission was heard by many owners of receiving sets.

Technical arrangements were handled by Ray Allsop, Malcolm Perry and Basil Cooke. George Taylor delivered an opening address, saying that Australia was "the last of the great Dominions to proclaim Broadcasting Regulations, so we are starting with the world's experience to guide us and maybe we shall succeed in giving glory to our great Empire, as we have in other great discoveries". Charles Maclurcan also spoke on the outlook for broadcasting during the course of the programme, which featured a number of distinguished Australian artists.

As a direct outcome of the Sealed Set Regulations, four broadcasting stations commenced operation in three Australian capitals — 2SB (later 2BL) and 2FC in Sydney, 3AR in Melbourne and 6WF in Perth. The first company in the field was Broadcasters (Sydney) Ltd, a group representing radio dealers, including New System Telephones Pty Ltd and Anthony Hordern & Sons Ltd, and supported by the newspaper magnate, Sir Joynton Smith, whose condition for joining the company was that

The earliest known photograph of an Australian radio broadcasting control room — 2FC's control room, which began service on December 5, 1923. It was built and equipped by AWA. (Courtesy AWA).

his building in Phillip Street, Sydney, should be the transmission centre. He also insisted that extensive tests should be conducted to prove the suitability of the site.

The original licence of Broadcasters (Sydney) Ltd was issued on 22 July 1923. The catalyst in the formation of the firm was W.J. Maclardy of *Wireless Weekly*, himself a licensed amateur.

A month after the regulations were gazetted, Maclardy was saying "there is no doubt that the sealed set has many faults, yet it has its advantages and should at least be given a fair trial".

He engaged the services of Ray Allsop, then radio engineer of New System Telephones, to move his (Maclardy's) experimental station, 2HP, from Cremorne to the roof of the *Smith's Weekly* office in Phillip Street. There, in October, the embryo organisation began test transmissions on 10 watts with live artists — violinist Doreen Douglas, soprano Dorothy Deering (who had "done a little broadcasting from Paling's"), and Margaret Herd, who in later years became the tiny tots' Fairy Godmother on station 2CH.

These experimental transmissions continued for some weeks and afforded many promising artists an opportunity of being heard on radio. Encouraging reports from distant localities justified the immediate construction of a 500-watt transmitter (the minimum power provided for under the regulations), and by November this new transmitter was already undergoing low power tests using the call sign 2SB (for Sydney Broadcasters). Early in 1924 this was changed to 2BL (for Broadcasters Ltd), in order to avoid confusion with 2FC's call sign.

Hoping to recoup its dealer-shareholders by the sale of receiving sets, Broadcasters Ltd decided on a minimal subscription of 10 shillings, advertising it as 'a free service... all that the purchaser of a set is asked to pay is the Government licence fee of 10/- per annum and 10/- demanded as a royalty on patents by AWA. No subscription will be charged on any receiving set tuned to the Company's wavelength if such set is purchased from a trader member'.

The station was launched on a shoestring budget. The studio "measured about 14 feet by 12 feet, the transmitter room even less, and the generators were in a small separate building akin to a glorified dog kennel".

Broadcasters Ltd planned to extend their service over 12 hours of the day, divided into a number of 'sessions' — the station closing down during the intervals. Station publicity announced... "three orchestras have been engaged to play, and will take turns at broadcasting".

The station was officially opened as 2SB on Thursday 13th November 1923 by the Postmaster-General, acutely conscious of its primacy as Australia's first public broadcasting station. The wavelength was 350 metres (857kHz). The original transmitter soon proved ineffi-

And this picture is the earliest known shot of an Australian radio broadcast. Taken in 2FC's studio in 1924, the only performer identified is pianist Horace Keats.

cient, so Ray Allsop was commissioned to redesign it. He remained as consultant to Broadcasters Ltd until June 1925, when he was appointed chief engineer of 2BL.

Less than a week before Broadcasters (Sydney) Ltd received their licence approval, the first broadcasting licence in Australia was granted to the large Sydney retailer Farmer and Company Ltd, who contracted with AWA to build, equip and install their station, 2FC.

Compared to their Sydney competitors, Farmer's management had grandiose programme plans: "arrangements with J.C. Williamson and J. and N. Tait for transmission of entertainment items from their circuits, a morning news service from *The Sydney Morning Herald* supplemented by an evening service from the *Evening News* and, in addition, market reports supplied by Dalgety & Co Ltd and quotations from the Sydney Stock Exchange". 2FC set its listeners' subscription at three guineas.

In accordance with the best professional practice, 2FC's studios and transmitter were at separate locations, connected by permanent landlines. The elaborate, acoustically-treated studios were on the roof garden of Farmer's store in Pitt Street and the transmission site was on high ground near Edinburgh Road, Willoughby (now Castlecrag), overlooking the upper reaches of Middle Harbour.

This location was apparently chosen because there was insufficient accomodation at AWA's Sydney Radio Centre, Pennant Hills; but 2FC was subsequently moved to Pennant Hills after completion of a new transmitter hall. Farmer's leased their entire technical plant from AWA, thus avoiding a substantial capital outlay.

By contemporary standards, 2FC was indeed a giant station. Two 200ft steel lattice masts, visible for miles around Sydney, supported the aerial array and the 5-kilowatt transmitter was assembled on the site. AWA's chief engineer Arthur Stephen McDonald was in charge of the project, assisted by Joseph Griffiths Reed and George Cookson.

While the main transmitter was under construction, tests were run with an imported Marconi 500W set. These consisted of counting up to 10, reading newspaper extracts and playing pianola rolls. The tests were carefully monitored in various country centres, such as Newcastle, Kiama, Bowral and Katoomba, by AWA technicians. The Katoomba observer recalls spending a pleasant week at the Carrington Hotel, where the management gave him permission to erect a fairly substantial aerial on the roof... "reception was loud and clear and the only disability was humping the heavy filament batteries up and down to the nearest garage for recharging".

By the end of November, 2FC's test transmissions were sufficiently advanced for the station to commence operation on Thursday 5th December and give 'Australian listeners their first taste of high class broadcasting' — a sideswipe at their impoverished competitors.

The report continued... "there were many scoffers who openly declared that broadcasting might be a utility but it could never be entertainment. The revulsion of feeling after hearing the first tests from Farmer's station working on considerably less than one-tenth of its power was remarkable".

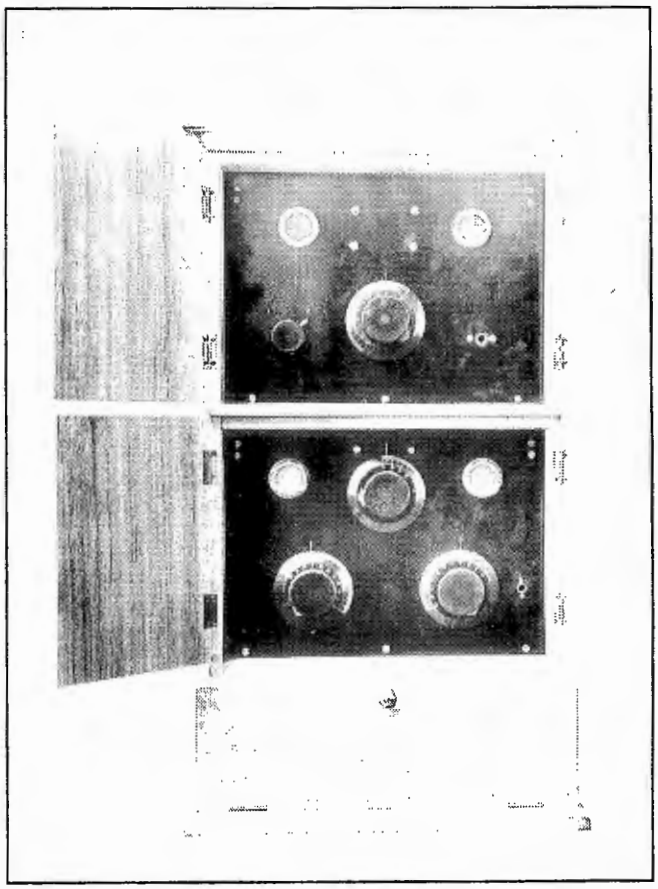
In point of fact this premature opening of 2FC before the completion of its 5kW transmitter was to prevent its rival, 2SB, from stealing the limelight at the big Wireless and Electrical Exhibition, held in the Sydney Town Hall from 3-8th December. The official opening of the station took place on 10th January 1924, the inaugural programme being a complete performance of the current musical *A Southern Maid*, starring Gladys Moncrieff, from the stage of Her Majesty's Theatre. Within a matter of weeks 2FC followed this with broadcasts of *The Merry Widow* and *Sybil*, performed by the Royal Comic Opera Company.

2FC's original wavelength was 1100 metres (273kHz), and each day's transmission was divided into relatively short sessions preceded by several minutes of studio chimes to enable listeners to adjust their tuning. The transmitter closed down between sessions.

These conventions were borrowed from England, where 2LO operated for three sessions daily and prefaced each session by tuning chimes. Four-note chimes, struck with a felt hammer, continued to be an essential piece of studio equipment, and a favourite toy of radio announcers for a quarter of a century. Later, when 'presentation' became a phobia, large sonorous Chinese gongs were installed by most stations and were struck with impressive ceremony to preface important programmes.

The bustle in Sydney had its counterpart in Melbourne, where two licensees were preparing to broadcast — although judging by the scant press notices, the firms concerned were obviously playing their cards close to their chests. One announcement said... 'while it has been known for some time that the Australian Broadcasting Company Pty Ltd, with which Messrs Farmer & Co of Sydney are associated, would establish a powerful broadcasting station in Melbourne, similar to the station operated by Farmer's in Sydney, it will come as a surprise to learn that a second service for Victoria has been planned by the Associated Radio Company of Australia Ltd.' This latter company also had an interest in securing the first Tasmanian licence, and planned to supply services to both Melbourne and Hobart by rationalising its technical arrangements.

Associated Radio lost no time in setting up a temporary 300-watt station at its premises in a'Beckett Street, Melbourne, where the company maintained a factory producing wireless apparatus. Its permanent transmitter was intended to be at Sunshine and, when completed, the smaller transmitter was to be shipped to Hobart to inaugurate a service there.



An AWA 'Radiola' sealed radio receiver of 1923-25, together with an 'amplifying unit' for improved long-distance reception. (Courtesy AWA).

The original 5-kilowatt transmitter used by 2FC, pictured in the Pennant Hills transmitter hall. It was designed and built by AWA engineers Joseph Griffiths Reed and George Cookson, under the direction of chief engineer Arthur Stephen McDonald.

3AR was officially opened on Australia Day 1924 by Dr Argyle, Chief Secretary of Victoria. The station operated on 480 metres (625kHz)... 'enabling all amateurs and experimenters to tune in easily, as their existing receivers have been designed to cover this wavelength'.

It would appear that 3AR opened on reduced power, because a contemporary report mentioned 'three hundred watts will be eventually used and this should ensure clear reception at considerable distance, even on a crystal set'.

Unfortunately the station soon fell on hard times and scarcely more than a year after its opening a columnist reported '3AR is a plucky little station and deserves better days. Its programmes look so well in print but, oh, if only that too-dreadful hum would cease'.

By October 1925, 3AR had moved to its new transmission site at North Essendon and had increased its power "so that to suburban dwellers the station sounds louder than ever, although thrice as distant to some. The curious hum is not now so conspicuous".

Whereas the first broadcasting stations in the eastern States expected to find their major support in the capital cities where they were located, Western Australia's pioneering station had an uncompromisingly agrarian policy which was implicit in its call sign: 6WF stood for Westralian Farmers Ltd. At the outset this company, with its strong pastoral influence, 'intended to install a two or three kilowatt transmitter capable of being heard through average receivers up to 300 miles but, as a result of overtures by pastoralists, that plan has been abandoned and a five kilowatt transmitter with a range of 600 miles is being installed'.

The real explanation was rather more chauvinistic, because when 2FC went onto its full power, Sydney programmes were heard clearly in Western Australia on two-valve sets and a Perth journalist suggested that, by increasing its power, 6WF "hoped to be heard in the eastern States".

Pioneer Perth experimenter Walter Coxon was invited to act as technical adviser to Westralian Farmers. During the Great War he had served in the wireless research department of the British Admiralty and, after demobilisation, had built himself the first amateur radio transmitter in Western Australia. This 'Maclurcan of the West' had transmitted from his own station, 6AG "no less than 3200 records, to the enjoyment of amateurs and the success of radio dealers".

Coxon became chief engineer and manager of 6WF and, due to his personal influence, 6WF was the only Australian broadcasting station to conduct a special session for wireless experimenters. This was despite the fact that Coxon's departure from the experimental ranks left

Western Australia with only one amateur transmitter — "Mr A.E. Stevens of Perth, who managed to be heard 400 miles away on a power of one watt".

6WF's listening subscription was four guineas, and the station's programme policy had a strong rural emphasis... 'directed mainly to farmers, pastoralists and country residents generally... news, market reports, musical and other entertainments, church services, speeches by visitors and other items required by residents outback'. The reasoning behind this policy was... 'to the city man wireless telephony will be for some time a source of curiosity. After the novelty has worn off, however, there can be little doubt that few, other than genuine experimenters, will continue to regard broadcasting with any seriousness'. The rural influence was also reflected in the name of the sealed receiver marketed by Westralian Farmers: The Mulgaphone, a two-valve set with an amplifier as an optional extra as well as 'a cabinet de luxe for those with advanced tastes'. The advertisement failed to mention whether this 'cabinet de luxe' was made from mulga wood!

Western Australian pride was satisfied by installing a 5kW AWA transmitter, identical to 2FC's, and 6WF was officially opened by the State Premier Mr Collier on 4th June 1924. At that time the station was running on 500 watts, but expected to go to full power within a month... 'thus enabling farmers and settlers as far north as Wyndham to hear satisfactorily with their Mulgaphone receivers'. Before discussing the problems of the Sealed Set Scheme, we should look closer at one of the interesting by-products of early broadcasting — the creation of microphone 'personalities'.

To the bemused public, listening fixedly to their chosen stations, the familiar voice of the announcer quickly generated a firm bond between station and listener. On 2BL George Ambrose Saunders — 'Uncle George' to an entire generation of Sydneysiders — appeared in the inaugural programme as a singer and went on to become the station's announcer.

This ex-army recruiting sergeant used his bouyant, outgoing personality to good effect, winning children's hearts with the first bedtime story on Australian radio and appealing equally to adults by launching 2BL's community singing concerts in King's Hall, Sydney. After four years with 2BL, 'Uncle George' joined 2GB where, in association with 'Bimbo' (Arthur Hahn), he became something of a legend in his own lifetime.

2FC's counterpart was quite a different personality. Arthur Stanley Cochrane — tall, portly and the quintessence of dignity — was born at Violet Town, Victoria, in May 1881. Coming to Sydney in 1914 he joined Farmer & Co and was a floorwalker in the store when Farmer's acquired the 2FC licence. The station advertised for an announcer and while the 240-plus applications were being sifted, Cochrane was used as a stop-gap. Almost overnight, he became an air personality in his own right.

'The Hello Man' — coined from his familiar call, "Hello, hello, 2FC Sydney" — made his mark primarily as the children's friend and storyteller, but also beguiled adults with readings from his favourite author, Charles Dickens. Cochrane moved to 2CH at its inception and ended his long radio career at 2GN, Goulburn, after having participated in countless momentous broadcasts.

A contemporary said of him... "He had his own small conceits — perfectly tailored suits, the vest piped with a thin, immaculate line of pique; his handsome bloodstone ring, walking stick and bespoke shoes. But with it all, a transparent honesty, for he was a simple man, devoid of intellectual affectation, yet possessing a shrewd mind". A rock-like figure set in the ways of his own generation, no discussion of the early days of radio would be complete without an affectionate tribute to 'The Hello Man'.

Listeners to those first stations rarely sensed what really went on in the draped interiors. Heavy drapes for acoustic damping were the dominant furnishing of early studios, so the resulting airless atmosphere was especially oppressive in summer. Studio equipment was crude and bulky... "everything built like a battleship" according to one veteran. Indeed, modern broadcasters would regard the studio facilities of Australia's pioneering stations as extremely primitive and, from an operational standpoint, positively nightmarish.

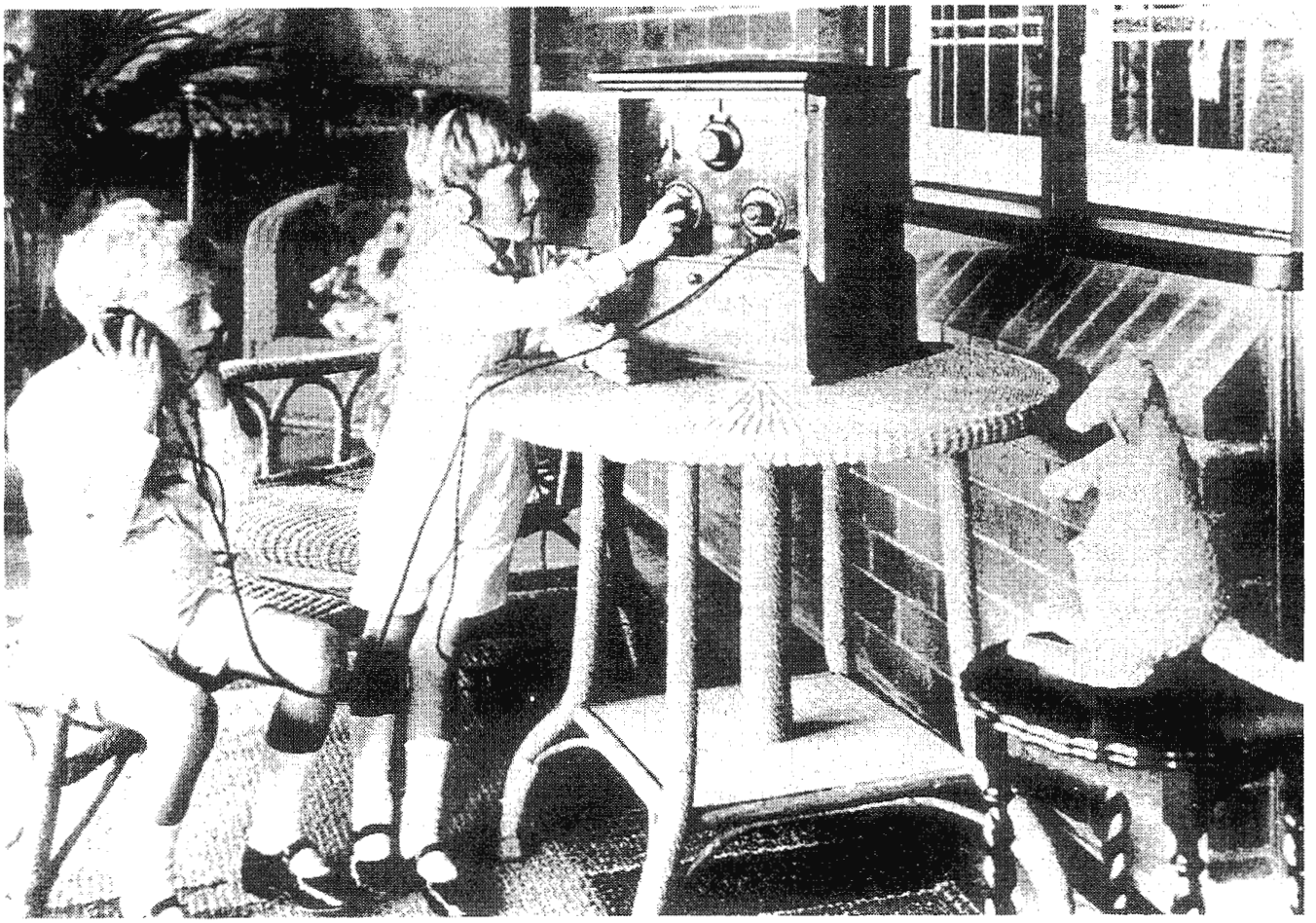
Because small synchronous motors and electric pickups had not been perfected, a spring-driven, hand-wound gramophone was an essential item of equipment. The vibrations of the heavy acoustic tonearm were amplified by the gramophone horn, in front of which a carbon microphone was permanently mounted. This was the source of all recorded music heard by radio listeners.

Our doughty veteran recalls "in those days we thought the quality wasn't too bad, but looking back it must have been diabolical in terms of frequency response. We didn't have electrically recorded discs; they came afterwards, and their labels were marked 'recorded by the new electric process' or some such wordage".

Electrical recording was, in fact, a direct outgrowth of radio's audio techniques. Loudspeakers of the early 1920's left much to be desired, but the appearance of the new 'dynamic cone speaker' in 1925 led to the development of an electric phonograph using the dynamic speaker — the Brunswick *Panatrope*, which employed an electromagnetic pickup.

The first pickups installed in Australian stations had their coils and armature in full view: "not concealed by a cover, but they worked". The announcer was required to change needles after every record, usually during an announcement. A common practical joke was to magnetise the needle supply of an unsuspecting announcer, so that he had difficulty in separating one needle while ad-libbing to a live microphone — and secretly cursing the prankster!

Acoustic feedback was a constant bugbear and many years were to pass before studios were equipped with monitor loudspeakers or, for that matter, before control



Ernest Fisk's two young sons Kelvin and Maxwell, using one of the AWA Radiola two-valve sealed sets on the verandah of their Wahroonga home. Maxwell was later killed during RAAF service, when he walked into a revolving aircraft propeller.

rooms were provided with receivers for checking transmission. Consequently it often happened that both announcer and technician remained blissfully unaware of a line failure or transmitter emergency.

The control room, at least, usually had telephonic communication with the outside world whereas the announcer — cloistered in his draped, airless cell — continued to 'fiddle while Rome burned'. As one ageing pioneer explained it, "the first hint the poor announcer had of any breakdown was when the control operator started banging on the glass window".

The earliest professional microphones were suspended inside a metal ring by mounting springs, to dampen vibration. Next came the Reisz microphone, a more refined carbon instrument mounted in a heavy marble block. The Reisz had a mica diaphragm and was not so prone to hissing as its forerunners.

The Reisz prototypes were imported from England by AWA and limited production commenced in Sydney, where a monumental mason was coaxed into diversifying his output from tombstones to marble microphone cases.

The carbon, after being hand-ground with a mortar and pestle, was screened through the finest laboratory sieve available — but unfortunately, the extremely small granules tended to compact and the microphone lost its sensitivity. Other than the announcer's desk and the ubiquitous gramophone, the most important item of studio furniture was undoubtedly the piano. Stations which could afford the luxury of live artists usually had a musical director, who doubled as accompanist, conductor, transposer and programme consultant. Smaller stations with limited budgets fell back on one of the favourite instruments of the 1920's, the pianola. Its tonal range was far superior to acoustic recordings and the announcer could play his own rolls by working the pedals — or if the mood took him, sing to the pianola's accompaniment.

The professionally built transmitters which launched Australian broadcasting were massive affairs. The various sections were constructed as separate units on frames of heavy steel piping. They were usually operated so close to overload that technicians were constantly on the alert for insulation breakdowns.

On one occasion a practical joker caused nervous apprehension among staff of AWA's Pennant Hills transmitter hall, by secreting behind the racks a tin containing bakelite powder and a 'live' coal. The unmistakeable stench of burning bakelite was enough to trigger off an intensive search of the entire building!

Some of the personalities associated with Sydney station 2UE in 1935. At the top are (left) Grace Shaw and May Filmer, both morning announcers. At centre left is C. Honeyfield, who was the station's 'agricultural commissioner' (he ran a morning programme dealing with pastoral matters, dogs, pigs, etc.) while at centre right is C. Agassiz, who was the interlocutor for the station's old-time minstral show. At lower left is Dorothea Vautier who ran the afternoon programme dealing with books and the arts and at lower right is 'Uncle" Si Meredith, who conducted the children's programme at 5.15 to 5.45 every afternoon.

Chapter 4

CLASS DISTINCTION

Even before the Sealed Set Regulations were issued, technical officers of the PMG's Department raised serious doubts about their practicability. The long wavelengths in excess of 1000 metres (i.e., frequencies below 300kHz) allotted to stations such as 2FC, 6WF and, later, 3LO, meant that many imported receivers tuned to medium frequencies were unable to receive these stations. Before long, broadcasters and listeners alike were complaining.

Between 1st August 1923 and 30th June 1924, a mere 1400 listeners took out licences. Revenue from their subscriptions was insufficient to support *one* station, and totally inadequate for the four then operating throughout the Commonwealth. Even more significantly, the PMG received during the same period some five thousand applications from individuals claiming to be bona fide experimenters and thus eligible to listen to any station.

It was also common knowledge that hobbyists with a smattering of radio — including artful schoolboys — could easily build a broad-band set and listen to *any* station without payment. George Taylor, erstwhile chairman of the Sealed Set Conference, lamented... "the present system is creating an army of illicit listeners-in. Smart young lads are able to surreptitiously listen-in to all transmissions, so we are making thieves of our own young people by placing before them, as it were, a great ripe orchard, unfenced and unprotected".

"Sealed sets are wireless walls" said another critic, "things cannot get through". And, of course, there were many complaints from radio enthusiasts who had received their initial grounding in wireless during the war: they felt 'cribbed, cabined and confined, by being forced to listen to one station when their wartime experience had taught them to twiddle dials in their sleep'.

Another disability was the technical hurdle of building sealed receivers to comply with the regulations; of 154 designs submitted to the PMG for approval, only 61 were acceptable. The regulations did not permit a listener to build his own set and, consequently, country people were at a great disadvantage because most set manufacturers could not guarantee efficient reception in country districts.

This drawback demolished the pious hope of Postmaster-General Gibson "that the advent of wireless broadcasting will prove a great boon, especially to people in country areas, as its successful development should place them virtually in the position of city dwellers who obtain their news in the morning and evening".

So the stage was set for another confrontation between the radio fraternity and the Government. In February 1924 George Taylor, wearing his other hat as promoter of the Association for Developing Wireless in Australia, New Zealand and Fiji, forwarded the views of his association to the Postmaster-General. The gravamen of this wordy document was that the Sealed Set Scheme had failed, and that the PMG should immediately convene a representative conference to introduce open sets.

An appendix of suggested alterations to the existing regulations contained one which was destined to play a major part in shaping the future of Australian radio:

...that two clauses of Broadcasting Stations be licensed, such stations to be classed as:

(A) Subsidised Broadcasting Stations, which shall participate in the revenue from Receiving Licences

(B) Non-Subsidised Broadcasting Stations

Taylor went on to define these stations as his association envisaged them:

'A' Class Stations must conform to prescribed standards as regards

(a) Continuity of service

(b) Quality of programme

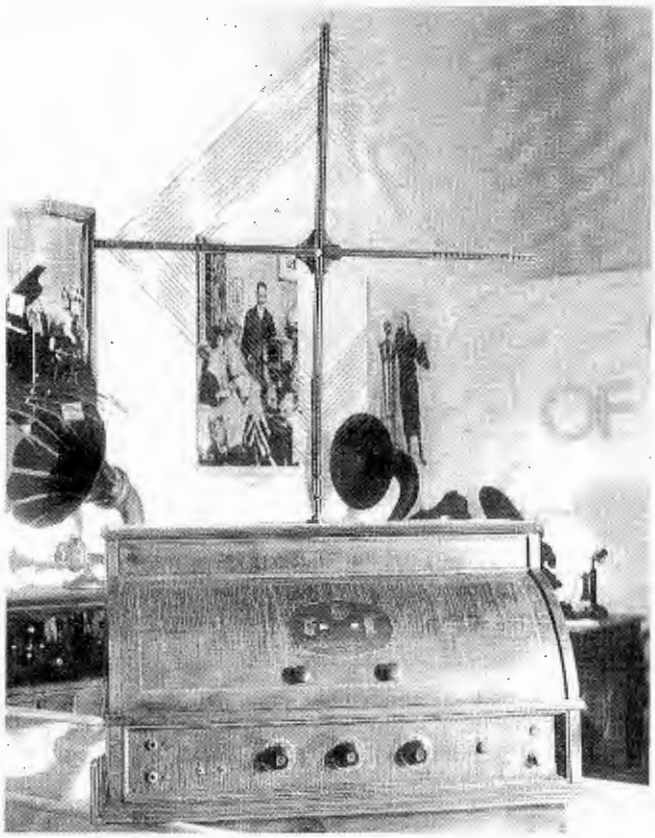
(c) Minimum power

(d) Sufficient financial guarantee

'B' Class Stations shall be allowed to exist without complying to the above standard.

Beset with complaints from disgruntled broadcasters, traders, experimenters and the listening public, the Postmaster-General called a second conference, which was held at the Sydney GPO early in April 1924. The independent chairman was Major (later Sir) Charles Marr, MP, DSO, MC, an experienced wartime wireless officer, and the Postmaster-General was represented by his new chief administrator, Mr (later Sir) Harry Percy Brown.

This crucial conference was not without its modicum of drama. On the first day a petition was received from a group of large Sydney retailers (not including Farmer &



AWA's six valve 'Radiola Super' receiver of 1926 achieved phenomenal popularity with Australian listeners. Perhaps this was because it could reliabily receive stations from interstate using only its frame aerial. Obviating the need for a highly-visible outside aerial. There had been well-reported prosecutions of unlicensed listeners, and in those days an outside aerial was an obvious 'give-away'...

Co.) proposing the formation of one big broadcasting company for the whole of Australia, but 'notwithstanding that three days' notice was given the signatories they declined to send a representative to the conference, saying in effect that it was neither the time nor the place to air their views'. At the end of the first session two directors of Farmer's walked out of the conference and did not attend again.

After days of discussion and deliberation the conference submitted a long list of detailed recommendations to Postmaster-General Gibson. Then began an agonising wait of three months during which, as one editorial put it... 'dozens of small traders are literally on the brink of ruin and the whole industry is at a standstill. Even those anxious to get experimental licences are held up'.

Finally on 11th July, Prime Minister Bruce tabled the new broadcasting regulations in the House of Representatives. Sealed sets had given way to open sets and two distinct classes of broadcasting stations, denoted 'A' and 'B', were to be created. But apart from these agreed considerations, the conference delegates were astonished to discover that the majority of their other recommendations had been extensively rewritten or discarded entirely. They sensed that Mr Brown was architect of the revised scheme.

Briefly, the essential points of this new blueprint for Australian broadcasting were:

Two A Class licences were authorised for New South Wales and two for Victoria, mainly because these stations were already in existence or, in the case of Victoria, detailed planning for the second station was well advanced. In all other State capitals only one A Class station was provided for; but the regulations stipulated that A Class licensees should, if required, establish relay stations in country areas.

A Class stations were to be financed mainly from licence fees imposed and collected by the Government from listeners, radio dealers and experimenters, whereas B Class stations would not participate in revenue from these sources but would earn their own income from advertising. On the other hand, A Class stations were not precluded from broadcasting paid advertisements, but were subject to specific restrictions.

For example, their advertising was confined to periods not exceeding five minutes in duration and not exceeding 30 minutes in any regular programme or 60 minutes in any consecutive 12 hours.

Furthermore, at the commencement of each advertising period an announcement was to be made of that intention, followed at the end of the advertising period by a further statement that the regular programme was to be resumed. Each category of station was required to publish a rate schedule and no advertisement could be refused without approval from the Postmaster-General.

Listeners' licence fees were calculated on the basis of three zones in relation to distance from the transmitter, Zone 1 being the territory within a radius of 250 miles from an A Class station. The Zone 1 fee for the first year of the scheme was 35/- (35 shillings), of which 5/- was retained by the PMG's Department and the balance earmarked for financing the A Class service.

During the second year licence fees in Zone 1 were reduced to 27/6d. Country listeners paid lesser amounts for their licences. The regulations required all station licensees to make their own arrangements for meeting copyright and patents charges.

Official recognition of the open receiver produced an immediate and dramatic increase in listeners' licences: from 1206 licences in force throughout Australia in July 1924, the figure soared to 38,336 by the end of that year and 12 months later the total had already passed 85,000.

The first prosecutions of unlicensed listeners occured in Sydney. Coldly resisting the prevailing mood of seasonal goodwill, the PMG's Department summoned the first crop of defaulters before a magistrate on Christmas Eve 1924. Fines of £1 with 24/- costs were imposed.

Wireless Weekly reported that these shock prosecutions 'resulted in some hundreds of aerials disappearing from the public view and thus a very large number of potential supporters of broadcasting went out of the game, perhaps permanently. There was a rush... not towards the licence counter at the GPO, but to get the backyard aerial down before the postman appeared the next morning'.

On the same score it was later suggested that not a little of the phenomenal popularity enjoyed by the 1926 six-valve AWA *Radiola Super* was the set's ability to 'tune in Sydney, Melbourne, Brisbane, Adelaide and other stations without the use of an aerial' (an outside aerial, that is).

In August 1924, the Wireless Institute of Australia began publishing in Melbourne an official monthly organ of its activities, *Experimental Radio and Broadcasting News*, with Ross A. Hull as associate editor. This journal reflected Victoria's dissatisfaction with the current state of broadcasting: 'It is time someone took hold of the Australian radio situation and gave it a good shake. In Sydney there is a good broadcast service and subscribers are paying their fees willingly... Sydney is undoubtedly in the throes of a wireless boom. This should be a warning to Victorians to put their house in order'.

But Victoria's annoyance at being bested by Sydney was soon quelled. By January 1926 its licence figures already exceeded those of New South Wales, and eight months later Victorians held more than half the total number of radio licences in the whole of Australia. The reason for this spectacular upsurge in listenership was the opening of 3LO, which soon emerged as the most successful station in the Commonwealth.

3LO, a loyal echo of 2LO in London, was launched by the Broadcasting Company of Australia Pty Ltd — the shareholders of which were Farmer & Co Ltd (Sydney), J.C. Williamson and J. & N. Tait, Herald and Weekly Times Ltd and Buckley and Nunn Ltd. The licence was issued on 22nd July 1924 and 3LO commenced operation on 13th October of that year.

A suite of elaborately furnished rooms in the Cambridge Building, 139 Collins Street, housed the studio in which 'all walls, ceilings and windows were heavily padded with mattresses in order to deaden any vibration'. Actually these mattresses, concealed artistically behind the inevitable heavy drapes, were to deaden the incessant clanging of cable tram bells in Collins Street.

The studio locale, in a building owned by Sir George Tallis and the Taits, was selected by Thomas William Bearup, a former AWA marine operator who had absorbed a knowledge of broadcasting at 2LO, London, in 1923 before returning to Sydney in time for 2FC's opening. Somewhat reluctantly, he was dragooned into the studio managership of 3LO and was to be continuously involved with the direction of Australian broadcasting, for many years.

Permanent landlines connected the studio with the transmission site at Braybrook, four acres of flat country six miles from the Melbourne GPO. Like 2FC, its Sydney model, 3LO was equipped with a 5kW AWA transmitter and two 200ft steel lattice masts. The station's original wavelength of 1720 metres was changed to 371 metres (808kHz) in July 1925.

With Sir George Tallis as chairman of directors, the destiny of 3LO was firmly controlled by theatrical interests, a circumstance which contributed enormously to its meteoric success.

The station was managed by Major Walter T. Conder, a Gallipoli veteran with a flair for showmanship and a background of varied experience, including such diverse employments as sportsmaster of Launceston Grammar School and Governor of Pentridge Gaol. The theatrical influence manifested itself in 3LO's spectacular opening programme — Dame Nellie Melba's farewell performance of the opera *La Boheme* from the stage of His Majesty's Theatre. One contemporary recalls that it was impossible to buy, hire or borrow a radio set in Melbourne that week...

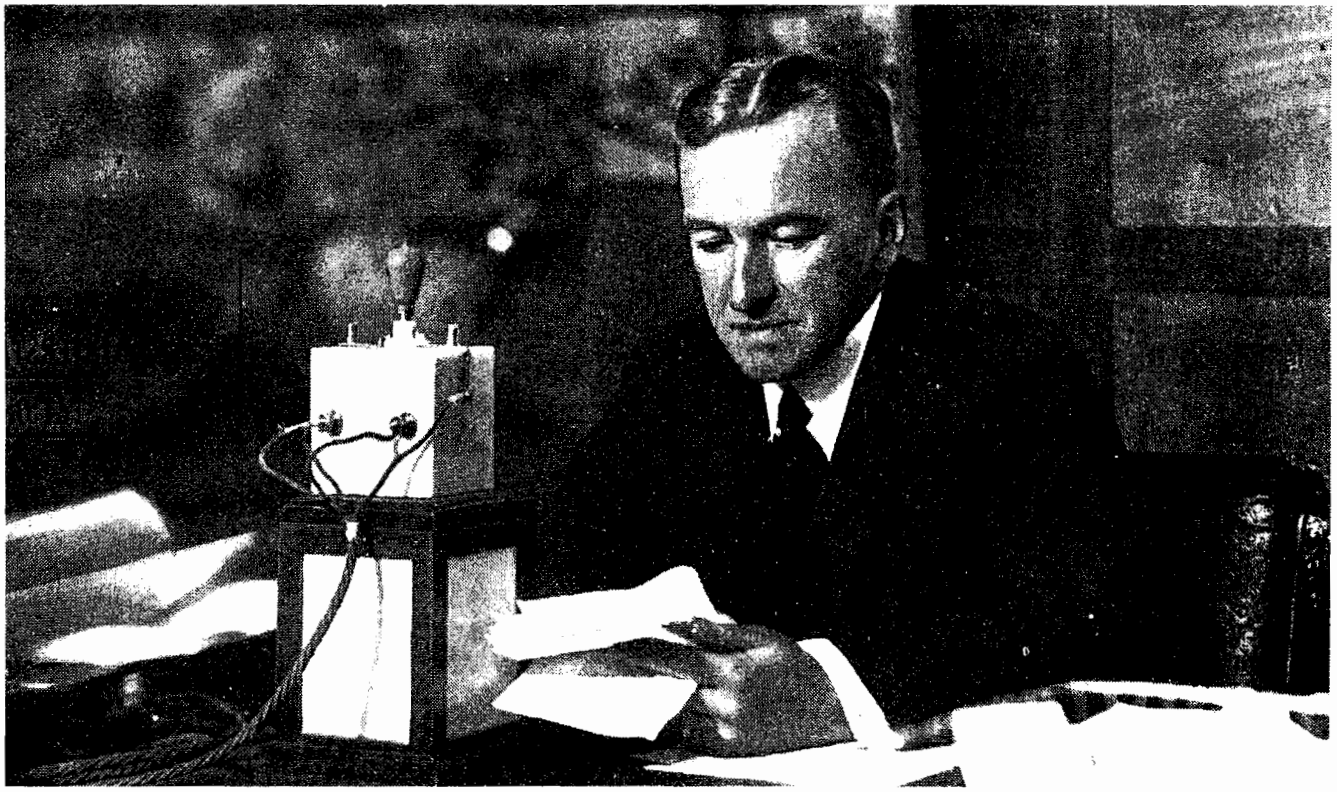
Hard on the heels of 3LO's debut, Adelaide acquired its planned A Class station, 5CL, licensed to Central Broadcasters Ltd. Service commenced on 20th November with a temporary 1/2kW set operating on 395 metres (760kHz). The number of licensed listeners almost doubled within three months, but there was considerable dissatisfaction with the programmes of the new station and most South Australians preferred to tune to 3LO. One critic said "South Australia has suffered severely from the great volume of canned music that is put on the air. Even the local A Class broadcaster is guilty of circulating talking machine music, but it must be remembered that we are not very strong on artists over here".

In the fulness of time AWA completed 5CL's 5kW transmitter, which was shipped to Adelaide and installed at Brooklyn Park by Joseph Reed. When it came on the air on 16th September 1926 its higher power promptly blanketed the interstate stations which had been supplying Adelaide's favourite programmes, so there was a further outburst of dissatisfaction.

Tasmania entered the broadcasting arena when 7ZL opened on 17th December 1924. The original licence was issued to the Melbourne promoters, Associated Radio, but progress in the Apple Isle proved painfully slow.

In April 1926 Donald MacDonald, consulting engineer of 3AR, 5CL and 7ZL, went to America to get fresh ideas for revitalising the three stations. At the time 3AR's power was only one third of 5CL's, and 7ZL was 'smaller still, being less than one twenty-fourth of the power of 5CL'. MacDonald promised that 3AR and 7ZL would be "brought into line with their larger contemporaries and when that has been done there will be no low power A Class station in the Commonwealth, and if stations and listeners do their part co-operatively, much unnecessary criticism and jealousy will vanish".

'Things are moving rapidly with the new station, 7ZL',



Melbourne station 3LO began operating on October 13, 1924, from a studio in the Cambridge Building in Collins Street. The station's 5kw AWA transmitter was located at Braybrook, and initially operated on 1720 metres. By 1927, when this picture was taken of announcer Maurice Dudley at the microphone, 3LO had become the most successful station in the Commonwealth.

said a report of August 1926; 'the studio is to be erected at 95 Elizabeth Street, Hobart' — actually it was above a fruit shop. Sidney F.H. Laws, who years before had assisted John Graeme Balsillie to erect some of Australia's coastal wireless stations, was appointed general manager of Tasmanian Broadcasters Pty Ltd and set about the task of reorganising the station.

By June 1927 7ZL had increased its power to 3kW, although Sidney Laws commented ruefully "the kick is now on the programmes, but I ask you, what is to be done when we are not yet receiving any revenue, and when we do it will only amount in a year to what 3LO receives in a couple of weeks".

At that time Tasmania had less than 2500 licences in force, compared with 119,000 in Victoria. 7ZL was even too poor to afford an 'official announcer', the hallmark of prestige in early radio.

Queensland was thus the last Australian State to acquire a public broadcasting station, but before 4QG opened the southern States had already laid the foundations of commercial radio in accordance with the B Class provisions of the new regulations.

From press reports of that time it is clear that the A Class stations were unable to satisfy all tastes: "there is much criticism of the class of stuff put out by 2BL and, for that matter, by 2FC" was a typical plaint, and listeners with no ear for highbrow music or appetite for weighty talks continued to explore the ether in search of more homely fare.

Australia's first commercial station, 2BE Sydney, owned by Burgin Electric Co Ltd, opened on 7th November 1924 but had a difficult time from the outset. Eighteen months later it was broadcasting on only two nights per week for a total of five hours, and running rather ominous press advertisements... '2BE will be glad to get in touch with artists willing to give their services to this station'.

In 1927 2BE was off the air for a lengthy period as the result of a fire at Burgin Electric, but hoped 'to recommence in the New Year'. After its faltering start 2BE finally expired in 1929, the year of the Great Depression.

Cecil Vincent Stevenson's station 2UE was the second commercial outlet in Australia and is today the eldest survivor, having been in operating in that role since 26th January 1925. It grew from extremely modest beginnings, as did all its B Class contemporaries of the 1920's.

Stevenson's son, Murray, who had a long association with 2UE before moving to television, remembers the original station at the family home in Storey Street, Maroubra. The backyard was dominated by two 80ft flagpoles supporting the antenna, the closed-in back verandah housed the transmitter, and the dining room did duty as a studio.

Morning and night Stevenson ran his own broadcasts,

singing, pedalling the pianola, playing records and, of course, announcing. By day he attended to his business, the Electrical Utilities Supply Co in Radio House, George Street, Sydney. 2UE's call sign was a euphonious reversal of the firm's initials. So modest was 2UE's entry into commercial radio that the trade press failed to mention the station's existence for more than a year afterwards...

The first commercial station in Australia outside a capital city is an honour that belongs undeniably to 2HD. Licensed to Hugh Alexander Douglas of Newcastle, 2HD went commercial one day after 2UE and with scarcely more press acclaim. *The Newcastle Morning Herald and Miners' Advocate*, which reported every other petty occurrence in the district, made no mention of 2HD's opening and a week later, when the same paper began printing radio programmes on its amusements page, only 2FC and 2BL were listed. 2HD's licence was transferred to W.W. Johnston on 21st February 1928.

This lack of public notice was not uncommon. The pioneer commercial stations were usually one-man enterprises broadcasting makeshift programmes at irregular hours and, because they had no share in the disbursement of licence revenue, were not accountable to listeners for their vagaries or shortcomings.

Consequently it is hardly surprising that their births and deaths were given little, if any, publicity. Newspapers were apt to look askance at local B Class stations as being competitors for the available advertising pound and, in some areas, open hostility developed between the two media.

Despite these difficulties Australia's fourth commercial station, 2UW, enjoyed considerable notice — probably because its mentor, Otto Sandel, was a personality in his own right. Moving from Brisbane to Sydney in the early 1920's, Sandel studied at the Marconi School of Wireless and secured an amateur licence for 2UW in 1923.

While still in the experimental ranks, 2UW broadcast the first political speeches in Australia by arrangement with Mr (later Sir) Archdale Parkhill, who was the principal speaker. In preparation for 2UW's commercial debut on 13th February 1925 Sandel, a wireless trader, advertised that he was about to increase his power from 15 to 400 watts, adding... "it has been decided to clear the studio of all sets and materials on hand to make room for the high power transmitter".

Billing 2UW as "the little station with the big kick", Otto Sandel proudly shed his amateur mantle: "Would listeners please note that 2UW is not an amateur station, but a B Class station with authority to carry on regular programmes on 267 metres".

2UW was on the air each Monday, Wednesday, Friday and Sunday, the weekly programmes extending over three hours per night from 7pm to 10pm. The first half-hour was devoted to bedtime stories, read by the proprieter in his alter ego of 'Uncle Otto'. There were three sessions on Sundays.

5DN Adelaide, the first B Class station in South Australia, was the next amateur to go commercial — on 24 February 1925. Operated by Ernest James Hume of Parkside, 5DN was described as "holding pride of place among transmitters in South Australia... and although using only about 40 watts, is already well known throughout the Commonwealth and in New Zealand. The station is easily recognised by its lady announcer, Mrs Hume, who also tells children's stories on Thursday evenings under the *nom de plume* of Leonora Star". 5DN was equipped with two programme lines, "one to the music room of Mr Hume's private residence and the other to the Elder Conservatorium of Music and Adelaide University for concerts and educational lectures".

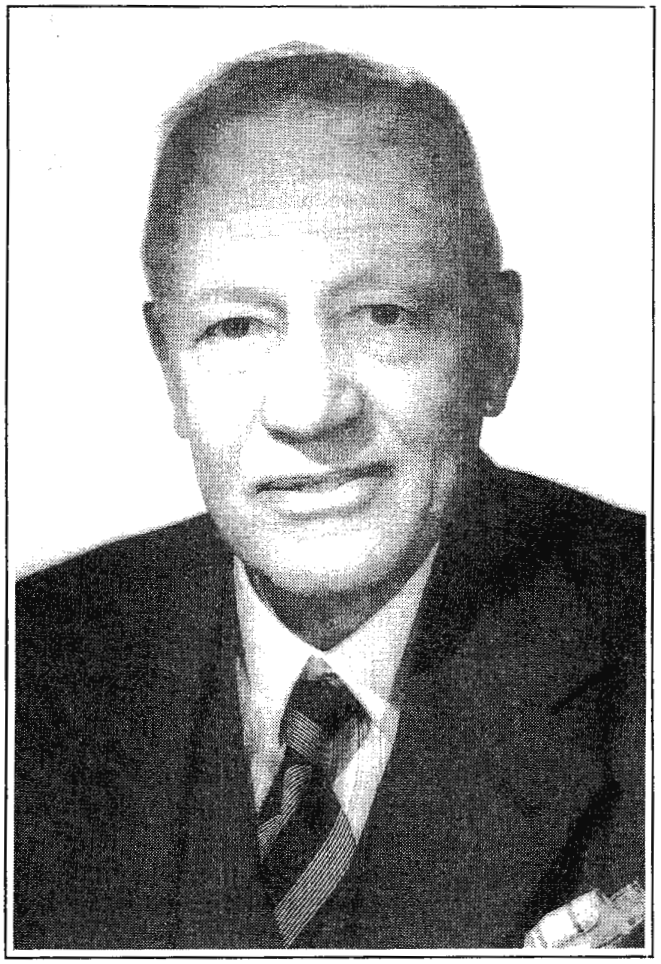
From contemporary evidence we learn that 5DN, like many other commercial stations, apparently broadcast no advertising for quite some time after securing its B Class licence. It is equally apparent that prospective sponsors were not forming a queue to place their business with those pioneers of commercial radio. Nor was much known about the psychology and techniques of broadcast advertising, for in the 1923 edition of his *Principles of Advertising* Daniel Starch dismissed the radio medium in one brief sentence.

5DN had been operating for six months when a South Australian magazine reported... 'a great deal of interest has been aroused by the announcement that Station 5DN is likely to put on a daily programme. To test the position, Mr Hume has secured the consent of the Postmaster-General to broadcast advertisements in addition to the usual programme. It is understood that the charge would be about £1 per minute'.

Towards the end of 1926, when the station increased its power to 500 watts, it was reported that 'The popularity of 5DN was again evinced when no fewer than 14 people called at the studio in Hindley Street to request dance music'.

Within a fortnight of 5DN's commercial debut, 3UZ followed suit to become the first B Class broadcaster in Victoria. This station was founded by Oliver J. Nilsen & Co, as an adjunct to their electrical and radio business, and began as an experimental transmitter supplying musical programmes two nights per week on 350 metres. The small studio in Melbourne was equipped with a gramophone and pianola and had 'delighted enthusiasts in every State of the Commonwealth with its excellent transmissions'.

About the time that 3UZ acquired its commercial licence, the station "was employing two 5-watt valves as oscillators and two as modulators". But those disloyal Melburnians who were in the habit of tuning to Sydney stations with unselective receivers were displeased by 3UZ's increased signal strength: a radio journal reported 'In allotting wavelengths the parties concerned should avoid such impasses as that which results in 2BL being jammed by that fine local station 3UZ, whose transmissions recently come clear and strong and exactly on top



Cecil Vincent Stevenson, who founded Australia's second commercial station 2UE in January 1925, operating initially from his home the Sydney suburb of Maroubra. Today 2UE is the country's oldest surviving commercial station. C.V. Stevenson's son Murray was to become chief engineer of ATN-7, when television began in Australia. (Picture courtesy Murray Stevenson).

of 2BL's and, of course, smother it. Uncle George (i.e., George Saunders of 2BL) should not be elbowed out of the Cabbage State in this unnecessary way'.

The next station in chronological succession was Brisbane's A Class broadcaster, 4QG. Its call letters, standing for Queensland Government, gave explicit testimony of its origins and control. 'In other parts of Australia private concerns have been allowed to obtain licences, but in Queensland the State Government has decided that wireless broadcasting has such a great future that it should be a public utility controlled by the State'.

Service commenced from a temporary station on 27th July 1925 and continued until April of the following year, when the 5kW AWA transmitter, identical to those of 2FC, 6WF, 3LO and 5CL, was ready. AWA's ubiquitous transmission engineer Joe Reed was in charge of the massive installation on the roof the State Insurance Building, Brisbane, where two steel aerial masts dominated the city skyline.

The Queensland Radio Service, a sub-department of the State Government, was formed to control 4QG. The first station director was John William Robinson, formerly of *The Sydney Morning Herald* and 2FC.

The official opening of Brisbane's A Class station was performed by the Premier of Queensland, William McCormack, on Thursday 22nd April 1926. Transmitting on 385 metres (780kHz), 4QG was soon being enjoyed by listeners throughout Australia, New Zealand and the Pacific Islands... 'numerous enthusiasts in Victoria regularly receive 4QG on crystal sets and from West Australia have come reports of excellent reception on one valve'.

The souvenir programme of the station's official opening contained one embarrassing advertisement by a Brisbane radio dealer proclaiming darkly that '4QG can be eliminated if you know how'. It is worth noting that 4QG was one of the few A Class stations to capitalise on its ability to accept paid advertising; in the first year of operation it made a profit of £730, after paying £2670 in copyright and patents fees.

Queensland's first B Class station took to the air on 16th August 1925. It was 4GR Toowoomba, licensed to Gold Radio Service and conducted by Edward Gold. This small station had a difficult time from the outset, a fate shared by B Class licensees in considerably more populous areas.

The establishment in Sydney of 2KY and 2GB, within the space of a year, marked a significant change in the development of Australian broadcasting. Up to that time practically all B Class licences were held by wireless traders, but the launching of two Sydney stations to expound the philosophies of their respective licensees was a brand new phenomenon for Australia and reflected an increased social consciousness among broadcasters.

The moving spirit behind 2KY's genesis was Emil Robert Voigt, an English-born engineer who, among his diverse accomplishments, had represented Great Britain as an Olympic athlete. After setting up the Labor Research and Information Bureau at the Sydney Trades Hall, Voigt visited the United States in 1923-24 and, on his return, reported how effectively radio was being used in American political campaigns.

Recognising the possibilities of making use of radio to counter adverse newspaper publicity, the Labor Council formed a wireless committee, which in due course applied for a B Class licence. In his memoirs J.T. Lang recalls... "Voigt and (Jock) Garden addressed every trades union in the search for funds. The response was only lukewarm. Some of the union secretaries had no time for such newfangled nonsense". So Australia's — and also the world's — first labor broadcasting station had to be launched on a very slim budget indeed.

The technical work of design, construction and installation was undertaken by Ernest Gordon Beard, a former Royal Navy wireless man who was then chief engineer of United Distributers Ltd. His young assistant, Leonard Nelson Schultz, had taken up radio whilst still a school-

boy and was destined to be involved with it for the rest of his life. According to Voigt, the original cost of setting up 2KY was £1636/6/8. The station was located on the roof of the Trades Hall in Goulburn Street, Sydney, and commenced operation on Saturday 31st October 1925 with a temporary power of 1500 watts and a wavelength of 279 metres (1075kHz).

The ethos of the new station was summed up by Voigt: "In addition to the usual musical programme, 2KY will broadcast special debates at the Trades Hall and for this purpose microphones will be installed in the main halls throughout the building. The public will be given an opportunity of hearing discussions by the Labor Council and other organisations. The schedule of broadcasting hours is from 3pm to 5pm and from 7pm to 11pm Monday to Saturday. No broadcasting will take place on Sundays or public holidays".

One of the first body blows sustained by 2KY was an edict from the PMG's Department warning that transmission of messages to Labor Party branches would constitute a clear breach of official regulations.

Users of crystal sets had difficulty in separating 2KY from 2BL, so wireless journals promptly broke out into a rash of technical articles explaining 'how to tune out 2KY', which must have been very discouraging for the new licensees.

Not many months later, the advent of another B Class station further complicated Sydney's listening habits and a fresh controversy ensued about interference between 2FC and the newcomer, 2GB. But before 2GB was heard on the airwaves, mounting dissatisfaction at all levels of Australian radio swelled to a chorus of complaint and reached its crescendo in a searching Royal Commission.

Many factors contributed to the prevailing disenchantment with early broadcasting. All the A Class stations and practically all the B Class outlets were sited in capital cities, catering almost exclusively to metropolitan audiences.

Although the national economy was solidly based on rural production, scant attention was paid to the needs of country listeners — except for some programme concessions such as broadcasts of commodity prices, etc. There had been considerable discussion about providing relay stations in country areas, but the economics of relayed programmes posed an insuperable problem.

In Victoria, where more than 60% of licence revenue was derived from crystal sets, country listeners were obliged to install valve sets to receive Melbourne stations and they were understandably apprehensive that they might be further penalised be a new licence fee calculated on valves.

To provide for these rural dwellers, relay stations would need to be built at Ballarat, Bendigo, Sale and Wangaratta and the establishment costs of these four stations, independent of landline charges, were reckoned at £13,600. The prospective return from licensed listeners simply would not cover such an expenditure.

Wireless administrators were considerably influenced by the opinion of the British radio authority, Captain Peter Eckersley, that enjoyable reception was only consistent within a radius of 100 miles from a major station. The more stations that were licensed, the greater the possibility of fringe interference, although freak reception of distant stations would diminish accordingly. It was concluded that New South Wales would need a minimum of three country relay stations in areas such as the Riverina, Orange and Armidale, but the potential licence revenue from these places was an unknown factor.

Nor was there any incentive to open B Class stations in country districts. Mockler Bros inaugurated a 250-watt station, 2MK, at Bathurst on 11th November 1925 and suffered the characteristic problems of other pioneering country broadcasters. E.K. Gillies, who managed this station, admitted that there were only two licensed listeners in the Bathurst area before 2MK opened yet, largely as a result of having a local radio service, more than 160 licences were taken out in nine months.

But because 2MK was a B Class outlet, no monetary benefit accrued to the station from these licences. Indeed, Mockler Bros spent more than £1000 in 12 months to promote radio in Bathurst: "they had sold five-valve sets at 2/6d profit in order to get them into the homes of people and get others to come and buy them".

The endeavours of Mockler Bros in Bathurst stirred a few other enthusiastic innovators to consider the possibilities of extending B Class services to country districts. Otto Sandel had lengthy negotiations with the PMG's Department about a commercial station to serve Wagga. His initial plan was to intercept 2UW's Sydney transmissions on a powerful receiver in Wagga and to re-radiate the programme from a local transmitter so that "listeners in Wagga with small receivers like crystal sets will be able to hear the whole programme, whereas at present a valve receiver is required to hear Sydney and Melbourne stations".

Sandel erected a 100ft mast in Gurwood Street, Wagga, to pick up his 2UW programmes and also planned to broadcast on one night each week "Wagga district musicians, of whom there are several of high standing". However the interception of distant stations was a chancey business on early valve receivers, which were not equipped with automatic volume control and thus subject to periodic fading.

Almost 89% of licence holders in New South Wales lived within 50 miles of the Sydney GPO, a statistic that was misinterpreted by officialdom. Instead of planning a reliable service for country listeners, the official attitude was to ask whether 'the farmer really wants radio'. Financial considerations were the over-riding factors. In October 1926, Kempsey was removed from the list of country towns being considered for relay stations because 'the cost of the lease of the telephone circuit from Sydney would be prohibitive considering the revenue likely to be derived from licenses'.

The BBC's Captain Eckersley gave Australian broadcasters food for mature thought by explaining how English radio provided alternative programmes. This had particular relevance to Sydney, where 2FC and 2BL 'frequently broadcast similar programmes on the same night, each attempting to outdo the other in excellence. Not only has the talent been divided, but a listener turning from one station to another for a change of programmes, finds himself listening to exactly the same type of music'.

Wireless Weekly suggested two remedies: 'First, that licence fees be abolished, relying on advertising revenue for the upkeep of the stations, in short the American system. Second, that all broadcast services come under a single control, be it Government or private enterprise.

This suggests a monopoly — repugnant thought! — however, the advantages or disadvantages would depend entirely on the terms on which such a monopoly was granted'.

In both Sydney and Melbourne, where two A Class stations were battling for supremacy in each capital, it was almost inevitable that their initial competitive spirit would degenerate into bitter hostility.

The main bone of contention was their disparate share of the licence revenue, which the PMG decreed should be divided in the ratio of 70% to 2FC and 3LO and 30% to 2BL and 3AR. This arbitrary division was adopted because, when the regulations were framed, the power and coverage of 2FC and 3LO were considerably greater than that of their competitors.

The original 2BL 'did not make a farthing profit' and was only saved from extinction by injections of outside capital resulting from a Sydney 'newspaper war'. Because 2FC's news service was supplied by *The Evening News* its competitor, *The Sun*, determined 'to protect its interests on the air by acquiring an interest in 2BL', accepting debentures for £7500 for eventual conversion to shares in the company. When 2BL appealed to the Government for an equitable distribution of licence revenue, the Postmaster-General appointed a leading King's Counsel to arbitrate in the dispute.

A somewhat similar situation pertained in Melbourne. With 3LO enjoying unprecedented success, efforts were made to bring 3LO and 3AR under single control in order to rationalise revenue distribution; but the directors of 3AR refused. The station had its own plans for achieving recognition.

Following Donald MacDonald's return from his fact-finding tour of the United States, 3AR intended to install a 5kW transmitter and to approach the Postmaster-General for a fairer share of the listeners' licence fees. The stalemate was becoming more frustrating to all concerned.

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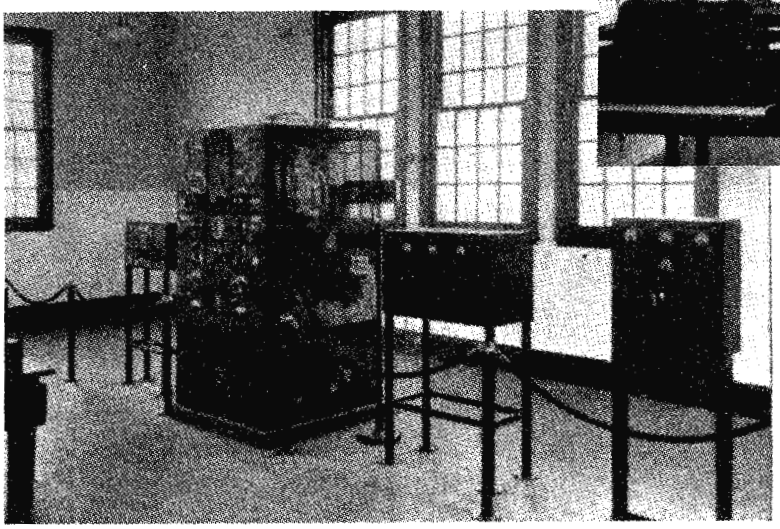
The interior of a small studio at Sydney station 2CH in 1935. The station boasted that special broadcasts for other states could be made from its studios.



The transmitting plant of Sydney radio station 2CH in 1935. The transmitter was made by Telefunken, and used a special method of modulation called 'Schaeffer' DC grid modulation'.

Chapter 5

A TIME OF SOUL-SEARCHING

Widespread public dissatisfaction with broadcasting became apparent in October 1925, barely two years after its inception, when 3513 listeners — 3000 of them in New South Wales alone — cancelled their licences. For every new listener two old ones dropped out. It was difficult to equate this exodus with the complacent comment of James Malone, Chief Inspector of Wireless, that "broadcasting is going ahead satisfactorily, considering the handicaps in establishing a business for which there are no precedents".

In 1926 2FC, hoping to emulate 3LO's phenomenal success, changed its wavelength from 1100 to 442 metres (678kHz). *Wireless Weekly* said... 'Every trader and listener-in is out to see that radio in this State makes up the headway lost during the past year. Official figures show that there are 4.6 listeners-in to every hundred people in Victoria, whereas there are only 1.8 in NSW, despite the progress made here before broadcasting began in Victoria. Among the reasons advanced for this area: that the novelty of radio has not yet worn off in Victoria, that there is a great deal more home life in that State than in NSW, and that 3LO has a low wavelength. The first two reasons are open to debate, but there is no doubt about the third'.

Yet radio dealers were in two minds about 2FC's reduced wavelength, fearing that there would be 'an influx of cheap American ready-made sets'.

An unexpected source of income for the more successful stations came from radio journals, which paid substantial sums for the privilege of publishing advance programme details. Less affluent stations could not afford this luxury, with the result that their potential audience was often ignorant of forthcoming features.

The few 'big' stations, such as 2FC, 3LO and 4QG, enjoyed a wide following of interstate listeners as well as a large bonus audience across the Tasman... 'owing to the unsatisfactory state of affairs in connection with New Zealand broadcasting'.

With Oswald Anderson's fertile mind guiding its programmes, 2FC launched into all manner of exciting radio 'specials', such as the first broadcast from an aeroplane in flight and landline relays from distant points — including Mount Kosciusko and the Jenolan Caves. 2FC was also responsible for the first outside broadcast from an Australian church when it transmitted an Easter service from St Mark's, Darling Point, on 18th April 1924. This proved so popular that before long all major stations were deluged with requests to broadcast devotional programmes.

3LO made good capital of its association with theatrical promotors, by broadcasting direct from Melbourne theatres and featuring popular stars in its programmes. It was also the first station to invite the public to its studio to watch broadcasts in progress. Thus began a tradition of announcers and artists performing in evening dress, a practice that endured in metropolitan stations for years afterwards.

Another 3LO 'first' was scooping the local press by broadcasting news intercepted from England. Morse transmissions from the high power station at Rugby were copied by 3LO's studio manager, Tom Bearup, and put to air with minimal delay. Victoria's press barons reacted violently to this innovation. But reading Morse code through crackling static did not tax Bearup unduly: this experienced marine operator had been one of the original staff at AWA's Koo-wee-rup (Victoria) experimental station, where European transmissions were monitored around the clock during the historic 1921 tests on the feasibility of a direct wireless service to Great Britain.

In its turn, 4QG fascinated Queensland listeners with the stunts and novelties which had already been tried in the southern States but were completely fresh to Queenslanders: 4QG 'endeavoured at all times to lead novel transmissions... three cockroaches were made to walk across a sheet of paper in front of the microphone and the shuffling of their feet astounded most listeners'.

By September 1926, Queensland was proudly claiming a higher rate of radio progress than New South Wales.

Aware of the high level of Australians' interest in sport, 2FC appointed M.A. 'Mick' Ferry as its 'Turf Commissioner' — the country's first racing commentator. This posed photo was taken on the roof garden of Farmer's department store, where the station had its first studio.

But 4QG's programmes were not limited to stunts by any means. The station also presented many fine features although, as one veteran remarked, "it was the stunts that captured public imagination. Unless you had a bottomless well of talent, as Sydney and Melbourne did, you had to do all sorts of things to keep people listening. That was the problem of the B Class stations, too. They didn't have money to squander on live artists because no Australian businessman would think of spending money, even bad money, on radio advertising in the 1920's".

The average Australian's devotion to sport was another factor in the popularity of the major A Class stations. 2FC's appointment of a 'turf commissioner' (M.A. Ferry) set a pattern that was followed by stations in all States. By September 1926 'Mick' Ferry had described the running of 53 races, a service which one columnist described as:

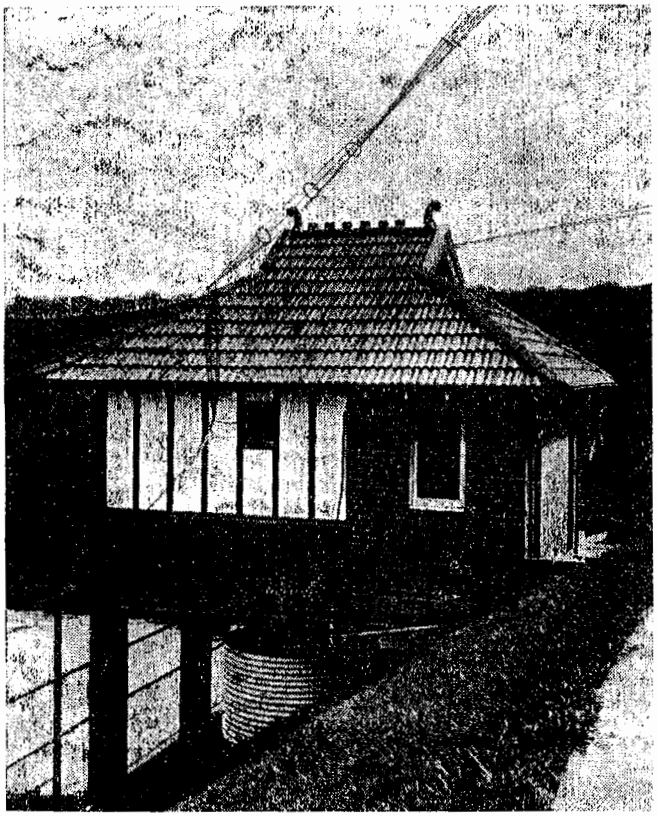
...the greatest consolation of modern times. At any point in the race punters can make another little wager, if so inclined. As the field flashes past the judge's box, the keen eye of the expert announces the places. Perhaps he adds the admonition "Don't pay out yet, gentlemen, wait for the flag".

In the commercial arena the Sport Broadcasting Company of Prospect, South Australia (the original licensees of 5KA, which opened on 25 March 1927) created widespread interest in September 1926 by enunciating a novel policy... 'to broadcast an almost exclusively sporting programme and to install plant and machinery for manufacturing high class radios'.

Among its countless innovations, 2FC taught the prevailing craze, auction bridge, by radio. 3AR set itself a more difficult task by inviting Walter Lindrum to broadcast lessons on billiards. Several stations gave lessons in Esperanto, the brave attempt at an international language which the postwar generation fondly hoped would avert another Great War.

Catering to juvenile listeners was well within the capabilities of all stations, no matter how small, and they did it wholeheartedly, although with variable success. The era of radio's Uncles and Aunts was an ecstatic opportunity for happy extroverts to command the microphone each evening, giving endless birthday and cheerio calls and directing their young fans to follow a string around the house to find a gift. These diverters of children often adopted 'pixie' pseudonyms, such as The Twinkler, Mary Gumleaf, Big Brother and Boy Blue.

At the inception of radio local artists welcomed the



On August 23, 1926, the Theosophical Society's station 2GB began operating in Sydney. The original transmitter was housed in this small building in the grounds of Bishop Leadbeater's residence in Mosman, and at the time was the only broadcasting transmitter using a quartz crystal for frequency control.

chance to broadcast without payment, content to gain microphone experience and public exposure. Studio managers of major stations usually found themselves beseiged by singers and musicians anxious to perform *gratis*, although the novelty of unpaid appearances wore off within the first year or so. By then, of course, stations were receiving disbursements from licence revenue and could afford to pay most of their artists.

3LO's total expenditure on artists' fees during the first half-year of operation totalled half a guinea. The station's music, records and musical instruments were all supplied by Taits' associate company, Allan's Music Warehouse. There was no scarcity of enthusiastic speakers offering to talk gratuitously on their own specialities, whether photography, books, pets, or porcelain.

A neat arrangement at 3LO enabled the retail firm of Buckley & Nunn to advertise indirectly: the five-piece Buckley & Nunn Studio Orchestra made frequent appearances on the programme and, in addition, all artists who gave their services to the station were entitled to a free meal at Buckley & Nunn's restaurant.

Stations with only one studio had considerable problems accommodating the endless procession of live artists. A brass band followed by a solo vocalist meant that the bandsmen had to vacate the studio while a record was playing and, without the benefit of air conditioning, heavily curtained studios were apt to become quite foetid in summer after several hours of occupation by live artists.

Stations in the populous eastern States enjoyed a virtual monopoly of the best talent. Even so, the repertoires of their artists were frequently over-exposed. For this reason broadcast comedy was a rare commodity, and the appearance of a new entertainer who drew favorable audience reaction usually assured him or her of continuing radio engagements.

Jack Lumsdaine was one example. His song 'Calling' was voted the most popular in a 1927 competition, and Lumsdaine went on to become one of the most durable performers on Australian radio. His appeal had the common touch and earned for him the sobriquet of 'The Radio Rascal'.

By 1926 many stations were under fire for programming 'too much jazz and phonograph records'. This must have been rather deflating to the Gramophone Company, which had just opened Australia's largest disc-pressing plant at Homebush in NSW.

Philosophical discussions raged in the radio journals about whether broadcasters should give listeners the music they liked, or the music that was 'good for their souls'. A spokesman for the Performing Right Association opined that "jazz was not music at all, simply noise", but admitted that for years "the public had regarded jazz as the most popular dance music". Dr A.E. Floyd, organist of St Paul's Cathedral, Melbourne, and a respected musical pundit on 3LO, saw "little value, either educational or entertaining, in popular music" and lamented "the demoralising effects of syncopation".

The voices and personalities of the announcers stamped an indelible brand on their respective stations, and the smallest details of their lives quickly became public property in the pages of radio magazines. Arthur Cochrane and Laurence Halbert radiated the sumptuous dignity of 2FC, contrasting with the more free and easy manner of George Saunders and John Prentice on 2BL.

Prentice summed up the main role of his brethren by quipping... "generally speaking, announcers are generally speaking". He left 2BL in 1926 to work in New Zealand radio, returning later to become a respected pillar of 2UW. Bryson Taylor was another voice heard in that era, as a singer and announcer on 2FC.

Co-operation between stations was unthinkable. Each had its own programme philosophy and secretly hoped that its competitors would throw in the towel, so it is worth recording that Australia's first interstate relay was initiated by the Government, not by the stations.

On 20th August 1925 J.R. Collins, Secretary of the Commonwealth Treasury, spoke from a curtained cabinet at Melbourne's central telephone exchange, appealing to listeners in four States to support a war loan conversion. "It was uncanny", he said later. In that same month Australian radio encountered its first case of a news

broadcast raising questions in Parliament, and generating a controversy about official censorship of radio news. The unwitting culprit was 4QG, the embarrassed mouthpiece of the Queensland Government — of all stations! The news item was a highly coloured criticism of British policy in China.

Radio was slowly separating into two distinct groups — the 'Haves' and the 'Have-Nots' — and it must be said that the latter category included a number of A Class stations. The struggling B Class licensees were not remotely concerned with the programme niceties that dominated the thinking of their A Class brothers. Their main endeavours were directed to something much more fundamental — survival.

In 1927, 3UZ was operating without any revenue whatsoever. Nilsen's had 'spent £544 in running the station and received nothing in return', although they had frequent requests 'to broadcast in the morning when no other stations were on the air'. The chief concern of Nilsen's accountant was to write back the cost of the station's pianola!

2KY's total revenue for 1926 was £535: contrasted with an expenditure of £1641 for the same period, it was obvious that the small staff had more pay days than pays. The announcer, a talented juggler named Herbert Beaver, needed all his skill to balance the station's precarious finances.

Quite apart from their other concerns, some early broadcasters found themselves in a morass of confusion over two entirely novel problems — musical copyrights and patent rights.

It was blithely assumed that because people could play gramophone records without let or hindrance in their own homes, it was equally blameless to broadcast them into listeners' homes without payment of a royalty. Again, the total restriction on the public performance of certain musical works by the copyright owners was quite incomprehensible to many, who expected to hear their favourite works on the air.

The question of technical patents was equally, if not more confusing to broadcasters and wireless traders alike. Australia was only just seeing the dawn of electronics technology, and the light was blinding.

When AWA was established in 1913, the company controlled the existing and future patents of the two principal wireless systems of the world, Marconi and Telefunken. With the passage of years intensive research into electronics led to a proliferation of patents from these sources and, in addition, AWA subsequently acquired rights to the patents of RCA in America and two leading French wireless firms.

This mobilisation in Australia of the most important world patents under the control of an Australian company made it possible to launch broadcasting without separate, and possibly protracted, negotiations with overseas patentees.

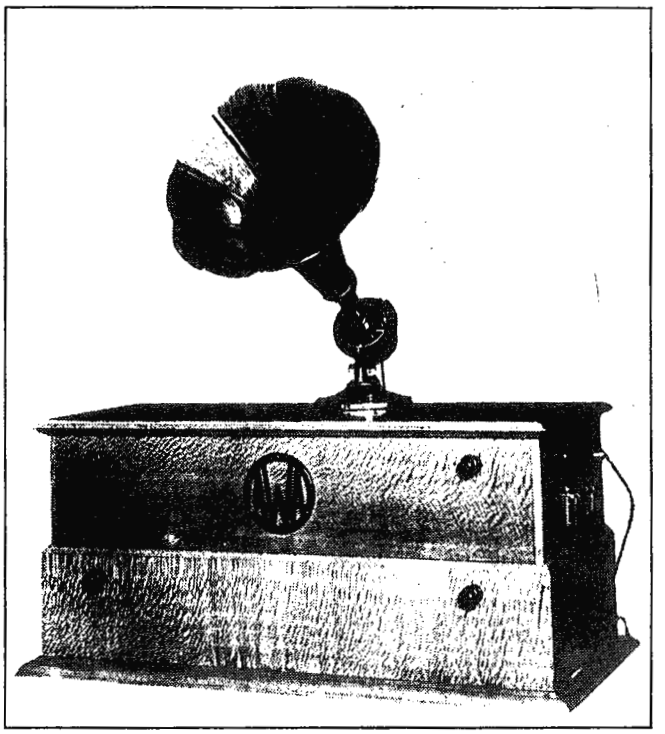
Equally it meant that it was virtually impossible to build, operate or sell radio equipment of advanced design without payment of the requisite royalties.

The Commonwealth Government recognised the validity of radio stations and their listeners paying copyright and patents dues. Of the 27/6d listener's licence fee, only 17/6d was actually distributed to the A Class stations. The PMG's Department retained 2/6d for administration, 5/- was paid to AWA for the use of its patents and the Performing Right Association received 2/6d for musical copyrights. B Class stations made separate arrangements with regard to copyrights and patents.

However some broadcasters and radio dealers did not understand the legal position, so the ensuing confusion led to acrimonious debate and, finally, litigation. Oswald Mingay later reflected on that troubled era of radio's growth, remarking... "It was not to be expected that a group of keen businessmen would stand by while other people entered the radio trade for the purpose of making profits without having contributed one penny towards its development".

So by 1926 Australia's infant radio industry was a leaderless legion, divided by jealousies and racked with doubts about its own future. Its problems were brought into sharp focus by George Taylor, president of the Association for Development of Wireless in Australia, New Zealand and Fiji, who convened a conference of broadcasters, dealers and experimenters at the Sydney Town Hall on 3-5th May of that year.

Calling itself the Commonwealth Radio Conference, it



This AWA 'Radiola Super' receiver of the later 1920's was typical of the kind of set being used to receive the steadily-growing number of radio broadcasts.

Part of the AWA transmitter hall at Pennant Hills, in 1927. The sign on the front of the operator's desk explains that by that stage, there were eight other transmitters housed in the hall apart from the 5kW transmitter for 2FC. Apart from two 5kW shortwave units used for broadcasting feed interstate, the rest were mainly used for telegraph and telephone links. (Photograph by courtesy of AWA).

became a timely sounding board for accumulated grievances, although it was by no means a truly representative gathering. The PMG's Department, 2FC, 3LO, 4QG, AWA, and the Performing Right Association were all noticeably absent.

Taylor enunciated the main purpose of the conference — to press the Federal Government to appoint a Royal Commission on wireless, adding... "Australia, which has led the world in some of the primal discoveries of radio, was one of the most backward nations in the use of radio, although the Postmaster-General asserted that broadcasting in Australia was proceeding as happily as in any other country".

Like terriers contesting the right to gnaw a juicy bone, the delegates, led by W.J. Maclardy of 2BL, began snarling about "the impositions placed upon broadcasting by copyright claimants" who had allegedly "claimed up to 21% of a broadcasting station's net revenue, withdrawn a large number of popular works demanded by the listening public and claimed on items to which they had no title, the whole onus being thrown on broadcasters in every case to find out whether the music being broadcast was copyright or not".

Other accusations were that the copyright organisation "continually harassed and irritated broadcasting companies by their unjust and unreasonable demands" and had "withdrawn items from programmes on the eve of performance — in one case the whole programme".

Maclardy revealed that Broadcasters Ltd had spent close to £1000 on copyright litigation and cited the instance of his company receiving a copyright demand for a Beethoven sonata. "Beethoven had been dead for 92 years, but they were charged copyright because five years ago it was re-set to trio music in America".

The proprietor of 2UE, C.V. Stevenson, told the conference that he "had been harassed continually by the copyright people, who made demands which he had never agreed to and were still making demands". He hoped that a Royal Commission would "go into the matter of the B Class stations, as these stations were going to be great factors in the development of radio in Australia".

The discussion on radio patents was far more temperate. Beethoven may have been dead, but Marconi was undeniably alive and still inventing. So the conference indulged in the luxury of airing grievances against the Commonwealth Government, as the majority shareholder in AWA.

One delegate, himself an AWA shareholder, complained that "until the Federal Government stepped in, Amalgamated Wireless each year paid 5% on one's investment; the last year before the Government stepped in it paid 6%, but from the date the Government took control of Amalgamated Wireless it had never paid a penny dividend and had been calling up fresh capital every year".

Finally the conference voted to petition the Government to appoint a Royal Commission to investigate, *inter alia*, the whole complex question of wireless patents, suggesting that 'a fixed scale of royalty be decided upon in respect of each valid patent, to be payable to the patent holder'.

Much of the conference was given over to a long, though inconclusive, discussion on the crux of the industry's troubles — how to finance broadcasting. The meeting adopted a recommendation that listeners' licence fees should be abolished 'provided sufficient revenue for efficient broadcasting service can be obtained from other sources', but there was no agreement on what these 'other sources' might be.

The representative of 3AR feared that "if a Government is going to pay out hundreds of thousands of pounds to various broadcasting stations from year to year, there will be many political 'wire pullers' to say "well, if you are spending this money, we should have jobs in it" and the next thing would be that interested parties would come into the broadcasting industry: either the Government would take over the whole of broadcasting and make it a Government concern, or political 'log rolling' would be sufficient to prejudice every broadcasting station".

Emil Voigt of 2KY "regretted that B Class stations had been totally ignored".

The Government seemed in no hurry to act upon the recommendations of this 1926 Commonwealth Radio Conference, since the desired Royal Commission was not appointed until the following January.

But as a result of continuing agitation by broadcasters against the demands of the Performing Right Association, the Government did call a conference of interested parties on 23th July 1926 at which it was agreed that 'the Copyright Association should receive 10% of broadcasting revenue in respect of the first 100,000 licences issued in Australia and 5% in respect of licences above that figure'. Otherwise the official *laissez faire* attitude to broadcasting produced no tangible improvement, although the licensing of two new B Class stations in Sydney and Melbourne added an important dimension to the radio scene in those two capitals.

The licence for 2GB was issued to the Theosophical Broadcasting Station Ltd on 13th May 1926, and the station began operating on 23rd August. Its general manager, A.E. Bennett, a young chartered accountant, had the task of countering public criticism of his embryo station by declaring:

"We have no axe to grind... the Theosophical station has no intention of using its resources for semi-religious or religious matter only. It is our ambition to have our programmes as varied as possible. We propose to broadcast four days a week, Mondays, Wednesdays, Fridays and Sundays. It is our hope, later on, to broadcast seven days a week. There will be good music, classical and modern, and talks on Australia in all the aspects of her varied life. All those who are endeavouring to contribute to the world's uplift, whether in politics, the arts and sciences, in industry or education, will be invited to use the station."

It was said that the station had wished to adopt the call letters 2AB — for Mrs Annie Besant, the British theosophist — but finally settled for the initials of Giordano Bruno, the martyred sixteenth-century Italian philosopher. 2GB's studio was located at the Sydney headquarters of the Theosophical Society in Adyar House, Bligh Street, and the original transmitting site was 'The Manor', Mosman — the residence of Bishop Leadbeater.

The technical equipment was built and installed by the United Distributers team of Beard and Schultz, who had already demonstrated their competence and commendable economy by getting 2KY airborne so cheaply. Within a few years, following an overseas study tour, Len Schultz was to become chief engineer of 2GB.

Predictably, the opening of the station created the usual outcry from listeners in the Mosman area that the newcomer was interfering with 2FC's signal: the latter's wavelength was 442 metres (678kHz), whereas 2GB's was 326 metres (920kHz) — an interesting commentary on the poor selectivity of receivers in use at that time.

In Melbourne, the licence for 3DB was issued to the Druleigh Business and Technical College Pty Ltd on 18th October 1926, and the new station made its debut on 21st February of the following year.

With only half a kilowatt of power, 3DB suffered the usual trials of B Class pioneers. The licence was transferred to a new company, 3DB Pty Ltd, on 1st June 1927. Radio journals of the period paid scant attention to the station's existence, although in February 1928 one magazine published a photograph of 3DB's studio in Capital House, reporting that the station had 'recently received a communication from Southern California saying that it was heard there, which must be regarded as quite an achievement for a small station'.

The ultimate success of 3DB as a commercial enterprise became assured when its licence was acquired by the Melbourne *Herald* on 14th June 1929.

Chapter 6

THE ROYAL COMMISSION

The 1927 Royal Commission on Wireless was a searching investigation, not only of broadcasting, but into many facets of wireless administration — including coastal stations, defence matters, lighthouses, radio beacons and ships' installations.

The commissioners were J.H. Hammond KC (chairman), Sir James Elder, C.E. Crocker and John McMaster. Their terms of reference were to inquire into and report upon:

(1) Wireless broadcasting within the Commonwealth in all its aspects, making recommendations as to any alterations deemed desirable in the policy and practices in force

On April 8, 1927, the Beam Wireless Service between Australia and Britain was officially opened. Pictured watching T.M. Johnson receive and send the first messages are (L to R) Senator J.D. Mullen, Mr W.T. Appleton, Mr H.O. Richmond, Mrs S.M. Bruce, Sir William Vicars, Lord Stonehaven, Mr A.S. McDonald (AWA Chief Engineer), the Rt. Hon. S.M. Bruce (Prime Minister), Ernest Fisk (AWA Managing Director) and Sir George Allard. (Courtesy AWA).

(2) The development and utilisation of wireless services for public requirements within the Commonwealth.

Assembling first in Melbourne on 5th February 1927, the Commission subsequently heard evidence in most capitals and the press gave considerable prominence to the examination of witnesses, reflecting the widespread public interest in the developing medium. Yet even a superficial reading of the voluminous evidence heard by the Commission is enough to reveal the utterly confused state of radio at that time.

Triumphant, but lonely, on the pinnacle of success stood 3LO, which was 'almost universally admitted to give the most satisfactory service on the Commonwealth' and was regarded as 'unique amongst broadcasting stations in Australia'. The cash capital brought into the company controlling 3LO was a mere £6250, but by March 1927 it already possessed tangible assets in excess of £18,000.

Receiving £72,000 from licence revenue, 3LO had returned a profit of £11,600 after paying more than £19,000 in directors' fees, executive salaries and patent royalties. The station completely overshadowed its A Class competitor, 3AR, which had sustained substantial losses.

Nevertheless some Victorian country listeners asserted that "they received much better service from distant stations, especially 4QG, than from Melbourne stations", whose programmes "contained too many talks and lectures and there was a tendency to overdo sporting results". It was stated that between four and five thousand Melbourne listeners had cancelled their licences during March and April 1927 and it seemed significant that these cancellations "followed the opening of a B Class station of 500 watts (3DB) in the city". The B Class stations in Sydney "with the possible exception of 2GB, did not get through with sufficient power to cause interference in Victoria".

A New South Wales country listener blamed much of the local interference on "howling valves and weird sets

made by people who probably got their designs from newspapers". The Graziers Association armed itself with useful opinions by sending out six thousand questionnaires to its members: they considered '3LO and 4QG were the best stations, with the locals (i.e., Sydney stations) a bad last'.

The graziers' research also indicated that New South Wales had only five thousand listeners outside the Sydney area, two thousand of them in Newcastle and on the South Coast, with the remainder scattered thinly over the rest of the State.

Country folk favoured super-power stations of 150kW in capital cities or, alternatively, 5kW relay stations at Wagga, Dubbo, Tamworth and Armidale. They also wanted the Government to undertake receiver manufacture, in order to reduce prices, and suggested a lower licence fee for crystal sets.

Bemused by confusing discussion over relay stations, country residents hoped that some benign power — preferably the Government — would provide such stations, thus allowing them to enjoy the same reception as city dwellers. But rosy visions of relayed programmes were clouded by the high cost of landlines. An alternative scheme was that A Class stations should 'transmit on long waves for two hours of each day for the benefit of country listeners'.

In Victoria, Associated Radio had actually been granted permission to erect a relay station at Ballarat, but the provision of this facility depended on 3AR being able to bolster its sagging finances.

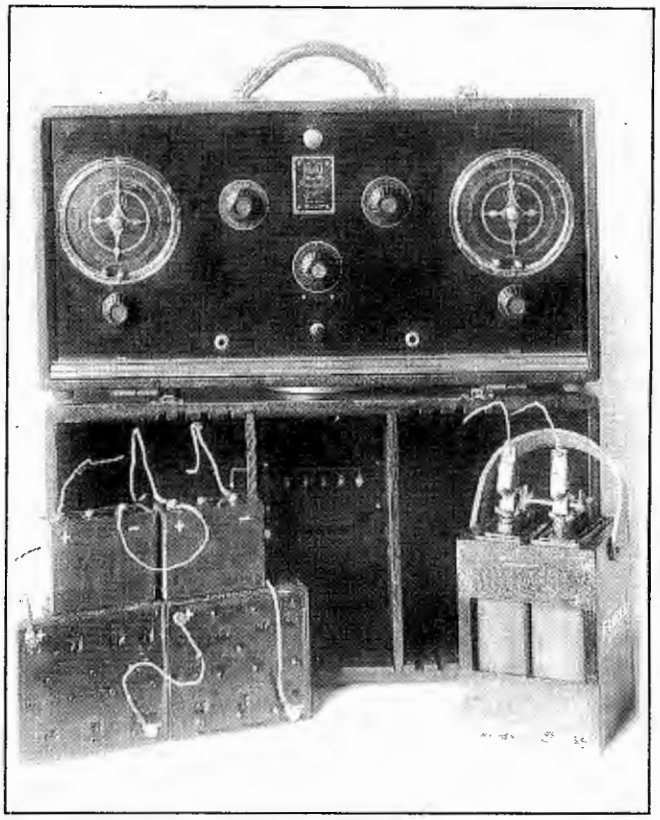
Phillip Renshaw, an official of the Wireless Institute of Australia, shocked the Royal Commission by claiming... "there are probably as many listeners in New South Wales as in Victoria, but they are not all licensed. People I would not have thought capable of such a thing are in that position".

This opinion was reinforced by other witnesses. A leading citizen of Dubbo was certain that "if a roundup were made it would be found that 50% of the people listening in had not taken out a licence".

Reacting to these allegations, the Director of Posts and Telegraphs 'arranged for a staff of trained detectives to search out the pirates'.

One leading Sydney experimenter threw the cat among the pigeons by asserting that "the inferior quality of New South Wales broadcasting has been directly responsible for the public's apathy and disgust... the local stations have used every effort to prevent the public getting to 3LO and 4QG, so that they could not compare the programmes". He pinpointed the objectionable programmes as "serial stories, cookery talks, fashion talks, band recitals from beaches, too many football descriptions and too much sporting".

The chairman thereupon asked "but are you aware that wrestling descriptions gained second place in a radio plebiscite in Melbourne? " When the complainant answered "they may like wrestling down there", the chairman cracked back "in Melbourne they like wrestling — and paying their licence fees; here you like neither".



A portable battery-operated Radiola set of 1927, with the batteries moved out of their lower compartments. Those on the right are the accumulators used for operating the valve filaments, while the 'B' and 'C' batteries are on the left. The set's loudspeaker would have been spearate, and is not shown.

4QG was making good progress towards its break-even point, and hoped to write off its foundation expenses; whereas 7ZL, the millstone of Tasmanian Broadcasters, was in sore straits. The station was working on a permit from the Postmaster-General who had, in the opinion of the Royal Commission, 'wisdom in not enforcing strict compliance with the regulations'.

7ZL had received no revenue whatever and had expended practically all of its share capital. For most of its precarious life the station had been badly equipped and poorly situated and 'the sparse population of the Island and the difficulty of arranging programmes had all helped to create a problem'. The directors of 7ZL believed "they could make a success of the station with 6000 listeners, but had only 2000".

In Western Australia broadcasting had created an aura of impending disaster for Westralian Farmers, despite their monopoly of the air. Many listeners had cancelled their licences and 6WF's losses were piling up at an alarming rate. The total capital cost of the station had been about £20,000, but its accumulated losses exceeded £13,000.

For lack of revenue, programmes had become monotonous. Some of its subscribers "got better reception from stations in the eastern States, on shorter wavelengths than 6WF".

The Perth station was running on a frayed shoestring, with three full-time and five part-time employees. Operating costs had been pruned to about £36 a week. The manager, Walter Coxon, favoured an extra subsidy for unprofitable stations and "to assist the establishment of new stations in areas such as Northern Australia, where there was no prospect of a station".

Westralian Farmers feared that without a subsidy they would be forced to relinquish 6WF's licence: "they were prepared to lose £1000 a year, providing the standard of service was maintained". To overcome the paucity of professional talent in the West, they suggested that "artists specially trained in broadcasting should travel from State to State".

Licensees of unprofitable stations, which then constituted the vast majority of Australian broadcasters, "hoped that the Government would do something". Mostly they eschewed any form of Government control over programmes, particularly news, but saw a panacea for their ills if the Government would "take over radio patents and curb the demands of the Performing Right Association".

Hugh Douglas, whose initials are enshrined in the call sign, disclosed that his station cost about £3 a week to run "but that did not include the copyright charge of 4d per item other than special music, which was much greater". He opined that "no station should have to pay copyright charges, which were an imposition on the listening public".

4QG, in a period of ten months, paid out more than £5000 in copyright and patent royalties. Dr James Battye, an influential citizen of Perth, said sarcastically... "it seems to me that the copyright people have overlooked the fact that mothers frequently sing their children to sleep: they have not exploited this avenue of revenue".

There was a mounting feeling that a central body was needed to supervise broadcasting, particularly programme and technical standards. Theatre proprietor John Fuller "favoured nationalising wireless and having it controlled by four commissioners". He asserted that "no one had been so hard hit by the introduction of wireless as the press, theatre and pulpit". Broadcasts from other theatres emptied his own, but he was opposed to control of stations by newspaper and theatrical interests. Fuller thought there should be a designated station to broadcast news continuously throughout 24 hours of the day.

Yet it was the overwhelming opinion of broadcasters themselves that a governmental monopoly would be fatal to the public interest. Newspaper publishers had strenuous objections to official control of the new electronic medium, on the grounds that "their experience of the telegraphic monopoly had been particularly unfortunate".

Professor T.H. Laby, technical consultant to 3LO, hoped that "the Royal Commission would recommend that broadcasting should not be used for advertising, or for religious, political or other propaganda".

The Commission believed that the outstanding success of 3LO was attributable to its excellent management, close association with theatrical enterprises and to the compact, thickly populated State of Victoria.

Ernest Fisk thought that one factor in Victoria's addiction to radio was that "Sydney had had more rows over broadcasting than Melbourne". He was referring, of course, to the bitter wrangling between 2BL and 2FC over their disparate shares of licence revenue.

Even 2BL's new transmitter at Coogee had done little to alleviate the financial stringency of the struggling station. By the end of 1926 the accumulated losses of its licenceholders, Broadcasters Ltd, had climbed to £14,745 and, though efficiently managed, 2BL was slipping deeper into the mire. Its relationship with the Performing Right Association was 'most unsatisfactory' and the station was also engaged in patent litigation. Its staff of 21 and a weekly salary bill of £106/15/0 starved 2BL from employing top talent.

Maclardy admitted that the programmes were bad... "he wanted the public to wake up to the fact that the station was entitled to a more equitable share of the revenue".

By contrast, 2FC was in the happy situation of featuring no less than 982 live artists in March 1926 and 1753 in the same month of 1927. The station had even offered violinist Fritz Kreisler 500 guineas to broadcast — but he refused. Yet despite its expenditure on programmes, or perhaps because of it, 2FC was operating at a loss, although a prospective increase in listening licences and new studio facilities held out promise of early profitability.

Before considering the outcome of the 1927 Royal Commission on Wireless, we must look closer at some interesting developments which occurred that year.

On 8th April, Australia's global communications were completely revolutionised by the commercial opening of the Beam Wireless service to Europe.

This achievement represented the consummation of years of intensive research by Marconi and AWA engineers, and amply justified Australia's determined rejection in 1921 of the relay scheme proposed by a British committee. And although Beam Wireless was essentially a high-speed telegraphic service, the Australian public sensed that this important link with Britain would inevitably lead to worldwide radiotelephony. That came sooner than most people imagined.

In the field of broadcasting, perhaps the most controversial proposal of 1927 was the State Wireless Scheme fostered by the Lang Labor Government in New South Wales. Following the establishment of 2KY by the

Inside 2FC's main studio at 98 Market Street, Sydney in 1928, Edwart Chapple is at the piano, with announcer Laurence Halbert standing before the microphone — which is supported by a large wooden stand. The control room is visible behind the bright rectangular window at centre rear. Note the tubular gongs, behind the pianist.

Trades and Labor Council, the Lang Ministry conceived the idea of creating a network of State-owned broadcasting stations.

Voigt and Beard were briefed to plan a network covering the principal areas of population in New South Wales: they estimated that one metropolitan and six country stations would be required, at a total cost of about £10,000. The central long-wave station, with a power of 15kW, was to be located in Sydney — the old Darlinghurst Gaol was a suggested site — with an auxiliary shortwave transmitter of relatively low power capable of sending Government messages in Morse and adaptable for telephony when needed for broadcasting. Six small regional stations on the broadcast band were intended to communicate with the central station and with one another.

A secondary role of these country outlets was to disseminate Government news to their immediate areas when not acting as relay stations.

State Cabinet approved the scheme early in 1927, and J.T. Lang recalls... "I included the Broadcasting Network Plan in the policy speech, which was broadcast by 2KY. The Nationalists bought blocks of time on 2GB to reply to us. It was the first time that broadcasting was used by both sides on a paid basis (in an Australian election). We were defeated and the Bavin Government dropped the Broadcasting Plan."

Between March and May 1927 the Duke of York (later King George VI) and his Duchess paid an official visit to Australia, to open the first session of the Commonwealth Parliament in the new national capital, Canberra. The Royal couple visited all States and their extensive itinerary was given wide radio coverage, including pioneering interstate relays. The sudden upsurge in overall licence figures during this period — from 201,000 in March to 225,000 in June — reflects the important role played by radio in Australia's first Royal visit of the broadcasting era.

The euphoric mood of nationalism engendered by the Royal visit and the long-awaited establishment of Canberra as the seat of Federal Government led to an important series of Empire broadcasts in which Australia, the 'Lion's Cub', demonstrated her antipodean loyalty to Mother England.

The technical capability for these historic transmissions grew out of AWA's continuous research into shortwave propagation. Experimental studies of long distance telephony included a test transmission to England on 22th June 1926, and the knowledge gained from that experiment enabled AWA to formulate the requisite pro-

cedures for the first Empire broadcast on 5th September 1927.

By prevailing standards of the time, the technical arrangements for these pioneering shortwave transmissions were both complex and extensive. 2FC's studio was the co-ordinating point and transmission was effected on 28.5 metres (10.5MHz) by AWA's experimental shortwave station, VK2ME, at Pennant Hills. By prearrangement, the BBC intercepted the programme and rebroadcast it to British listeners.

A distinguished lineup of artists faced the microphone, some of them English concert artists then touring Australia. 2FC staff announcers Halbert and Cochrane handled the continuity and the featured talent included Joseph Hislop, tenor, Lionel Lawson, violinist, Lindley Evans, Frank Hutchens and Alexander Sverjensky, pianists, Strella Wilson, Savoy Opera star, Mabel Bachelor, soprano, Alfred Cunningham, baritone, and many others. Prime Minister Bruce contributed an Empire message from his home at Frankston, Victoria, and the Governer of New South Wales, Sir Dudley de Chair, spoke from Sydney.

This landmark broadcast created a deep impression in Britain. The London *Times* reported it prominently, saying 'the first broadcasting to the Empire must be accounted a great success', while *The Morning Post* considered it 'one of the most remarkable experiments in the history of broadcasting'. The *Evening Standard* commented 'the ends of the world have been linked by wireless and Empire broadcasting has entered the homes of Britain to stay'. A Glasgow listener was astonished... "fancy hearing Sydney on a crystal set".

Stimulated by the enthusiastic reaction to this first transworld broadcast from Australia, an even more ambitious programme was arranged for 17th October. On that occasion both 2FC and VK2ME radiated the programme simultaneously, so Australian listeners were able to hear the programme as it was being relayed throughout Britain by the BBC.

Sir James Fairfax sent a message to the English press and the Lord Mayor of Sydney, Alderman Mostyn, addressed another to the Lord Mayor and citizens of London and the Lord Mayors of other cities in Great Britain and Ireland. Again a formidable array of talented artists contributed to the programme, including Jack Lumsdaine, Wilfred Thomas, Charles Lawrence and Len Maurice.

Before the month was out, 2FC and VK2ME originated a third Empire programme to an immeasureably greater audience than hitherto — for besides the BBC's relay to British listeners, this programme was also rebroadcast by WGY Schenectady, New York, and its associated stations.

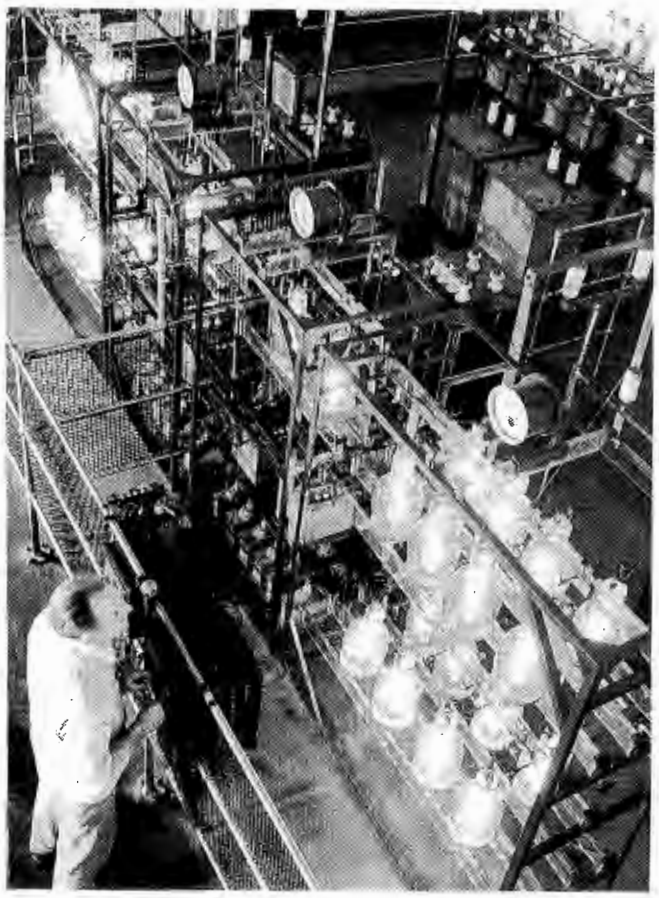
For countless listeners in the British Isles, the United States and Canada, the highlight of this third global transmission from Sydney was its strong Australian flavour, characterised by a 'Cooee' and the laugh of a tame kookaburra, 'Jacko', which had been adopted as a nestling at Healesville, Victoria, and trained to laugh on command. The BBC applauded this broadcast as 'another step in the direction of what will eventually be a regular thing' and commented that 'a satisfying feature was the very little fading'.

Two further Empire broadcasts were originated by 2FC and VK2ME during the closing months of 1927 — one on 2nd November and a special Christmas programme on Boxing Day.

It should be stressed that the motivation for this entire series of historic transmissions originated in Australia and years later, when the BBC initiated shortwave broadcasts from London, they followed a pattern already set by Australia in 1927.

An interesting footnote is that the regular shortwave transmissions from VK2ME and VK3ME, which continued until the outbreak of war in 1939, were always heralded by a kookaburra's laugh — a sound which by that time had become a familiar hallmark of Australia's worldwide radio outreach.

The report of the Royal Commission was made public in October 1927. On the vexed question of broadcasting



A shot taken inside the Beam Wireless Centre in Ballan, Victoria in 1928, showing a technician checking the high-power transmitting valves in their racks.

the Commissioners concluded that 'very little change in the existing system is advisable at the present time'. They rejected the concept of direct control of broadcasting stations by the Government, and hedged about establishing a corporation similar to the BBC because 'this would really result in the creation of a Government Department whose business it would be to provide entertainment... for the people. It may be that ultimately Australia will adopt such a mode of control, but at the present time it does not seen wise to embark upon a system which, although only operating since the commencement of this year in Great Britain, is already receiving adverse criticism'.

Instead, the Commission recommended 'that the whole of the existing stations should be encouraged to co-operate and come to mutual arrangements for future working, subject to strict control by the Postmaster-General'. The results of this recommendation were soon to effect significant changes to Australian radio.

The Royal Commission also put forward important suggestions on musical copyrights and patent royalties. As a direct outcome the Government signed a new agreement with AWA, granting the company a royalty payment of 3/- per year from each listener's licence. For its part, the company agreed to waive royalty claims on valve receivers for a period of five years.

As already mentioned, the Royal Commission's recommendations for co-operation between stations were to alter the entire structure of Australian broadcasting, yet it should be pointed out that the Government's insistence on co-ordination was undoubtedly influenced by trends in Great Britain, where the original British Broadcasting Company had been dissolved at the end of 1926 to be replaced the next day by the British Broadcasting Corporation, an official instrumentality constituted under Royal Charter for a period of 10 years.

Implicit belief in the infallibility of British institutions still dominated the thinking of Australia's legislators.

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Some personalities of Sydney station 2CH in 1935. No.1 at top left is A.S. Cochrane, senior announcer at 2CH and also known as 'The Hello Man'; No.2 at top right is Gwen Gibson who conducted the women's morning session; No 3 at lower left is Donald Scott, the sporting announcer; and No.4 centre is Warren Penny who specialised in broadcasting talks on aviation.

Chapter 7

CONFUSION IS COMPOUNDED

The chain of events which led to the initial co-ordination of Australian broadcasting may be said to have begun in Melbourne on 25-26th October 1927, when Prime Minister Bruce convened a closed meeting of A Class interests to discuss implementation of the Royal Commission's report.

In essence the Government's proposal was that Victorian listeners, as the preponderant licence holders, should help to finance the operation of unprofitable stations in South Australia, Western Australia and Tasmania: 3LO was to forego £10,000 of its licence revenue and 3AR £2000 in order to subsidise 5CL, 6WF and 7ZL. New South Wales was to have a redistribution of revenue between its two A Class licensees, with 2FC foregoing £2000 in favour of 2BL.

The station hardest hit by this scheme was of course 3LO, the most successful of all Australian broadcasters. Its directors objected strenuously to the Government's proposals, maintaining that their station was being penalised for its popularity and claiming that if 3LO were forced to subsidise unprofitable companies, it should also control them.

The hallowed principle of no taxation without representation figured prominently in the arguments of 3LO's directorate. Not surprisingly, this first confrontation between the Prime Minister and the A Class interests ended in deadlock.

Following their uncompromising rejection of the Government's plan to amputate a sizeable slice of their licence revenue, the directors of 3LO promptly applied for separate A Class licences in South Australia, Western Australia and Tasmania. Listeners in the latter State wired congratulations to 3LO and "hoped the desired licence would be granted for Hobart".

Reacting defiantly, the management of 5CL, which had not paid a dividend since its inception, then made a formal application to open high-power stations, operating on a minimum of 10kW, in New South Wales, Victoria, Western Australia and Tasmania. Just how Central Broadcasters Ltd proposed to finance such a costly development was not explained.

Although this spate of nervous activity in the A Class sphere took on the atmosphere of a Mad Hatter's tea party, it also had its impact on some B Class licensees, particularly in those States where only one A Class station existed. They considered applying for the right to be regarded as A Class stations, thus sharing in the disbursement of licence revenue.

Another dimension was added to the growing influence of B Class stations by the action of 2GB, in effecting a rapid accumulation of popular talent. In the closing months of 1927 the English-born Shakespearian actor Heath Burdock, who in later years was to become a mainstay of the Australian Broadcasting Commission, made his first appearance at the 2GB microphone and was soon followed by George Saunders, who quitted the unhappy atmosphere of 2BL to accept an executive position with the Theosophists.

Discussing the troubled situation at 2BL, a gossip columnist wrote... "changes in staff have become so frequent that even the office boy casts longing eyes on the managerial chair". 'Uncle' George Saunders seemingly took his army of devotees across to 2GB where, by teaming up with 'Bimbo' (Arthur Hahn), he quickly captured a substantial audience. It was reported that his personal appeal was 'so great that he received 615 Christmas cards' that year: '2GB is out to develop on popular lines, particularly humorous and commercial... it considers there is a wide field for advertising on the air'.

While George Saunders was counting his Christmas cards and 3LO and 5CL were building their castles — or stations — in the air, the management of 2GB announced its own development plans: to establish in every State of Australia a chain of Theosophical broadcasting stations, to be known as 3GB, 4GB, and so on. They had 'already made a start by buying out the station at Toowoomba (4GR) and planned to build another station in Sydney'.

George Saunders was undoubtedly the stimulus for this buoyant optimism among Sydney's Theosphists: according to one journalist, 'their station had definitely become an encumbrance and they instituted a half-dollar collection campaign, urging the faithful to cut out ice creams

An early AWA broadcasting transmitter, designed and manufactured in Australia, on display in the late 1920's. The picture was probably taken at AWA's Melbourne offices. (Courtesy AWA).

and tram rides, so as to be able to provide financial power for the station. Then their Grand Mahatma sent them 'Uncle' George Saunders, and at once 2GB seemed to gain added energy'.

Coincidental with these developments, 2UW announced that it would 'devote itself exclusively to broadcasting programmes on the toll or indirect advertising system and discontinue trading in wireless goods'. The station's new studio manager, R.M. Tweed, said... "although we cannot hope to obtain an A Class licence, we hope to give our listeners an A1 programme... we intend specialising in educational talks and lectures".

To this end 2UW had just engaged "Mr Norman Goode, the only Australian with Lawrence of Arabia during the war, and Mr Thorpe, ethnologist of the Australian Museum, who has some interesting talks on natives of the Solomon Islands". Musical programmes were also to be facelifted. Professor Sauer was appointed musical director, his wife became official accompaniste, and their associate artists included a soprano, contralto and cellist, in addition to 'Mr Mudge, professional whistler'.

It is interesting to discover that towards the end of 1927 there was a growing conviction in some quarters that radio had reached saturation point and, having exhausted its novelty potential, had little else to offer.

There is no evidence that such pessimism diminished public interest in the medium, although it was probably easier to believe than the remarkable prediction made by Ernest Fisk at New Year 1927. Asked to project the progress of electronics within the next half century, he said:

"In fifty years we shall be able to transmit not only the sounds of the human voice and musical instruments, but complete pictures in colour. We shall be able to sit in our homes in any part of Australia and see and listen to any of the important happenings in the world as they occur. If our fancy lies in the direction of trans-Atlantic airship races, which should then be a common feature, we shall be able to watch the competitors as they race at 200 miles an hour".

Rather more limited in his vision of radio's future was a professional seer, the Melbourne youth who astounded musical hall audiences of the period as 'Argus, The Boy Wonder'. *He* predicted that the crystal set would become obsolete within 20 or 30 years and that fading and static, the prevailing bugbears of radio listeners, would soon be conquered. But 'Argus' could not forsee the day when a truly pocket receiver would be built.

The 1927 Washington Conference, at which H.P. Brown represented Australia, proved an important milestone in the international control of radio. Sixty-seven

Another shot taken in the main Market Street studio of 2FC, this time on May 23, 1928. The occasion was the departure of Raymond Ellis, and what was described as a group of '100 artists' had gathered before the microphone (front right) to sing 'Auld Lang Syne'. Only about half of this number seem to be present for this photo... (Courtesy AWA).

countries entered a convention to eliminate interference and standardise wavebands. The resolutions of this conference led to a re-allocation of Australian wavelengths, which affected a number of commercial broadcasters.

A new facet of commercial radio's burgeoning enterprise manifested itself during the early months of 1928, when the Roman Catholic Church inaugurated regular denominational broadcasts through 2UE.

Radio church services ranked high in listener preference polls of that era and, even more topically, Sydney's Catholics were busy preparing for the 29th International Eucharistic Congress during the coming September. So, predictably, 2UE commanded a sizeable audience with its regular broadcasts of Mass from St Mary's Cathedral.

The 1928 Eucharistic Congress proved to be a spiritual convocation without parallel in Australia, and was attended by the Papal Legate, Cardinal Ceretti, and hundreds of delegates from every corner of the globe. The entire proceedings of the Congress were given worldwide dissemination through AWA's 20kW shortwave station, VK2ME, and were rebroadcast in all Australian mainland capitals and throughout New Zealand and the United States.

The Congress also required the first large-scale use of public address facilities in Australia. The secretary of the management committee, Father J. Meany, was so impressed by public reaction to the radio coverage of this milestone in Australian Catholicism that it inspired him to work tirelessly for the acquisition of a Catholic broadcasting station in Sydney. He became general manager of 2SM at the station's inauguration on 24th December 1931.

Another memorable radio highlight of 1928 was the continuous monitoring of messages from Kingsford Smith's Fokker monoplane, *Southern Cross*, during its epic transPacific flight from California to Brisbane. In Sydney, Ray Allsop and Tom McNeill maintained a constant listening watch, using a shortwave receiver of Allsop's own construction, and the exciting progress of this first Pacific aerial crossing was broadcast to a huge audience by 2BL.

'Uncle Col' and 'Kitty' broadcasting the early morning childrens' session from station 2GF Grafton, in the 1930's. 'Uncle Col was C.E. Coldwell-Smith, foundation manager of 2GF at its opening on December 15, 1933. The vegetables and flowers were gifts from children to the local hospital. (Courtesy AWA).

When the hoped for co-operation between A Class interests had not eventuated by the beginning of February 1928, Postmaster-General Gibson hinted darkly that licences might be in jeopardy unless stations were prepared to co-operate — adding that he would acquiesce 'for the time being at one organisation operating two licences'. Sensing the chilling reality of a gun levelled at their heads, station managements concluded that surrender was the only course open to them.

The first amalgamation was announced on 21st February — a joint statement by the directors of 2FC and 2BL that both stations had finally resolved their differences and would co-ordinate their future activities, 'thus ensuring to the listeners-in a maximum of efficiency and variety in the programmes and, at the same time, eliminating much duplication which had been unavoidable in the past'.

The Postmaster-General expressed delight at this preliminary announcement and "expected other States to take their lead from New South Wales". On 16th May a new company, New South Wales Broadcasting Co Ltd, with a capital of £100,000, was registered to acquire the licences of 2FC and 2BL.

Not everyone echoed the Postmaster-General's enthusiasm for the 2FC-2BL merger. Although George Taylor, that ardent anti-monopolist, had died suddenly on 20th January 1928, his *Radio Journal* continued to voice his opinions and its editorials were not mollified one whit by official praise of the merger. The magazine trumpeted:

The monopolist situation is still further intensified by the reported amalgamation, termed 'friendly agreement', of 2BL and 2FC. The sugar coating carefully applied to induce the Radio Public to swallow this bitter pill is that the fusion will mean co-ordination of programmes to avoid duplicating and overlapping. The obvious reply is that such co-ordination could and should have been accomplished without creating a monopoly.

In Melbourne a pending lawsuit between 3LO and 3AR remained in abeyance as crucial talks between both managements dragged on behind closed doors. The licences of both stations were due to expire in the following year and, from the mood of the Government, no one doubted that licence renewals of the A Class stations depended on their acceptance of the Government's ultimatum to co-operate.

After numerous sessions of hard bargaining, the directors of 3LO and 3AR were finally able to announce that the two stations had agreed to amalgamate under the ownership of the Dominion Broadcasting Co Ltd, on 1st March 1928.

Then the picture began to change rapidly. The Postmaster-General revealed that plans were in hand for merging the companies operating 6WF and 7ZL with 3LO and 2FC.

A simultaneous statement from 6WF announced that 'only a modification in terms stood between the stations coming under the control of interests in the eastern States' and promised that 'programmes would then be provided by entertainment specialists'. 3LO was also engaged in merger talks with 5CL.

All these rapid developments disclose the important influence which Prime Minister Bruce had exercised on A Class managements. He was known to be an ardent protagonist of the British system, whereby the BBC enjoyed overall control of national broadcasting, and Bruce made no secret of his desire to create an equivalent situation in Australia.

Following the amalgamations of 2FC-2BL and 3LO-3AR, the emphasis suddenly shifted from business control to programmes.

The directors of 3LO found themselves in a quandary, for although their station had been cited as a shining example by the Royal Commission, and the Postmaster-General had recently suggested that 3LO should install a shortwave link to transmit Melbourne programmes to Hobart for relay by 7ZL, its current programmes drew criticism from several quarters.

The prestigious musicologist Dr A.E. Floyd asked "what would be the future of music in Australia if the programmes broadcast by 3LO indicated what Melbourne people would tolerate?", adding that "Victorians should not allow their musical judgement to be insulted by such programmes".

Postmaster-General Gibson promptly interested himself in "improving programmes in regard to balance and excellence of individual items" and on 19th July 1928 an omnipotent official triumvirate, comprising Bruce, Gibson and Malone, met in Sydney to debate with A Class representatives 'the Federal Ministry's expression of dissatisfaction with programmes'.

For their part, the A Class operators undertook "to make appreciable improvements in their programmes immediately, provided they were assured of a renewal of their licences for a period of five years" after their expiration in 1929. To reinforce this claim they stated that, without adequate licence guarantees, they were disinclined to spend money on erecting relay stations.

But Government spokesmen continued to lay uncomfortable stress on programme quality, reasoning like theatrical entrepreneurs that "revenue for broadcast entertainment was about £240,000 annually, sufficient to give regular engagements to the best talent in Australia and also to bring to Australia some of the best British and American entertainers. By working in co-operation with the British Broadcasting Corporation there could be a regular interchange of leading artists".

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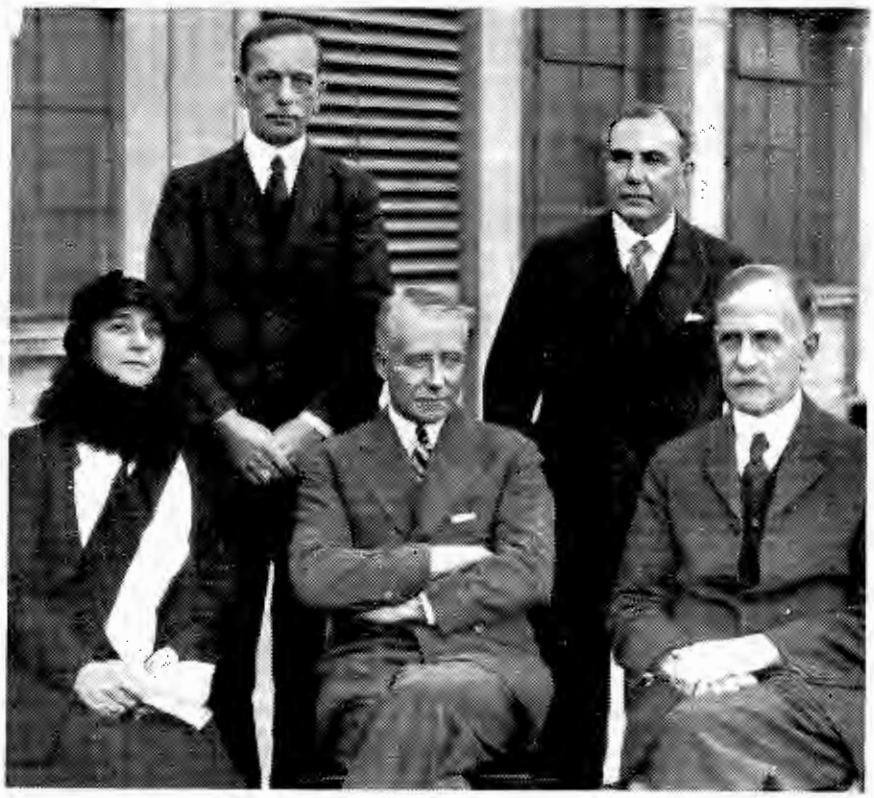

In 1932 the Federal Government established the Australian Broadcasting Commission to take over the operation of all 'A' class radio stations in the country. The founding members of the Commission are shown in this picture. From left to right: Mrs Couchman, Professor Wallace, Charles Lloyd Jones (chairman), R.B. Orchard and Herbert Brookes.

Personalities of Sydney station 2UW in 1935. Top left is Myra Dempsey, conductor of the women's homecraft session; top centre is Madame Joan Harvey, a psychologist for the women's session: top right is F.R. Thompson who was responsible for radio advertising at 2UE. Centre left is Norman Lyons, studio supervisor and special announcer for boys and girls sessions; centre is Alfred Andrew, producer-announcer, and responsible for musical and dramatic broadcasts; centre right is Vernon Sellars who conducts the Breakfast Club Session. Lower left is J.M. Prentice, announcer for foreign affairs and overseas news; lower centre is Linda Littlejohn, special announcer of foreign affairs; lower right is C.J. Arnold, assistant studio director, and responsible for compilation and arrangement of the programming.

Chapter 8

NATIONALISATION

A Class station managements did not have to wait long before learning what the Government had in mind. On the evening of Wednesday 25th July 1928, the Prime Minister informed the House of Representatives of the decision which changed the entire climate of Australian radio. The Government would 'take over the plant, equipment and mechanical means of broadcasting in all A Class stations and relay stations' and would lease private entertainment contractors the right to provide programmes to those stations.

To implement the plan, the Government appointed a Broadcasting Advisory Committee. Its members were H.P. Brown, Director of Postal Services (chairman); J.H. Hammond KC, chairman of the 1927 Royal Commission; Professor J.P.B. Madsen, Professor of Electrical Engineering in the University of Sydney; R.B. Orchard, a former MHR and wartime Director of Recruiting; and W.H. Swanton, former business adviser to the Postmaster-General.

It would seem that the Government was driven to assume control of 'the mechanical means of broadcasting' by the success of its own advocacy for co-operation between affluent and impoverished A Class stations. Faced with the imminent possibility of nation-wide amalgamations, the Federal Ministry apparently feared that the warmth of its enthusiasm for co-ordination was in danger of hatching a huge private monopoly — and decided to break the eggs before an uncontrollable monster emerged.

Yet, in some respects, the contemplated change was not so drastic as it seemed. The licensees of some A Class stations did not own their technical equipment, but merely leased it from AWA.

Because the B Class stations received no share of the licence revenue, they were unaffected by the Government's plans. The Federal Ministry considered that 'equal opportunities should be afforded to everyone desiring to broadcast... whether that might be done by increasing the number of B Class licences, by the provision of stations operated and controlled by the Government to which the public might have access, or by a combination of the two methods, depended on practical and technical considerations'.

Twelve B Class stations had already been licensed, and the Postmaster-General had 50 other applications from prospective commercial broadcasters. Gibson believed "that it would be impossible to allot more than twenty wavelengths without creating interference and the question would be to whom to allot these available licences without incurring the danger of a monopoly". Nevertheless his Department immediately received a further 10 applications and passed them to the Advisory Committee for consideration.

In point of fact no new commercial stations came on the air until 1930, and by that time two of the pioneers — 2BE and 2MK — had ceased operation.

The Government's plan for national radio was received with general satisfaction, if we except those companies which had been pressed into hurried amalgamations, only to find themselves nationalised soon afterwards. The extent of *their* bitterness at this cavalier treatment did not become generally known for some time.

There was a widespread belief that established theatrical organisations, such as Williamson's, Taits' and Fuller's, would probably win the programme contract, and even though Sir Benjamin Fuller had applied to inaugurate his own chain of A Class stations, he made no secret of his firm's desire to compete with Williamson's and Taits' in the programme field.

Among the commercial operators there was widespread relief that B Class stations would not be unduly limited... "it was contended by the controllers of such stations and by firms which desire to erect similar stations that if they are given reasonable facilities as well as freedom from official restrictions they will, from the revenue derived from advertising and publicity, be able to supply entertainment equal, if not superior, to the programmes provided by A Class stations".

By December 1928 the Advisory Committee headed by Harry Brown had prepared a detailed scheme for the establishment of a national broadcasting service to supersede the privately operated A Class stations. The blueprint provided for the PMG's Department to undertake the provision and maintenance of technical services of the stations, studios and relay circuits whilst the programme services would be let by tender to private

On April 30, 1930, a regular radiotelephone service was inaugurated between Australia and England. This shot, taken on June 12, 1931, shows eminent pianist Mark Hambourg speaking on the radiotelephone watched by AWA's Ernest Fisk (standing) and famous baritone Peter Dawson. Mrs Hambourg is sitting in the chair on the left, while Mrs Dawson sits next to her husband. (Courtesy AWA).

contractors. From the annual licence fee of 24/- a maximum of 12/- was available for programming.

The continuance and extension of the B Class service was assured and, in addition, the Committee proposed the establishment by the Postmaster-General of a further category: C Class stations, as auxiliaries to the national stations which, under the new organisation, forfeited their right to broadcast limited periods of paid advertising — a right, incidentally, which few of them had ever pursued vigorously because Australian firms of that era had ingrained preferences for visual advertising.

The intended role of these C Class stations was never defined in detail, beyond a wishful thought of 'broadcasting commercial programmes sponsored by large advertisers'. Although this suggestion received official approval, it was never implemented; the stringent economic depression of 1929 rendered the plan impracticable. Thus an implicit threat to B Class stations, and a further complication of Australia's already confused broadcasting system, evaporated.

The first station acquired by the Government was 6WF, which was taken over on 20th December 1928. Its emergency acquisition was precipitated by 6WF's management announcing that continuing heavy losses would oblige the station to close, thus leaving Western Australia without a radio outlet. The PMG's Department purchased 6WF's plant, reputedly for £7000, and provided its programmes until the station was absorbed into the national broadcasting scheme on 1st September 1929.

As the licences of the principal stations in Sydney and Melbourne were due to expire in July/August 1929, their plants were to be taken over and the assets of the controlling companies absorbed into the national broadcasting service. It was an open secret that the acquisition of 2FC, 3LO and 4QG remained in the hands of AWA, which had built the stations and manned them from the outset.

At the same time tenders were called for equipping relay stations, although the exact number could not be ascertained from a reading of the announcement. One was to serve the Newcastle area, and pressure from Queensland indicated that Rockhampton also had a high priority for a relay outlet. At length, on 9th

May 1929, tenders were invited for the provision of national programmes along specified lines for a stated contractual term.

Again the projected relay stations were concealed in a cloud of vague verbiage... 'it is impracticable to give precise information, but the tentative construction programme contemplates the provision of about sixteen subsidiary stations which may be brought into service during the currency of this contract'. In fact, only four were established.

Of eight programme tenders received, the combined submission of Union Theatres Ltd, Fullers Theatres Ltd and J. Albert & Son was accepted and the successful tenderers formed the Australian

Broadcasting Co Ltd, contracting with the Government to provide programme services to the national stations for a period of approximately three years — ending in all States on 30 June 1932. Stuart F. Doyle became chairman of directors of the programme organisation, with Sir Benjamin Fuller as vice-chairman.

From the inception of this arrangement there seems to have been a tacit understanding that the Australian Broadcasting Company was merely acting as caretaker of national broadcasting, to allow the Government time to create a local equivalent of the British Broadcasting Corporation. Basically the Australian Broadcasting Company had contracted with the Government to make agreeable sounds for the PMG's Department's microphones, to disseminate through the Department's own stations.

Stuart Doyle admitted that the first year of national programming was an extremely difficult period: "We had to face very definite hostility to the new method of centralised control of broadcasting, the natural disturbance by our taking possession of the stations and, above all, the severe financial depression. Sceptics forecast constant friction under the system of dual control, but these critics were confounded."

This, however, was a simplistic apologium for the actual state of affairs. Professional broadcasters of that time still remember their countless frustrations, particularly in the area of technical liaison. Often, after spending hours in rehearsing some complicated presentation, its effectiveness would be ruined by the key rehearsal technician being rostered 'off' for the scheduled broadcast.

Among the unsuccessful programme tenderers was W.H. Paling & Co, a firm which had a valid claim to pioneering the electronic medium, having initiated regular broadcasts from its Sydney concert hall in 1923. Paling's disappointment at failing to secure a share of the programming contract was to have important consequences for commercial radio in the years ahead.

Public acceptance of national broadcasting was soon reflected in licence figures. Between July 1929 and July 1930, listeners' licences increased from 302,539 to 322,403. New South Wales showed a marked improvement and Victoria's ratio of 8.08 licences per hundred continued to be the envy of all States — even though some 65% of Victorian listeners were calculated to be crystal set owners.

In Western Australia, where radio listening had suffered severely from 6WF's difficulties, licences rose by 60% during the first year of the Australian Broadcasting Company's stewardship. Tasmanian licences increased 24% during the same period. The new team of national programmers were understandably proud of such progess in the year of the Great Depression, although the trade press remained critical of the radio fare served up in less populous States... 'Tasmania seems to be a survival of the dark ages of gramophone records and the West Australian transmission has been the subject of the most urgent complaints and recommendations to the Postal Department'.

As the Australian Broadcasting Company set about the mammoth task of providing programmes on a national basis, new concepts of entertainment asserted themselves. Professor Bernard Heinze, the company's Director-General of Music, believed that broadcasting was the final step in the democratisation of music: "It has to be recognised that the growth of discrimination among the listening masses has already tended to the discouragement of poor quality and to encourage better, healthier music. When great masters like Kreisler and Backhaus visit us, do they worry themselves with peevish questionings as to the likes and dislikes of the public? Not at all. They pay us the tribute of an unconcerned presentation of the best they have to give."

During the Australian Broadcasting Company's administration the radio play grew in stature, from an irregular and experimental feature to an extremely popular programme segment enjoying a full proportion of air time in relation to music.

It is even more significant that the popularity of radio plays and public fascination with the first talking pictures progressed in step, to the mutual advantage of both media.

The first producer to explore the unusual potentialities of radio drama in Australia was 2FC's Laurence Halbert. His productions were a far cry from Australia's first radio play, 'The Barbarous Barber', broadcast by 3LO on 21st March 1925 and produced by Stanley Brookes ('the noted Dickensian') with instrumental music played live by the five-piece Buckley & Nunn Studio Orchestra.

Of course, radio technology was resposible for fostering sound films which, in turn, provided radio with an important programming tool — transcribed recordings. Improved loudspeakers for auditoriums, together with better pickups for disc reproduction, were applied to motion pictures and resulted in the rapid conversion from silent to sound movies. This adaptation began overseas in 1926, and the first commercially successful 'talkies' made use of 16-inch lateral cut disc recordings, which were played at 33rpm and synchronised with the film. The specifications of these oversized discs became stand-

ard in the radio industry, and led to a new era of transcribed programmes.

Radio audiences of that period were becoming increasingly conscious of sound quality. The first all-electric receivers were making their appearance, often housed in ornamental cabinets which made them the most impressive piece of furniture in the average home and certainly the focal point of the family circle. The superior education and rounded tones of the invisible announcer tended to endow him with an authority that politicians probably envied.

Another byproduct of that era was the intrusion of theatre music into radio. For years, the larger metropolitan cinemas had employed their own show bands to entertain patrons of silent films and these bands had long been favourites on radio; many stations maintained permanent landlines to pick up the nightly 'overture' from a local cinema.

With the advent of sound films, the more affluent cinemas began installing costly Wurlitzer organs and importing experienced organists from America. Their playing soon became a popular ingredient of radio programmes in capital cities.

Nevertheless, most Australian were still relatively unsophisticated in their listening habits. H.P. Brown went on record as saying... "It is amazing that listeners will turn up their sets and almost shout to carry on a conversation simultaneously. Is it any wonder that at the end of an evening of such 'entertainment' they feel it has not been altogether agreeable?"

In furtherance of its unwritten charter to educate listeners, the Australian Broadcasting Company issued a solemn pronouncement which has an oddly naive ring for modern broadcasters, who place such emphasis on audience surveys: 'No one, however leisured his or her life, ought to listen all the time. There would be something excessive and intemperate about such a person. Listening to wireless transmissions may become... a bad habit.'

Fortunately for Australia, electronics research was only marginally affected by the stop-and-go permutations of official wireless policy. The spectacular success of Beam Wireless quickly welded the nation into the invisible chain girdling the globe, and it was inevitable that international duplex telephony would be the next refinement. Thanks to ceaseless experimentation, this became a reality in 1928.

On 31st October, a select group of notables and pressmen gathered at AWA's Sydney headquarters to exchange greetings with confreres in other countries — merely by speaking into a domestic telephone instrument. After W.G. Conley of *The Sydney Morning Herald* had chatted to Java, the United States Consul, E.M. Lawton, spoke at length to several gentlemen at WGY, Schenectady, and Australian journalists then talked to their opposite numbers in America.

These tests continued over a period of weeks and enjoyed worldwide publicity. And although male voices dominated the tests, it should be mentioned that Mrs Albert Deane, the American wife of an Australian-born film executive, had the distinction of being the first woman in the United States to converse with Australia by radiotelephone.

Successful contact was established with Amsterdam and Berlin in December, and by the following September international radiotelephony was sufficiently advanced for the Prime Minister of Australia, S.M. Bruce, to conduct a lengthy conversation from AWA's Sydney office with Lord Passfield, Secretary of State for Dominion Affairs, at his home near London.

The regular radiotelephone service between Australia and England was inaugurated on 30th April 1930, when the Prime Ministers of Great Britain and the Commonwealth, Ramsay MacDonald and James Scullin, '...conversed together for some fifteen minutes with the greatest ease and clarity over twelve thousand miles of the ether, Mr Macdonald sitting in his office in Downing Street, and Mr Scullin at Canberra.

This historic conversation was followed immediately afterwards by another between the editors of the oldest existing daily papers of England and Australia respectively, *The Morning Post* and *The Sydney Morning Herald*'. At last Australia had a direct speech link with the heart of the British Empire.

Of course, there were countless frustrations in the working lives of professional radio people of that period. The transition from acoustic to electric recording brought an enormous increase in frequency response, causing radio stations to invest substantial capital in new audio equipment. But many listeners with outmoded receivers could not enjoy the improved sound, or even notice it.

Just the same, the infinite wonders of wireless seldom failed to stimulate public imagination when properly demonstrated, and the very mention of Marconi's name invariably lent a magical aura to any occasion. The great inventor had never found time to visit Australia, but on 26th March 1930 he opened Australia's most elaborate radio and electrical exhibition at the Sydney Town Hall by turning on 3000 coloured lights from his yacht *Elettra* in Genoa harbour.

Many witnesses of that remotely controlled phenomemon became intensely emotional, sensing the presence of an invisible hand — a *rapport* which Italy's 'Leonardo of Electronics' possessed in great measure.

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Chapter 9

THE COMMERCIAL REVOLUTION

1930 was to prove a watershed year for the struggling commercial stations, although no pundit would have dared to make such a bold prediction a year previously — having regard to the immense amounts of money and developmental energy earmarked for national programmes, re-equipment of national stations and provision of the first regional relay outlets at Newcastle (2NC), Rockhampton (4RK), Corowa (2CO) and Crystal Brook (5CK).

When the Government approved a fresh crop of commercial licences one columnist wrote... 'with the national service being extended and improved very slowly, we must look to the B Class stations for a move. For some time there has been a fear that the Government was not sympathetic towards those stations, and that there would be some radical alterations in the policy governing their licences. Those fears, if not altogether wiped out, have lessened considerably'.

On 6th January 1930, 2XN Lismore commenced service, the first new commercial licensee in almost three years. Its proprietor, George W. Exton, was an experienced experimenter who claimed to have built his first spark set in 1896. A foundation member of the Wireless Institute, Exton had operated VK2CZ from Molesworth Street, Lismore, until he was granted a B Class licence for a hybrid collection of gear feeding 50 watts into 2XN's 210-foot mast.

Before the year was out, a further twelve B Class stations were supplying intermittent programmes to various far-flung communities throughout Australia. These are listed in Table 1, together with their commencement date and licensee.

Many of these stations were established by enterprising radio dealers as adjuncts to their businesses, so it is hardly surprising that their capital resources and programme philosophies were often as different as the areas they served. 2MV, for instance, had a brief life of about nine months and was managed by W. Yound, a radio trader of Exeter, on behalf of a local group. 2AY was the dream child of Charles Rice, proprietor of the Mid-State Radio Company of Dean Street, Albury.

In Tasmania, where broadcasting had made such a faltering start, Findlays Pty Ltd and Wills & Co Pty Ltd decided to investigate the possibilities of commercial radio. From the outset 7HO initiated a novelty by opening from 8am to 9am, thus scooping its national competitor, 7ZL. Both firms had an interest in 7LA, Launceston, where there was no local competition. The station, furnished with the latest AWA equipment, promised listeners 'comprehensive and high-grade programmes'.

The Australian Broadcasting Company did not take over 4QG's programming until 31st January 1930, at a period when Queensland's original enchantment with radio had declined sharply. One man who considered that the northern State deserved a better deal was Brisbane's English-born electrical trader, John Beals Chandler, who had started a radio department in November 1924. Acquiring a commercial licence, Chandler contracted with AWA for a temporary plant pending delivery of a modern transmitter and 4BC opened with a fanfare — literally — of silver trumpets on 16th August 1930. The newcomer was deluged with congratulatory messages, from northern New South Wales to Cairns and as far afield as Charleville and Winton.

Quietly and unobtrusively, the seeds of a commercial radio revolution were being sown during the opening months of 1930; and before the national broadcasters, or anyone else, were fully aware of their germination, a record harvest had been reaped. The architects of this revolution were the Sydney music firm, W.H. Paling & Co and their recently re-employed executive, Oswald Anderson.

The story really began in 1928 when the founder of 2UW, Otto Sandel, disposed of his station to Radio Broadcasting Ltd, a company dominated by Paling & Co, Farmer & Co and J.C. Williamson. The licence of 2UW was transferred to the new owners on 12th April 1928.

Oswald Anderson, who back in 1923 had organised Paling's experimental radio concerts and went on to become general manager of 2FC, was by then controlling

the destinies of the 2FC-2BL combination for the New South Wales Broadcasting Company. He retained a similar position when the Australian Broadcasting Company took over national programming. Then, early in 1930, it was announced that Anderson had resigned to rejoin his original employers, Paling & Co, to organise and manage 2UW.

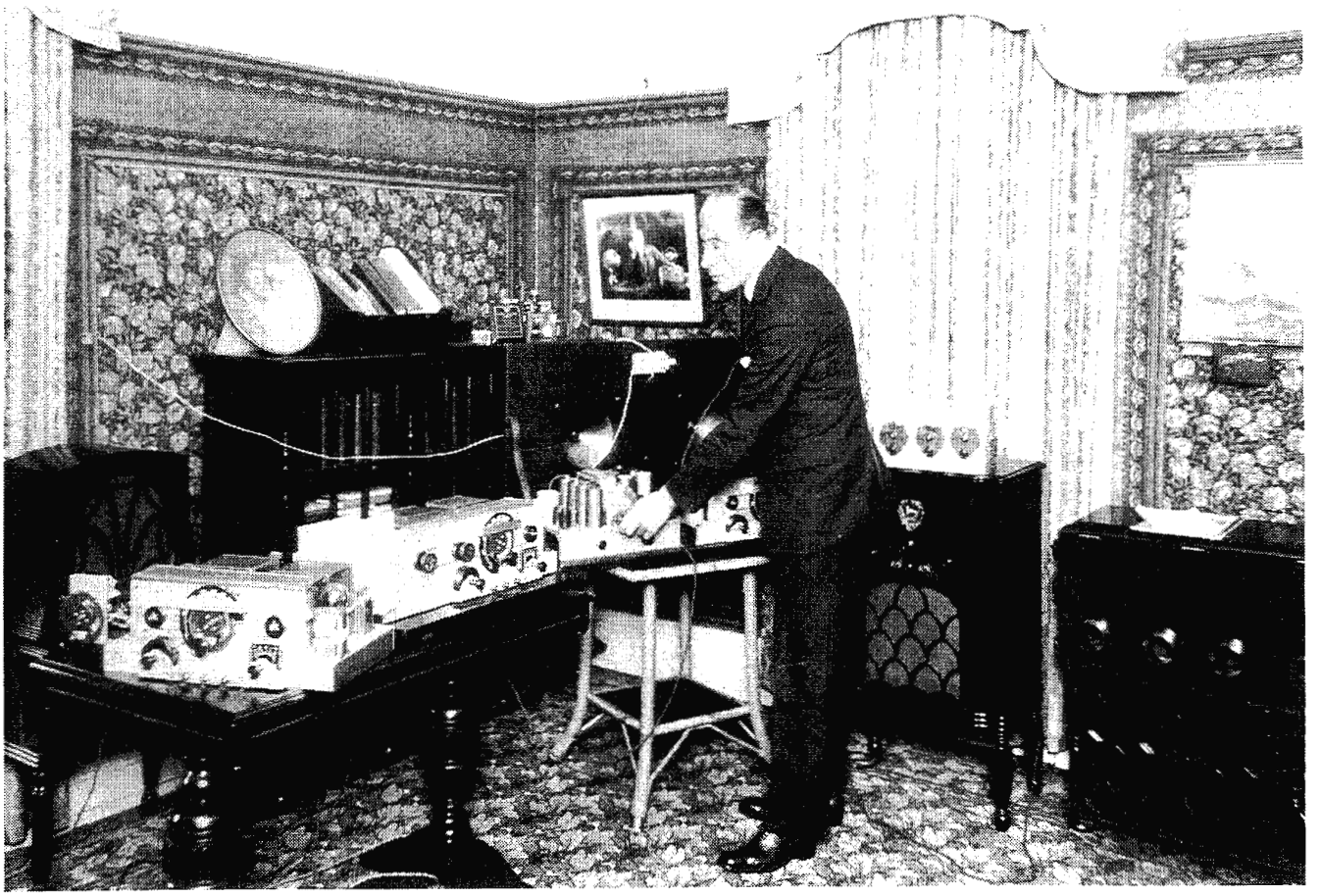
Paling's lost no time in acquiring outright control of the station by purchasing the share equity of Williamsons and Farmers. With one of Australia's most experienced broadcasters occupying the managerial chair, it seemed evident that the new owners of 2UW might be planning some sort of coup and a trade paper remarked sapiently 'it is believed that Palings are now going out after the Australian Broadcasting Company, who defeated them for the supply of national broadcasting programmes last year'.

Few men were better informed about the plans and budgeting of the national programme contractors than Oswald Anderson. Australia was wallowing in the mire of economic depression, with a growing army of unemployed on the dole, but Anderson reasoned shrewdly that radio could play an important role in diverting people from their personal problems. The popular community singing concerts in Sydney and Melbourne were undeniable evidence of this.

At that very time the Australian cricketers, captained by Woodfull, had just arrived in England, hoping to retrieve the Ashes, and countless sports-loving Australians were pinning their hopes of victory on the prowess of their young batting star, Don Bradman. With the First Test scheduled to begin at Trent Bridge on 13th June, Anderson saw his chance to scoop the budget-bound national stations.

Arranging with AWA for a ball-by-ball Beam Wireless message service direct from Trent Bridge, Anderson engaged the doyen of Australian cricket, M.A. Noble, to supply an expert commentary from the 2UW studio. The station remained on the air until stumps were drawn at 3.30am Australian time, and managed to offset some of the cost of this historic sporting coverage by selling advertising.

The idea took wings, and the large audience was ecstatic in its praise of this exclusive service from a B Class station. After the Second Test at Lords, where Bradman rattled up 254 to help defeat England by seven wickets, Anderson suddenly found that sponsors were eager to participate and that other commercial



Ernest (later Sir Ernest) Fisk testing some of AWA's current receiver models at his Wahroonga home, in the mid 1930's. (Courtesy AWA).

stations were vying to share the cricket coverage by landline hookup.

These broadcasts reached fever pitch in July 1930, during the Third Test, when Bradman scored a staggering 334 at Leeds. A radio journal editorialised:

The present series of Test Match broadcasts arranged by 2UW has put the sponsored programme on the Australian map. It is the first time that large manufacturing concerns have been interested in a series of broadcasts to the tune of £3000, the first time an exclusive feature of topical importance has been chained up to radio advertising and the first time a feature has been sold in several States to other broadcasting stations. Up to the present large-scale manufacturers and large business have rather pooh-poohed the idea of broadcast advertising. Now, however, it seems that big business is beginning to sit up and take notice.

By the end of July, Oswald Anderson had laid the foundation for Australia's first network of B Class stations — 2UW, 4BC, 3DB and 5AD. Within a matter of weeks other stations were added — 4GR, 2HD, 2AY, 3TR, 3BA — and Musgrove's station 6ML, Perth, was hoping to 'participate by cable service'.

Thus the Federal Radio Network came into being. It was calculated that 'from 250,000 to 300,000 of the actual licensed listeners of Australia may be served by the entire chain.

The B Class stations have assembled this vast audience to further the use of sponsored advertising programmes. With the phenomenal success of the Test Match broadcasts, Australian advertisers are beginning to wake up to the possibilities of radio as an advertising medium: while the trunk-line hookups of the B Class stations can command these large audiences which will make large-scale radio advertising worthwhile'.

'Recently 2UW relayed an entire gramophone performance of *Aida* from 3DB, Melbourne. Walter Lindrum spoke through 3DB and 2UW at the same time. Last Friday night 2UW relayed the opening of the Fox Movietone Club at 4BC, the new Brisbane station. On Saturday night 3DB and 4BC relayed Stott and Hoare's typewriter championship from the 2UW studio; while 4BC has relayed 2UW's description of the Fifth Test for seven hours every night of play. Finally, the AWA shortwave station, VK2ME, took 2UW's Test description and relayed it all over the world, complete with advertisements'.

The economics of Australia's first commercial radio network provide interesting comparisons with modern standards:

...to cover the Sydney, Melbourne, Adelaide and Brisbane circuit the advertiser pays £52, which entitles him to an ordinary gramophone programme with name attached, broadcast simultaneously in four States. Half an hour's programme costs £29. These charges cover station expenses, trunk-line relays, etc. Flesh and blood artists and novelties are extra. Seven big advertisers willing to contribute (a total of) £1400 a week towards radio advertising could put on every night the best music, the best entertainment, the best vaudeville, that Australia can offer. Thus the question arises of where the A Class stations will come in. The answer is that they won't come in — they can't afford it. They couldn't even afford the Test Match descriptions.

Flexing their muscles and enjoying their new-found strength, member stations of the Federal Radio Network began referring to themselves as 'the commercial federation'. It was hardly surprising that when B Class broadcasting representatives met in Sydney during November of that year to form their own association, they adopted the name Australian Federation of Broadcasting Stations (now the Federation of Australian Commercial Broadcasters).

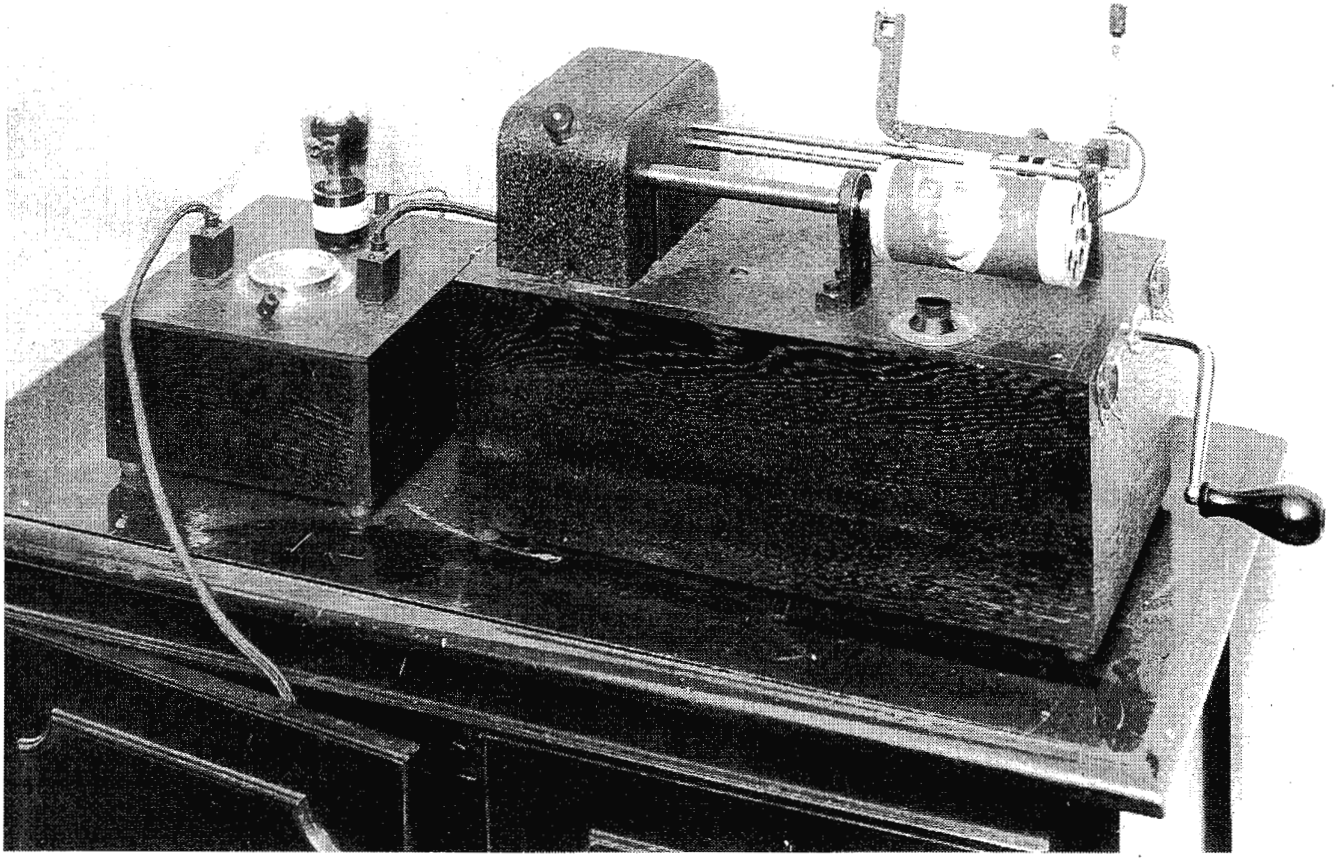
Within the space of a few months the Australian public had become acutely aware of commercial broadcasting. The exciting cricket coverage and the enterprise of its promoters persuaded prospective advertisers that this hitherto neglected medium could carry their message to a sizeable captive audience.

Throughout the nation newly-licensed commercial stations were making feverish preparations to get on the air and existing stations were overhauling their equipment to provide a better service.

A.J. Ryan of Canberra was testing the future 2CA under the experimental call sign VK2LE 'at various unscheduled times when 2BL is off the air' and probably wondering how effectively his unmodulated aerial power of 50 watts would serve the new Federal Capital, which

TABLE 1:
NEW COMMERCIAL STATIONS IN 1930

Station	Commenced	Licensee
6ML, Perth	19th March 1930	Musgroves Ltd
3BA, Ballarat	31st July 1930	Ballarat Broadcasters Pty Ltd
5AD, Adelaide	2nd August 1930	Advertiser Newspapers Ltd
7HO, Hobart	13th August 1930	Findlays Pty Ltd
4BC, Brisbane	16th August 1930	J.B. Chandler & Co
4BK, Brisbane	29th September 1930	Brisbane Broadcasting Co Ltd
3TR, Sale	29th September 1930	Gippsland Broadcasting Service, Trafalgar
3GL, Geelong	3rd December 1930	Geelong Broadcasters Pty Ltd
3KZ, Melbourne	8th December 1930	Industrial Printing & Publishing Co
7LA, Launceston	13th December 1930	Wills & Co Pty Ltd
2MV, Moss Vale	15th December 1930	Moss Vale Broadcasting Service Ltd
2AY, Albury	17th December 1930	Charles Rice.



In 1929, some English Fultograph equipment was brought to Australia for experiments in sending still pictures by radio. This is a Fultograph receiver, essentially an early predecessor of today's fax machine. Note the picture appearing on the receiving drum — none other than AWA's Ernest Fisk.

10 years previously had been called 'a city of foundation stones' by the visiting Prince of Wales.

2HD Newcastle, threatened by the imminent opening of the first national relay station, 2NC, was operating on an irregular schedule and complaining to the Prime Minister that the Director of Postal Services had reduced its wavelength without prior consultation. Marcus Oliver of Gunnedah was also lamenting that the 200 metres wavelength allotted to his prospective station, 2MO, was "quite useless because of receiver instability at distances of 50 miles or more on this wavelength".

Commercial station managements of that era were so intent on outdoing the national service and winning public favour that they had not yet generated a highly competitive spirit among themselves. Their main programme effort was concentrated on evening sessions, so metropolitan audiences were rather indifferently served at other times.

By October 1930, for instance, 2UE was the only commercial station in Australia on the air regularly before 8am and most stations, both national and commercial, closed down between sessions. Weekend programmes were usually minimal or non-existent. 2KY opened for four hours on Saturday evening, but remained closed on Sundays.

Indeed, the paucity of B Class programmes on the Sabbath was to have important consequences. Sydney's churchmen, both Protestant and Catholic, were keenly interested in securing commercial licences to serve their own denominations and as early as May 1930 it became known that Postmaster-General Joseph Lyons had informed a deputation for the Council of Churches that their application was unlikely to be refused... "it was only awaiting settlement of the main question of policy".

Three metropolitan commercial stations, 3UZ, 3DB and 2UE, toyed briefly, if optimistically, with the technical novelty of transmitting still pictures by radio, but their enthusiasm tended to outstrip the state of the art and public demand.

A Melbourne firm, Television & Radio Laboratories Pty Ltd, fostered the idea of Radiovision, which reproduced simple geometric figures on a special receiver. The experimental transmissions over the two Melbourne stations were soon abandoned.

2UE's interest revolved about the Fultograph system, canvassed ardently by the manufacturer's representative, who admitted that "such transmissions will be of no value until the Fultograph receivers are distributed". And all this in a time of worldwide depression!

Chapter 10

EQUILIBRIUM ATTAINED

There is evidence to suggest that commercial radio was determined to create its own success story, as a suit of defensive armour. Some of its most influential executives had been victims of the strange convolutions of official policies which bedevilled Australian broadcasting in 1928, and the cataclysmic events of that period made them very apprehensive about their own future.

The Australian public read the first expose of the bumbling transition from private ownership to national broadcasting when the Public Accounts Committee of the Commonwealth Government investigated a large compensation claim by the private companies which pioneered Australian broadcasting and, having been steered into hasty amalgamations by an implicit promise of licence renewals, were themselves taken over by the Government.

The former owners of Australia's most successful station, 3LO, pulled no punches. Their testimony to the Public Accounts Committee was bitterly outspoken. They claimed to have been coaxed into a costly amalgamation with 3AR for their own survival.

Then, they complained, the merger company, Dominion Broadcasting Pty Ltd, was practically compelled to buy the ailing 7ZL, to acquire a controlling interest in 5CL and an option over 6WF. But then, "after all this had taken place the Government suddenly changed its policy and decided to nationalise broadcasting".

The Prime Minister had allegedly shrugged off their protests by saying... "I'm sorry, gentlemen, the Government has changed its policy. Governments are unsatisfactory things to deal with — they have no business morals. Would to God they had".

This compensation suit dragged on for two years, and the final settlement was merely a token payment in comparison with the original claim. But by that time some of the most affected parties were actively engaged with commercial radio.

The Melbourne *Herald*, summarily deprived of its interest in 3LO by the Government's nationalisation measures, acquired 3DB in June 1929. The firms which had given 3LO its valuable links with show business had re-entered broadcasting through another door: Viola Tait tells us in her memoirs... "when 3LO was taken over by the Government, Sir Harry Brown suggested to George Sutherland of Allan's that Allan's, J.C. Williamson Ltd and *The Age* newspaper should start a B Class broadcasting station. This led to them becoming equal partners when they formed 3AW (the 'A' for Allan's and *The Age*, and the 'W' for Williamson's) in 1932, with a capital of £5000".

During December 1930, Australia's voice and characteristic accent began filtering into other lands as the first regular schedule of shortwave transmissions wafted out to the world on 31.5 metres from AWA's experimental station, VK3ME, at Braybrook. Immediately a flood of appreciative letters began pouring in from overseas. For eighteen hours each week, VK3ME told Australia's story to the world by means of news, talks and music. The announcer was C.T. (Tom) Sproule.

Its powerful sister station at Pennant Hills, VK2ME, had been a 'maid of all word' since inaugurating the Empire broadcasts of 1927. From time to time some of its more spectacular achievements received press mention and created an aura of wonderment in the public mind.

One of those occasions — on 10th January 1930 — was notable for being directed to a very small, cold audience: the members of Commander Byrd's expedition in Antarctica. In that incongruous setting the polar explorers listened to VK2ME bringing them the singing and talking portions of Maurice Chevalier's latest film, *The Love Parade*, from Sydney's Prince Edward Theatre.

Seven months after VK3ME commenced its regular overseas broadcasts from Melbourne, the 20kW giant at Pennant Hills began a complementary schedule on 31.28 metres. Each transmission opened and closed with a kookaburra's laugh, a tradition which Radio Australia continues to this day.

Foreign listeners were somewhat incredulous that any bird could produce such a cacophony, but the sound was

Radio transmitters being built at AWA's Radio-Electric Works at Ashfield, Sydney, in the mid-1930's. Many of the transmitters used by the first generation of Australia's radio broadcasters were built in this factory. (Courtesy AWA).

remarkably effective in helping to identify the station as 'The Voice of Australia'.

Percy Moore Farmer was one of VK2ME's first announcers. Radio pioneering was no novelty to Farmer, who had manned Australia's first wireless telegraphy land station back in 1911.

The opening of the first national relay station, 2NC, at Beresfield, near Newcastle, just before Christmas 1930 was something of an occasion. Australia's second regional, 4RK, opened eight months later. Indeed, 1931 was a year of intensive development in servicing country areas with new stations, as well as in the area of programme innovations.

The radio debut of George Edwards and Nell Stirling occurred in March 1931, when this competent team broadcast a sketch, 'Peace and Pleasure'. Adelaide-born Edwards had received his dramatic grounding in England and, on returning to Australia, paired up with Miss Stirling, who was already an established personality in J.C. Williamson's productions and Fuller's vaudeville. April 1931 witnessed another novelty from 2UW — Australia's first bi-lingual programme, in French.

A further crop of commercial stations blossomed throughout the land, including 3SR Shepparton, 4MK Mackay, 3BO Bendigo, 2WL Wollongong, 2KO Newcastle, 3SH Swan Hill, 6KG Kalgoorlie, 4TO Townsville, 6PR Perth, 3HA Hamilton, 3AK Melbourne, 2GN Goulburn, and work began on Sydney's two church stations, 2SM and 2CH.

The country stations, with their close involvement in local affairs, performed a valuable service which city-based national stations were not geared to match, and the two streams of radio became complementary.

Since 1928, 2UE had been the recognised source of religious programmes for Sydney's Catholic community, and the station had even been permitted to increase its power to 500 watts for its coverage of the Eucharistic Congress of that year.

But 2UE was obliged to forego some of its popularity among Catholics when the Catholic Broadcasting Company opened 2SM on 24th December 1931, with an address by Archbishop Kelly, followed by High Mass from St Mary's Basilica. The station contributed a new star to the expanding galaxy of Australian radio personalities in its announcer, John Dunne, a J.C. Williamson musical comedy artist who had first fronted up to a microphone in January 1931, as a guest baritone at a 2FC community singing concert compered by Charles Lawrence.

Within two months of 2SM's debut, Sydney's Protestants were turning to their own Council of Churches sta-

A shipment of 'Fisk Radiola' radio receivers about to leave from AWA's Ashfield Radio-Electrics Works, some time in the 1930's. Extended many times in the following decades, this factory went on to produce huge numbers of radio sets, transmitters and the first generation of TV receivers.

tion, 2CH, which opened on 15th February 1932 with a spectacular inaugural programme from the Conservatorium of Music. The station was financed by Frederick H. Stewart MHR, an omnibus proprietor, industrialist and leading Methodist layman.

It was then less than a year since Oswald Anderson had taken control of 2UW, launching his carefully calculated campaign to outshine his ex-employers at their own game.

No one doubted that this shrewd innovator posed an ominous threat to Sydney's national programmers. But the additional competition provided by 2CH shifted the programme initiative even more positively towards the commercial licensees, because the new Council of Churches station had contrived to enlist some of 2FC's top names, including Arthur Cochrane, Ewart Chapple, Bryson Taylor and Gwen Gibson. In addition, the novelty value of the new commercial stations in Sydney, Melbourne and Brisbane had the effect of fragmenting the available audience still further.

Then Oswald Anderson compounded the national stations' problems even more by wooing another of their star artists, Charles Lawrence, to join 2UW's already formidable personality lineup, so Frank Hatherley had to be rushed up from Melbourne to fill the vacuum at 2FC, a vacuum that was already assuming grave proportions for the Australian Broadcasting Company.

By this time the national programme providores were painfully aware that their days were numbered. With their contract due to expire on 30th June 1932, the Governor-General's speech at the opening of the new parliamentary session gave unequivocal notice of the imminent creation of a new national authority: the Australian Broadcasting Commission.

The validating bill was introduced in the House of Representatives on 9th March 1932, by Postmaster-General James Edward Fenton saying... "the system of control proposed in this bill is, as near as practicable, that which is in operation in Great Britain".

Former Prime Minister, William Morris Hughes, disagreed: "It would be a mockery to confuse the commission which the Government proposes to set up with the British Broadcasting Corporation".

Some months earlier, the BBC had announced its intention of inaugurating Empire broadcasting with a powerful shortwave station at Daventry.

So the Australian Government, looking nostalgically to London as the core of all things British, hoped that the future Australian Broadcasting Commission would draw liberally on the cultural riches emanating from Daventry.

In a strangely naive passage of his speech, Fenton said... "It is anticipated that under the Empire broadcasting system it will be possible for naked blacks to listen-in in the jungle to the world's best operas. We may also reach the period when brown-skinned Indians will be able to dance to one of England's best orchestras".

The original draft of the Australian Broadcasting Commission Bill permitted the new national radio authority to broadcast sponsored programmes... "a wise provision", as one speaker commented during the debate: "Easy money is at present being made by some of the B Class stations in the capital cities from the broadcasting of sponsored programmes. It is not right that the B Class stations... should be able to take the cream of the funds available for advertisement purposes".

Billy Hughes rebutted this argument and expressed concern about political control of Australian broadcasting. Frederick Stewart, the financial mentor of 2CH, saw "the possibility of this measure being used as a stepping stone to the assumption of direct control of B Class stations", adding that "advertising should be left to B Class stations, as that is their only field of revenue".

Predictably, the reference to sponsored programmes was deleted from the Bill before it received Royal Assent on 17th May 1932.

The Second Reading debate reflected widespread dissatisfaction with the current system of musical copyright fees, and this problem was to come under the clinical scrutiny of a Royal Commission during the following year.

The Member for Kalgoorlie, Albert Green, was also critical of the possible domination of one medium by another... "certain newspaper combines are endeavouring to obtain a monopoly of B Class stations and I sound the note of warning that sooner or later some government will have to tackle the difficult, but very necessary, task of dealing with the problem of metropolitan B Class stations".

Another contentious issue in the Australian Broadcasting Commission Bill concerned the annual salaries proposed for the five commissioners. The sums of £500 for the chairman, £400 for the vice-chairman and £300 for each other commissioner, were considered so paltry that only mediocrities would accept them. But this fear proved groundless and an eminently successful businessman, Mr (later Sir) Charles Lloyd Jones, became the foundation chairman of the ABC, which assumed control of national broadcasting on 1st July 1932.

The formative years were over. The courageous efforts of the pioneers had created something worthwhile; the passions, prejudices and ineptitudes of the past had culminated in a unique system which incorporated the best aspects of radio in Europe and America.

Australian broadcasting had taken nine years to attain equilibrium and, as the pioneers looked back on that tempestuous period, most of them were ready to concede that all their tribulations had not been in vain. Yet few of them could ever have envisaged the exciting years that lay ahead. ❖

The End

LIST OF BROADCASTING STATIONS

2CO 536 metres, 560kc, 7500 watts. National Broadcasting Service (relaying 3LO and 3AR), Corowa NSW.

7ZL 517 metres, 580kc, 1000 watts. National Broadcasting Service. Studio, Elizabeth Street, Hobart Tas.

3AR 492 metres, 610kc, 4500 watts. National Broadcasting Service. Studio, 120a Russell Street, Melbourne Vic.

5CK 472 metres, 635kc, 7500 watts. National Broadcasting Service (relaying 5CL), Crystal Brook SA.

2FC 451 metres, 665kc, 3500 watts. National Broadcasting Service. Studio, 96-8 Market Street, Sydney NSW.

6WF 435 metres, 690kc, 3500 watts. National Broadcasting Service. Studio, Hay Street, Perth WA.

5CL 411 metres, 730kc, 2000 watts. National Broadcasting Service. Studio, Hindmarsh Square, Adelaide SA.

4QG 395 metres, 760kc, 2500 watts. National Broadcasting Service. Studio, State Ins Bldgs, Brisbane Qld.

3LO 375 metres, 800kc, 3500 watts. National Broadcasting Service. Studio 120a Russell Street, Melbourne Vic.

2BL 351 metres, 855kc, 3000 watts. National Broadcasting Service. Studio, 96-8 Market Street, Sydney NSW.

6PR 341 metres, 880kc, 500 watts. Nicholson's Ltd, 86-90 Barrack Street, Perth WA.

7HO 337 metres, 890kc, 50 watts. Commercial Broadcasters PtyLtd, 82 Elizabeth Street, Hobart Tas.

4WK 333 metres, 900kc., 50 watts. Warwick Broacasting Co. Pty Ltd, Albion Street, Warwick Qld.

4RK 330 metres, 910kc, 2000 watts. National Broadcasting Service (relaying 4QG), Rockhampton Qld.

3UZ 323 metres, 930kc, 600 watts. Nilsen's Broadcasting Service Pty Ltd, 45 Bourke St, Melbourne Vic.

5RM 319 metres, 940kc, 1000 watts. River Murray Broadcasters Ltd. Studio, Renmark SA.

2GB 316 metres, 950kc, 1000 watts. Theosophical Broadcasting Station Ltd, 29 Bligh Street, Sydney NSW.

5DN 313 metres, 960kc, 300 watts. Hume Broadcasters Ltd, 29 Rundle Street, Adelaide SA.

3BO 309 metres, 970kc, 200 watts. Amalgamated Wireless (A/sia) Ltd, Allen's Walk, Bendigo Vic.

6BY 306 metres, 980kc, 50 watts. Bunbury Broadcasters Ltd, Bedford Hall, Bunbury WA.

4AY 306 metres, 980kc, 50 watts. Ayr Broadcasters Pty Ltd, Ardmillan Road, Ayr Qld.

4GR 300 metres, 1000kc, 50 watts. Gold Radio Service Ltd. Ruthven Street, Toowoomba Qld.

3HA 297 metres, 1010kc, 300 watts. Western Province Radio Pty Ltd, 37 Gray Street, Hamilton Vic.

2UE 293 metres, 1025kc, 1000 watts. Radio 2UE Sydney Ltd, 296 Pitt Street, Sydney NSW.

5PI 288 metres, 1040kc, 2000 watts. Midlands Broadcasting Services Ltd, PO Box 392, Port Pirie SA.

2CA 286 metres, 1050kc, 500 watts. A.J. Ryan Broadcasters Ltd, Symondstron, Canberra FCT.

4MB 283 metres, 1060kc, 50 watts. Maryborough Broadcasting Co Ltd. Studio, Kent Street, Maryborough Qld.

2KY 280 metres, 1070kc, 1000 watts. Trades & Labour Council NSW. Studio, 424 George Street, Sydney NSW

3SH 278 metres, 1080kc, 50 watts. Swan Hill Broadcasting Co, Campbell Street, Swan Hill Vic.

6AM 275 metres, 1090kc, 500 watts. Northam Broadcasters Ltd. Studio, Northam WA.

7LA 273 metres, 1100kc, 300 watts. Findlay & Wills Broadcasters Pty Ltd, 67 Brisbane Street, Launceston Tas.

2HD 270 metres, 1110kc, 500 watts. Airsales Broadcasting Co, Box 123, Newcastle NSW.

2UW 267 metres, 1125kc, 750 watts. Commonwealth Broadcasting Corporation Ltd, 49 Mark Street Sydney NSW.

6ML 264 metres, 1135kc, 500 watts. WA Broadcasters Ltd, Lyric House, Murray Street, Perth WA.

4BC 262 metres, 1145kc, 1000 watts. J.B. Chandler & Co. 43 Adelaide Street, Brisbane Qld.

3YB 283 metres, 1060kc, 25 watts. Mobile Broadcasting Service Pty Ltd, 430 Little Collins Street, Melbourne Vic.

2WG 260 metres, 1155kc, 500 watts. Riverina Radio Broadcasting Co Ltd, 16 Fitzmaurice Street, Wagga NSW.

4TO 256 metres, 1170kc, 200 watts. Amalgamated Wireless (A/sia) Ltd. Studio, Flinder Street, South Townsville Qld.

3DB 254 metres, 1180kc, 600 watts. 3DB Broadcasting Station Pty Ltd, 36 Flinder Street, Melbourne Vic.

4MK 252 metres, 1190kc, 100 watts. Mackay Broadcasting Service, 64 Nelson Street, Mackay Qld.

5KA 250 metres, 1200kc, 300 watts. Sport Radio Broadcasting Co Ltd, Richard's Building, Currie Street, Adelaide SA.

2CH 248 metres, 1210kc, 1000 watts. NSW Council of Churches Service. Studio, 77 York Street, Sydney NSW

2GF 246 metres, 1220kc, 50 watts. Grafton Broadcasting Co Ltd. Station, Turf Street, South Grafton NSW.

6KG 246 metres, 1220kc, 100 watts. Goldfields Broadcasters (1933) Ltd, 86 Palace Chambers, Kalgoorlie, WA

2NC 241 metres, 1245kc, 2000 watts. National Broadcasting Service, relaying 2FC and 2BL, Newcastle NSW.

3WR 238 metres, 1260kc, 500 watts. Goulburn Valley & N.E. Broadcasters Pty Ltd, High Street, Shepparton Vic.

2SM 236 metres, 1270kc, 1000 watts. Catholic Broadcasting Co, Australia House, Wynyard Square, Sydney NSW.

3TR 234 metres, 1280kc, 250 watts. Gippsland Publicity Pty Ltd, 47 Charlotte Street, Brisbane Qld.

3BA 231 metres, 1300kc, 50 watts. Ballarat Broadcasters Pty Ltd, Cnr Armstrong & Dana Streets, Ballarat Vic.

5AD 229 metres, 1310kc, 300 watts. Advertiser Newspapers Ltd, Weymouth Street, PO Box 392, Adelaide SA.

2MO 227 metres, 1320kc, 50 watts. M.J. Oliver, Marquis Street, Gunnedah NSW.

4RO 226 metres, 1330kc, 50 watts. Rockhampton Broadcasting Co Pty Ltd, Cnr East & William Streets, Rockhampton Qld.

2XN 224 metres, 1340kc, 50 watts. G.W. Exton, 137 Molesworth Street, Lismore NSW.

3KZ 222 metres, 1350kc, 600 watts. Industrial Printing & Publicity Co, 64 Elizabeth Street, Melbourne Vic.

4PM 221 metres, 1360kc, 100 watts. Amalgamated Wireless (A/sia) Ltd. Studio, Musgrave Street, Port Moresby, Papua.

2BH 221 metres, 1360kc, 100 watts. Radio Silver City Ltd, Cnr Cummins & Zebiana Streets, Broken Hill NSW.

7BU 221 metres, 1360kc, 50 watts. Findlays Pty Ltd, Burnie Tas.

3HS 219 metres, 1370kc, 50 watts. Wimmera Broadcasting Co Pty Ltd, 84 Wilson Street, Horsham Vic.

4BH 217.3 metres, 1380kc, 600 watts. Broadcasters (Aust.) Ltd, Parbury House, Eagle Street, Brisbane Qld.

2GN 216 metres, 1390kc, 100 watts. Goulburn Broadcasting Co Ltd, Auburn Street, Goulburn NSW.

3GL 214 metres, 1400kc, 50 watts. Geelong Broadcasting Pty Ltd, Moorabool Street, Geelong Vic.

2KO 212 metres, 1415kc, 500 watts. Newcastle Broadcasting Co Ltd, AMP Chambers, 57 Hunter Street, Newcastle NSW.

3AW 211 metres, 1425kc, 600 watts. The Vogue Broadcasting Co Pty Ltd, 382 Latrobe Street, Melbourne Vic.

3XY 211 metres, 1420kc. Station 3XY Pty Ltd, c/- 5 Bank Place, Melbourne Vic.

2WL 209 metres, 1435kc, 50 watts. Wollongong Broadcasting Co, 149 Crown Street, Wollongong NSW.

4CA 207 metres, 1450kc. Amalgamated Wireless (A/sia) Ltd, Cairns Qld.

5MU 207 metres, 1450kc, 100 watts. Murray Bridge Broadcasting Co Ltd, Bridge Street, Murray Bridge SA.

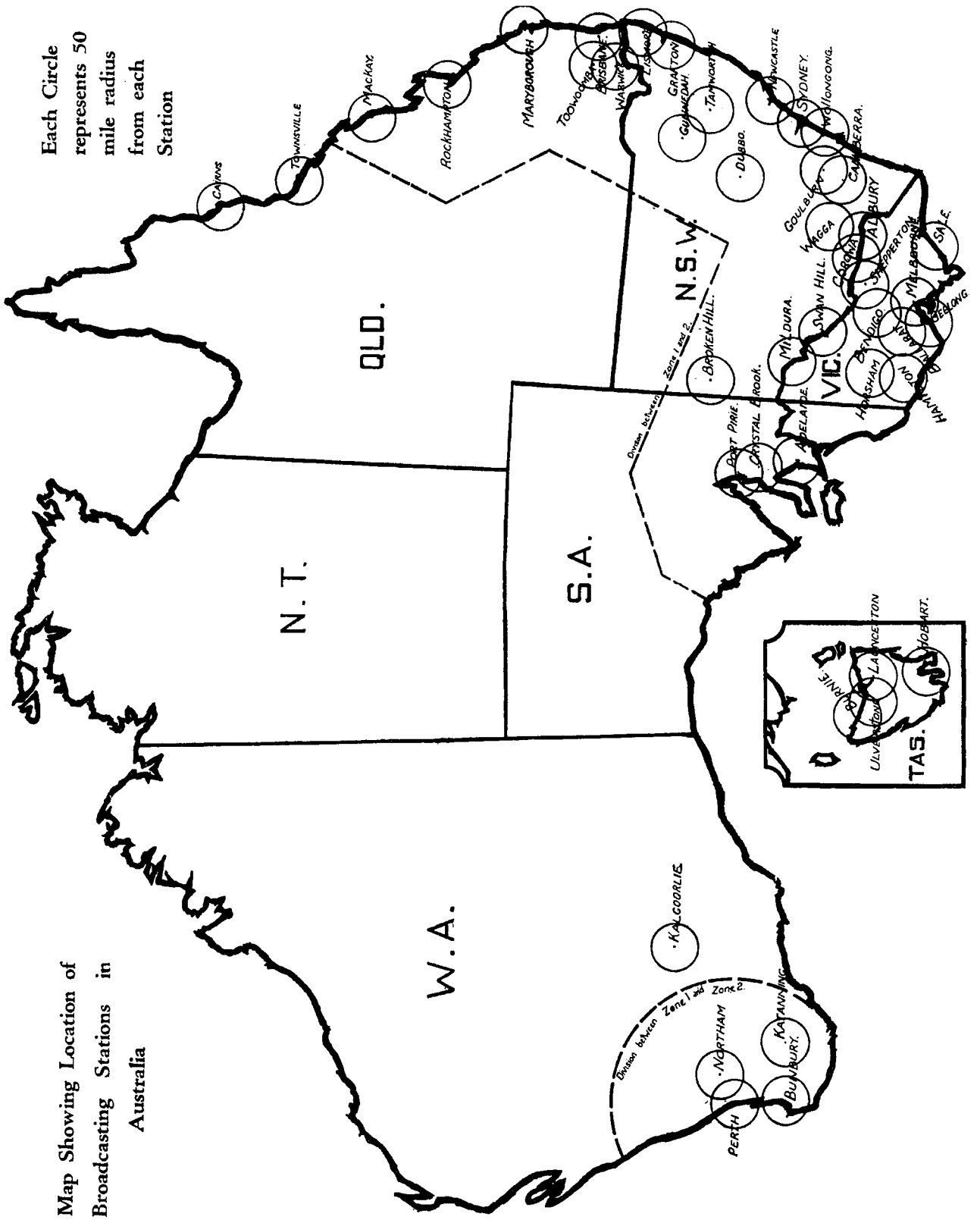
7UV 206 metres, 1460kc, 300 watts. Northern Tasmania Broadcasters Pty Ltd. Studio, Reiby Street, Ulverstone Tas.

6IX 204 metres, 1470kc, 500 watts. WA Newspapers Ltd, St Georges Terrace, Perth WA.

2AY 203 metres, 1480kc, 100 watts. Amalgamated Wireless (A/sia) Ltd. Studio, 610 Dean Street, Albury NSW.

2TM 201 metres, 1490kc, 50 watts. Tamworth Radio Development Co, Peel Street, Tamworth NSW.

3AK 200 metres, 1500kc, 200 watts. Melbourne Broadcasters Pty Ltd, 116 Queen Street, Melbourne Vic.



The list of broadcasting stations and the map showing location of broadcasting stations in Australia were taken from the 'Radio Trade Annual of Australia', 1935.

Gruelling OVERLAND TEST

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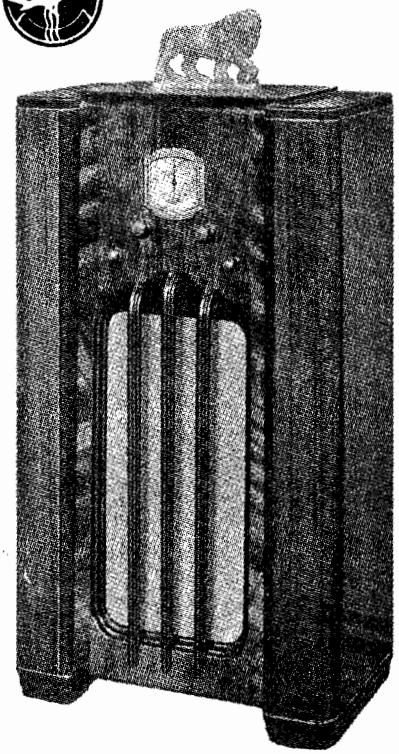

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