When I Think Back...

by Neville Williams

Vintage radio magazines: how they came and went, and transmitters BC (Before Crystals)

According to an estimate that I heard but failed to memorise, a startling number of technical radio periodicals have been launched in Australia over the years, only to pass into limbo. A reader brings to my attention the story of several radio amateur-related publications and, indirectly, unearths a few more facts about *EA*'s own history.

Many moons ago, I acquired a battered bound volume **No.4** of the early Australian magazine *Sea, Land and Air,* containing the issues from April 1921 to March 1922. From time to time, I've quoted snippets from them, *inter alfa* about **Guglielmo** Marconi, Ernest Fisk, AWA (Amalgamated Wireless **A'asia**), and the **WIA** (Wireless Institute of Australia).

In its day, *Sea, Land and Air* would have provided compelling reading for technically inclined subscribers. Thumbing through its pages reveals articles on land transport, on maritime pilots, ferries, tugs and shipping generally, and on the Australian aviation scene. Included is a profile of the Aircraft & Engineering Co at Mascot, Sydney, at the time an active aircraft **assembler/manufacturer.**

I noticed also a news item and picture of Lieutenant **'Hinckler'** (sic) and his baby **Avro**, which had just made it from London to Turin in nine-and-a-half hours. This was followed by an article on Australia's experimental wireless stations and a picture of the new **Hupmobile** tourer, being imported in chassis form and fitted with a 'gracious' all-Australian body — provided by L **Phizackerley** at 169-171 Elizabeth St, Sydney — opposite Hyde Park. It occurred to me that the body might have been so described because everything **Phitz exackerley!**

Launched in March 1918, *Sea, Land and Air* was published in Sydney by Wireless Press which specialised in (I quote) 'books and magazines written by experts for your benefit'.

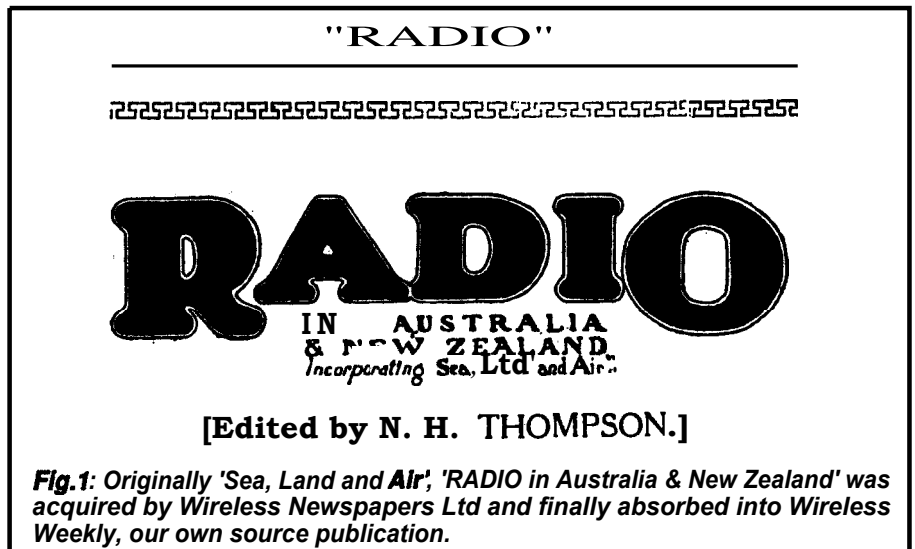Now but a distant memory, the magazine figured prominently in an article by Colin Mackinnon **VK2DYN**, in

"RADIO"

RADIO IN AUSTRALIA & NEW ZEALAND. *Incorporating Sea,* Ltd *and Air.*

[Edited by N. H. THOMPSON.]

Fig.1: Originally 'Sea, Land and **Air**', 'RADIO in Australia & New Zealand' was acquired by Wireless Newspapers Ltd and finally absorbed into Wireless Weekly, our own source publication.

the January 1991 issue of *Amateur Radio* magazine entitled 'The History of the **WIA** Journal'. For a photostat of the article I am indebted to a reader from **Jannali**, NSW who suggested that it could shed a little more light on early Australian wireless literature and possibly on the roots of our own magazine *EA*.

Magazine for amateurs

Well, it certainly does put several largely forgotten publications into context, but it serves also to show that they had little to do with *Electronics Australia's* own family tree. As it happens I also have on hand a supplementary letter from Colin Mackinnon, passed on to me recently by Jim Rowe.

In his article, Colin Mackinnon says that while wireless experimenters/-amateurs, legal and otherwise, had been active in Australia since the late 1890's,

no serious attempt had ever been made to circulate a regular national experimenter's publication until after the 1914-18 war. Until then, they had pursued their interest in virtual isolation or at most in regional groups.

The first postwar meeting of the one-time NSW Wireless Institute was convened in the classrooms of the Marconi School of Wireless in January 1919, by the prewar secretary, Malcolm Perry. An experimenter and enthusiast since 1905, Malcolm Perry was, in 1919, manager of the Experimental Sales Department of **Australectric** Ltd, a subsidiary of AWA based at 79 Clarence St, Sydney.

The meeting was chaired by Ernest Fisk (**callsign 2EF**), the managing director of AWA, who stressed the need for state-based experimenter groups to amalgamate into a single Australia-wide Institute. Only then, he said, could they

expect meaningful recognition of the amateur movement by the Federal Government.

Elected in March 1919 as president of the Wireless Institute of NSW, Ernest Fisk suggested that his company's existing monthly magazine *Sea, Land and Air* should become the official organ of the NSW WIA, and this arrangement was implemented without delay.

Within the next few months, the major state bodies had re-grouped to become 'Divisions' of the Wireless Institute of Australia, with *Sea, Land and Air* as their official organ. A formal link was also forged with the Wireless Institute of New Zealand.

Indicative of this cosy arrangement, advertisements in my 1921 editions of *Sea, Land and Air* for both Wireless Press and the Marconi School share AWA's postal address at 97/99 Clarence St, Sydney. Matters to do with the Wireless Institute were to be referred to the NSW secretary, who could be reached c/- The Editor of *Sea, Land and Air* — all on AWA premises.

Winds of change

Colin MacKinnon says that in early 1922, an amateur operator S. Tatham (2ST) became editor of *Sea, Land and Air.* But in March/April 1923, the magazine was re-styled and re-issued as *Radio in Australia and New Zealand.* S.Tatham continued as editor with N.H. Thompson as associate editor.

As it happened, I have in my files a front cover from the latter title (May 27, 1925, Vol.3 No.54), made available to me back in 1969 by John Stokes of Auckland, NZ. It was endorsed 'Incorporating Sea, Land and Air' and indicated that the re-styled journal was being published fortnightly for sixpence (5c) a copy.

At the time, John Stokes was unsure whether 'The Wireless Press' of Sydney, Melbourne and Wellington (NZ) was an offshoot of the Marconi-owned 'The Wireless Press Ltd' (UK); this was later absorbed by the British Iliffe organisation, publishers of the highly respected *Wireless World* (which itself evolved from *The Marconigraph,* I seem to recall). But having in mind the close working relationship between AWA and the Marconi Co, some link between the two publishers can reasonably be assumed.

As it turned out, the new magazine's formal association with the WIA lasted only a few months (until October 1923). But the journal maintained an independent news coverage of the amateur

scene, prepared by Charles Mclurcan, 2CM.

In early 1925, Tatham resigned as editor and his place was taken by Thompson. Then, in September of the same year, the magazine was sold to Wireless Newspapers Ltd, becoming a virtual stablemate of *Wireless Weekly* under the latter's then editor Arthur William Watt, 2WW. Watt was joined by C.W. Slade (2SX) as technical editor — which raises the question as whether he was the same Charles Slade who was later involved in the manufacture of Slade and Slade-Paton test equipment.
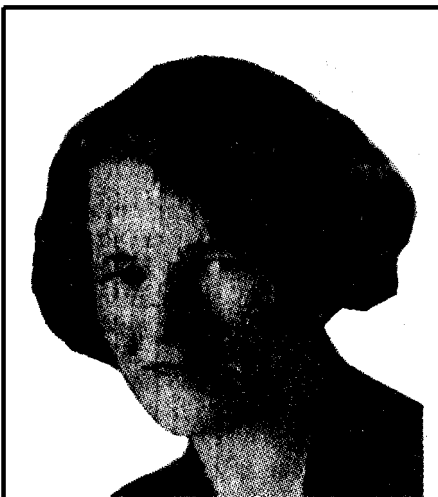

Fig.2: As pictured In Wireless Weekly for August 5, 1932, Mrs C.R. Mackenzie was better known in the early days as Alas F.V. (Vera) Wallace. Reputedly Australia's first female engineering graduate, a radio amateur and retailer, she was one of a small group which founded Wireless Weekly in 1922.

In the meantime, the size of the words 'in Australia & New Zealand' had been drastically reduced, and the magazine had come to be known simply as *RADIO.* It was re-launched as an 80-page monthly in April 1927, for one shilling (10c) per copy. Then Watt resigned in September 1928 and was replaced as joint editor by G.V. 'Blunden, with the well known amateur Don Knock (2NO) as technical editor. But in this form, *RADIO* lasted only until the December 1928 issue. Thereafter it was incorporated into *Wireless Weekly,* and effectively relegated to magazine limbo.

Succession of titles

Left without an official publication, the Victorian Division of the WIA toyed with the idea of a quarterly 'Proceedings' publication but, in col-

laboration with an outside publisher, ended up in December 1923 with a 32-page (approx) magazine entitled *Radio Experimenter.* Its editor was the well known Victorian WIA President Howard Kingsley Love (3UM), and its Technical Editor a state WIA councillor in the person of Ross Hull.

A fe* months later, on the occasion of the first Australian Wireless Convention (Melbourne Town Hall, May 1924) *Radio Experimenter* was seriously considered for the role of official journal of the WIA, but the proposal lapsed. Instead, the magazine reverted to the publisher, changed its name to *The Radio Experimenter and Broadcaster* and attempted to diversify into wireless retailing. In this form it lasted only until June 1925.

In the meantime (August 1924) the Victorian WIA launched the 50- page *Experimental Radio Broadcast News,* with Howard Love as editor and Ross Hull as assistant editor. In March 1925 the name was changed to *Radio Broadcast,* with the subsequent addition of 'incorporating the Radio Experimenter and Broadcaster'. By this time, Howard Love had assumed the role of managing director of the WIA (Vic) publishing offshoot, with Ross Hull as managing editor.

At the second federal convention of the WIA (Perth, August 1925), *Radio Broadcast* was adopted as the official national organ of the WIA but, after disruptive changes in personnel and location, the magazine also lapsed in January 1927.

The period 1927-29 saw the formation of the rival Amateur Radio Transmitters League and the appearance of state-based publications *CQ, QTC, Journal of the WIA NSW, Radio Journal of Australia* and the *WIA Bulletin* (WA).

The rivalry and argument continued through 1929, bringing us to the conclusion of Coln MacKinnon's January 1991 article. As I remarked earlier, it certainly puts a group of those early publications into perspective and explains my own puzzlement, from time to time, at references to titles which came and went while I was still at school studying the three R's!

It also adds another dimension to the pivotal role of Mr (later Sir) Ernest Fisk, as the managing director of AWA — along with the Marconi School, Australectric Ltd and a publishing arm with its own extended influence. (See 'When I Think Back' for June and July 1989).

And it likewise adds to the stature of Ross Hull, also featured in this series in February 1989. When Ross Hull knocked on the door of the ARRL headquarters in

West Hartford, Connecticut (USA) in 1926, he was not just a keen Australian amateur looking for a job. He was a keen amateur with demonstrable experience as a technical writer/editor, which was exactly what they were looking for at the time.

Years later, he was to bring those qualifications plus his work experience with the ARRL back to our source journal *Wireless Weekly,* providing one very tenuous link between our own past and the events in Colin MacKinnon's story.

The origins of *WW*

As many *EA* readers will be aware, *Wireless Weekly (WW)* dates back to 1922, when the Australian public were just awakening to the fact that public broadcasting was technically practical and needed only the stroke of the Federal Government's proverbial pen for it to become an everyday reality.

Aware that I would be taking a closer look at the origins of *WW,* and acting on a hunch, *EA's* current managing editor Jim Rowe turned up the issue for August 5, 1932. Sure enough, WW had marked its tenth anniversary with a 1-page article by Mrs C.R. Mackenzie entitled 'The First Wireless Weekly'.

Old timers, especially Sydneysiders, will remember Mrs Mackenzie better by her maiden name: Miss F.V.(Vera) Wallace. Reputed to be Australia's first ever female engineering graduate, she had gained a Diploma in Electrical Engineering at the Sydney Technical College and set up a contracting business in which she assumed both an executive and a hands-on role.

Interested also in wireless, she opened a radio parts shop in 1921 in Sydney's Royal Arcade. In the 1930's, it was one of several such stores in the vicinity, to which impecunious wirers like myself made regular pilgrimages to window-shop!

Somewhere between establishment of the shop and 1932, when the abovementioned article was written, Vera Wallace had become Mrs C.R. Mackenzie (Fig.2), although the shop was always identified with her maiden name.

The only mention of Mr C.R. Mackenzie in the article is as the creator of a `sea-shell' horn loudspeaker (Fig.4) — surely one of the most frequently used illustrations ever in stories about early Australian wireless.

In her article, Mrs Mackenzie claims that the idea behind *Wireless Weekly* originated in the Royal Arcade shop,

Fig.3: The simple card-style advertisement which Miss F.V. Wallace ran in 1923 editions of a rival magazine 'The Australasian Wireless Review. Note the four figure phone number.

where she had discussed the need for such a publication with Mr R.C. Marsden — the 'technical man' behind the counter, with expertise in circuit design.

In due course, the idea was put to Mr A. Mitchell, an acquaintance who worked on Sydney's *Evening News* daily. He in turn referred them to Mr W.M. MacLardy, a printer in Castlereagh St, who also happened to be a wireless enthusiast.

Through him they were introduced to Mr W.J. MacLardy, presumably a

Fig.4: Contrived from a magnetic driver unit and a generously proportioned sea shell, this novel and frequently pictured horn loudspeaker was the creation of Mr C.R. Mackenzie.

brother, who had his own pet ambition --- namely to set up Australia's first public broadcast station. To the would-be entrepreneur, a magazine which might conceivably excite public interest in broadcasting and stir the Government into action would be a gift from the gods!

After further discussion, the decision was made to go ahead. The new magazine would publicise the work of existing amateur stations, emphasise the potential of public broadcasting, encourage experimenters and create a climate for action by the Federal Government. (Colin MacKinnon adds that *WW* was also to serve for a while as official organ of the Australasian Radio Relay League, a short-lived segment of the WIA devoted to amateur message handling.)

Dream takes shape

So the magazine was born, with a meeting each week in Mr MacLardy's reportedly 'dark and dusty basement' in Castlereagh Street, Sydney. Mrs Mackenzie would submit industry news, notes about components, a short story or maybe a wireless 'poem'. Mr Marsden would contribute technical articles and circuits. Mr Mitchell, in the role of editor, would sub-edit and arrange the material, fleshing it out with science jottings and relevant overseas news, culled from the resources of the *Evening News.*

Mrs Mackenzie relates that the first 12-page issue had a print run of a few hundred copies, and went on sale from her shop at 8am on August 4, 1922. It carried the imprint:

Published by W.J. MacLardy, "Truro", Powell St, Neutral Bay, at the offices of W.M. MacLardy, 249 Castlereagh Street, Sydney.

Subsequent issues grew progressively in size to around 60 pages and to a circulation measured in tens of thousands, spread all over Australia.

By the time the 10th anniversary article was written, the magazine had outgrown the resources of the original publisher and as Mrs Mackenzie relates, had 'passed into other hands' (a tinge of regret?). Certainly, a 1926 edition in my files indicates a different printer and a different publisher at a different address: Wireless Newspapers Ltd, not to be confused with AWA's Wireless Press.

I also know that, when I assumed the responsibility for *WW's* technical offspring *Radio and Hobbies* in 1939, both *WW* and *R&H* were the property of Associated Newspapers, and *The Evening News* and Wireless Newspapers Ltd alike were but fleeting memories in the corridors of the *Sun* building near the corner of Elizabeth St and Martin Place.

A question of lineage

In his letter to Jim Rowe, Colin MacKinnon questions whether *Radio & Hobbies* can really be regarded as a linear descendant of *Wireless Weekly,* seeing the latter continued for a time, in its own right, as a magazine devoted to programs, station topics and fiction. If, says Colin, we're keen to emphasise our historical links, why not the one through *RADIO* and *Sea, Land and Air,* back to 1919? That would give us three extra years!

As I see it, the answer is simply that the first proposition is credible; the second is not.

From the outset, *Wireless Weekly* sought primarily to cater for the needs of a 1920's-style wireless family, with a mix of programmes, comment on stations and personalities — plus technicalities for the `man of the house' who had to operate the equipment.

As the wireless/radio scene gradually changed through the 1930's, the publishers of *WW* decided that the interests of all concerned would be better served by splitting the contents into two separate magazines:
1. For general readers a re-styled weekly with expanded coverage of programmes, stations, features and personalities; and
2. For the technically inclined, a monthly with a broader technical content, plus popular science and hobbies.

The existing *WW* editorial staff was accordingly divided into two distinct groups, while retaining the existing administration and secretarial support. They kept working in the original offices, with the same advertising section and using the same production and distribution facilities.

Having assumed responsibility for *Radio & Hobbies in that* very environment, shortly after the changeover, it has never occurred to me to question the continuity of the overall operation. By contrast, I sensed no carry-over at all from the ill-fated *RADIO* — no staff, no tradition, no records, no files or back issues. It was as if *RADIO* had never existed.

So there it is: whereas the publications mentioned by Colin MacKinnon sought to establish interdependent links with the amateur/experimenter fraternity, *Wireless Weekly* was directed primarily to prospective listeners from the public at large, in the cause of public broadcasting.

It involved experimenters and amateurs mainly because, in its formative years, they dominated the technical fraternity.

Two matters to do with the founders of *Wireless Weekly are* worthy of further mention.

A licensed radio amateur with what our one-time correspondent Pierce Healy describes as an 'almost musical fist', Mrs Mackenzie organised a centre in Sydney during World War II to train service personnel — particularly WAAF's — as telegraphy operators. Highly regarded and remembered by many *as* 'the grand old lady of wireless', 'Mrs Mack' died in her nineties in mid-982.

For his part, WJ. MacLardy's 'Broadcasters Ltd' opened Australia's first public broadcast station 2SB, on November 23, 1923. Operating under Fisk's ill-fated sealed set plan (see *EA,* July 1989), the listener's annual subscription fee was set at ten shillings ($1.00). The callsign
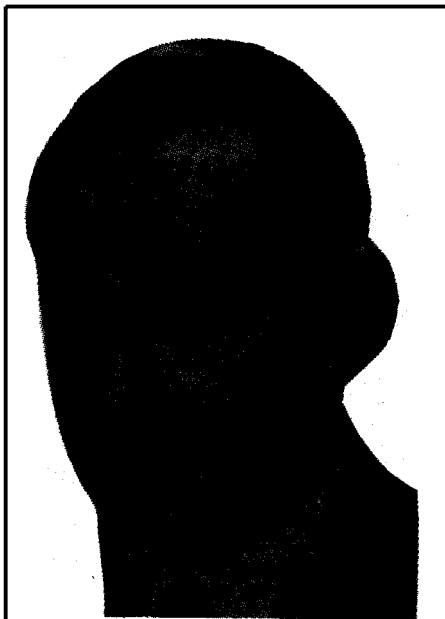

Fig.5: W.J. MacLardy, *as pictured in 1934. He was the first publisher of Wireless Weekly in 1922, launched Australia's first public broadcast station in the following year, and in 1934 sought to promote the use of sound film as an editable medium for recording and distributing radio programs.*

was subsequently changed to 2BL (Broadcasters Ltd) because, on air, 2SB sounded too much like 2FC (Fanner & Co) which opened at about the same time.

As indicated in 'Think Back' for January 1990, the man responsible for the initial installation of 2SB/2BL was the well known Ray Allsop. His subsequent involvement in sound film technology could well have been behind another story which Jim Rowe came across in *Wireless Weekly* for January 16,

1934, entitled `No More Howlers with the Latest Sound Film Records'.

With 2BL having *been* designated as a class-A station and taken over by the Australian Broadcasting Commission (1932) W.J. MacLardy (Fig.5) was free to contemplate broader issues, one of which was the inability of broadcasters to edit programs before they went to air.

His answer was to form a company in collaboration with the Commonwealth Film Laboratories, to develop the idea of recording new programs on sound film, so that they could be edited at the time of production and distributed for broadcasting free of errors.

He reasoned that material costs could be reduced by recording a sound track on both edges of the film and simply inverting the film in the equipment, at the half-way point in the program. But in any case, he said, the costs would be less than the alternative of re-recording complete faulty episodes, as with disc technology.

The very same argument led to the universal adoption of magnetic tape a couple of decades later, the vital difference being that tape offered instant replay without the need for processing. But even if MacLardy's proposal didn't get very far in 1934, he certainly had the right idea.

Technical personnel

Unfortunately from an historical viewpoint, *Wireless Weekly* rarely published authors' names, with the result that there is little to indicate who wrote or desired what in the way of do-it-yourself projects during that first decade.

Indications were that old-timers Ray Allsop and Don Knock were both active contributors during the mid-1920's and we knew about Ross Hull, 'Braith Hull and John Moyle in later years, but that's all.

I was most interested, therefore, to receive a letter from Stan Tonkin (VK2SG and VK5SG), who is now in a rest home in North Adelaide, SA. Stan can look back to the early 1920's when as the 15-year old son of the lessee of the Royal Hotel in Bathurst, NSW, he used to receive race results and cricket scores from 2FC Sydney and 3W Melbourne, when both were still on the long-wave band.

Having indicated his background, Stan goes on to say, and I quote:

I had a visit from Bill Hamilton, who wrote about 90% of the constructional articles for Wireless Weekly, under the name of insulator'. He worked with ER. Cullen of 96 Bathurst St, S   and later with Wiles Wo   Wireless,

which was one of the larger radio component retailers at the time.

Also at Cullens was a mechanic named **Viv Maidment,** who lived at Marrickville, Sydney—where he had installed a massive T-type aerial. He used to take all Bill Hamilton's creations **home for a** test run.

I joined **E.R.** Cullens myself in .1926, as a counter jumper and messenger boy. Bill Hamilton had left by then, but he came to an arrangement with Watt, the editor of Wireless Weekly and continued to produce articles for the magazine.

Most of the articles in your reprint of *Wireless Weekly* for 1927 were Bill Hamilton jobs, and where it mentions 'tested at '**Marrickville'** , it would have been on Viv Maidment's aerial.

Thanks Stan, for that unexpected peep into a hitherto closed book. Where else could we have obtained the information, other than from someone who knew the anonymous feature writer?

Early AM transmitters

While Stan's letter is much too long to reprint here in full, a section about early broadcast transmitters contrasts with the modern requirement that Australia's 260-odd medium-wave broadcast stations operate on the precise frequency allocated to each one.

Apart from anything else, this minimises the risk of an audible heterodyne between the many stations which now have to share a common channel. It also ensures that high frequency heterodynes which may occur between stations on adjacent channels will fall exactly on **9kHz,** which can then be eliminated in wide-band tuners by a sharply tuned 'trap' filter.

But things were not always like that, with each station doing its sometimes questionable best to keep its tunable master oscillator on frequency. Or should I say on wavelength?

As a lad, I can recall discussions between my father and other local wireless buffs about particular stations being 'out of position' at certain times. Listeners in those days invariably kept cards showing the exact dial settings of the available stations, and it became apparent to all and sundry if a particular station was out of position.

While the PMG's Department was nominally responsible for checking station frequencies, indications are that it couldn't always cope. For this apparent reason, the Authorities announced at one stage that frequency measurements made by Charles Maclurcan, 2CM, arguably

Australia's best known radio amateur, would he officially recognised by the Department.

Again, an article in *Wireless Weekly* for August 13, 1926, by engineer E.G. Beard sought to assure readers that the station he was installing for the Theosophical Society (2GB, Sydney) would not cause interference with 2BL or 4QG. Its wavelength would be carefully positioned between the two by the PMG's Dept, and the transmitter would be crystal-locked to the allocated wavelength, as
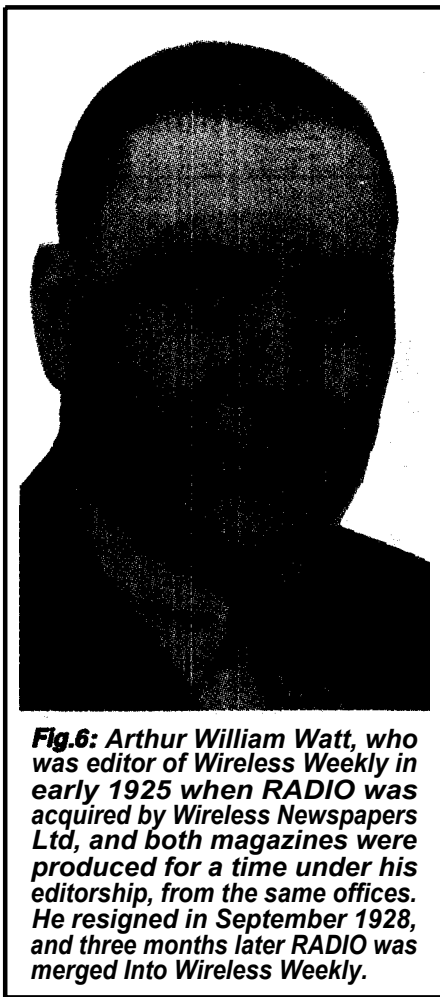

Fig.6: Arthur William Watt, who was editor of Wireless Weekly in early 1925 when RADIO was acquired by Wireless Newspapers Ltd, and both magazines were produced for a time under his editorship, from the same offices. He resigned in September 1928, and three months later RADIO was merged Into Wireless Weekly.

soon as the exact figure could be communicated to the crystal supplier.

I recall a separate news item, published about the same time, which made much of 2GB's initiative in adopting crystal technology. As evidence of a problem this is all anecdotal, but Stan Tonkin experienced it at first hand in quantitative terms.

Country station

After working for some years in the city, Stan took a job as a wireless mechanic with J.C. Rice at Albury on the NSW/Vic border. He continues:

About 1930, **J.C.** Rice was granted a B-class broadcasting licence for a local station to be identified as 2AY. He accordingly rented an AWA transmitter — 50 or 100W, I forget which.

At the time, there were only three country stations of any consequence: 2XN Lismore, 2MO **Gunnedah** and 2AY Albury. It was before the days of crystal control and 2MO (227m, **1320kHz)** was pretty close to 2AY (229m, 1310kHz). We used to talk in metres in those days and I couldn't swear to the exact figures.

The modulated oscillators on the last-named transmitters used to drift closer together, such that a merry old beat note would become audible to a lot of listeners around **9.00pm** on most evenings.

Eventually, the PMG's Dept decided to shift 2AY to around 203m or **1480kHz;** I certainly remember the occasion. The PMG read our frequency in Sydney and talked to me in Albury by phone, while I fiddled the dial of the master oscillator on the transmitter.

Unfortunately, the dial movement was a bit jerky and the closest **I** could get to the specified channel was 600 cycles (Hertz) off, which the PMG said was near enough. Nowadays it has to be spot on!

Perhaps 1 should add that, at the time, I held only an AOCP licence (Amateur Operator's Certificate of Proficiency) and my position with 2AY could only be recognised as 'temporary'. I subsequently moved back to Sydney to **qualify for** my full Broadcast Ticket.

In the light of the above, I was interested to come across a reference to frequency control in a paper 'Broadcasting in Australia' presented to the IRE 1938 World Radio Convention by (Sir) Harry **P.Brown,** the distinguished Director-General of Posts and Telegraphs in Australia. He pointed out that, at an international conference in Madrid in 1932, it was agreed that the frequency drift of AM broadcasting stations must not henceforth exceed 50Hz. If memory serves me correctly, the tolerance was subsequently reduced to 5Hz.

Back in the 'big smoke'

Broadcast Ticket in hand, Stan Tonkin was appointed as a shift engineer to the Sydney commercial station 2UW, reporting to chief engineer Alec Marshall. This would have been around 1933, he says, when 2UW was gearing up to become Australia's first 24-hour broadcaster. My *Macquarie Book of Events* records that they actually did so on February 22, 1935. Looking back, Stan recalls:

The main transmitter at 2UW was (what seemed to me at the time) a huge

AWA series-modulated job with an output of 1kW. The standby transmitter was less pretentious, having been cobbled together from bits and pieces. These two transmitters and the associated studios were all located on the top floor of the State Theatre building in Market Street, City, the signal being radiated from a tapered lattice tower erected above the building.

In those days, much of Sydney's central business district had 240V DC power mains and the entire equipment at 2UW was powered from DC/AC rotary converters.

Looking back, I recall a lot of discussion about 2UW's initiative in 24-hour programming from the central city. From George Street, one could glimpse the tower — just — rising above a conglomeration of stores and office buildings. How efficient a transmitting aerial would be in such a situation was certainly open to question.

There was speculation as to whether 2UW's intention was to saturate with signal an area which had a notoriously high noise level, arising from the arc-prone DC supply system, the ancient wiring and the absence of noise suppression devices. Some saw it as a ploy to out-manoeuvre 2CH, which was surmounted by a handsome tower atop the new AWA building in York Street — a tower that was always more emblematic than functional. Then again, 2UW's move could also have been an economy measure, to minimise manning levels through an endless succession of 24-hour days? So went the argument

Did they stand to lose more in the suburbs than they could hope to gain in the city? And anyway, how many people would be listening to the radio in the small hours of the morning?

There were stories also about interference from the transmitter into nearby electrical equipment, and RF voltages being developed along lift cables as they passed through a resonant length. *Even in those days, let alone at this remote point in time, it was difficult to say what actually happened or what critics expected to happen.*

To verify the above, I cross-checked it with retired engineer Winston Muscio, author of *Australian Radio, the Technical Story, 1923-83.* Having, about that time, moved into the transmitting section of STC, he remembers not only the debate about 2UW's initiative in the central city, but the sequel when they subsequently relocated their transmitter in the 'swamp' the lowlands around Homebush Bay in the Parramatta river.

Nowadays, its all water under the bridge, anyway. Sydney's ever-expanding suburbia demands broadcast transminers with blanket overall coverage and resonant vertical antennas with an unambiguous ground-plane/earth. As well, 24-hour programming is now routine, even if it is highly mechanised in many cases during the wee small hours.

Back to the country

After his stint in the central city, Stan Tonkin headed back to the country, joining the staff at 2LM in Lismore NSW in 1936. 2LM had taken *over the 2XN* licence and was in the process of installing new AWA equipment The installation was being handled, Stan says, by Tom McNeil, and Stan's first assignment was to help finish the job.
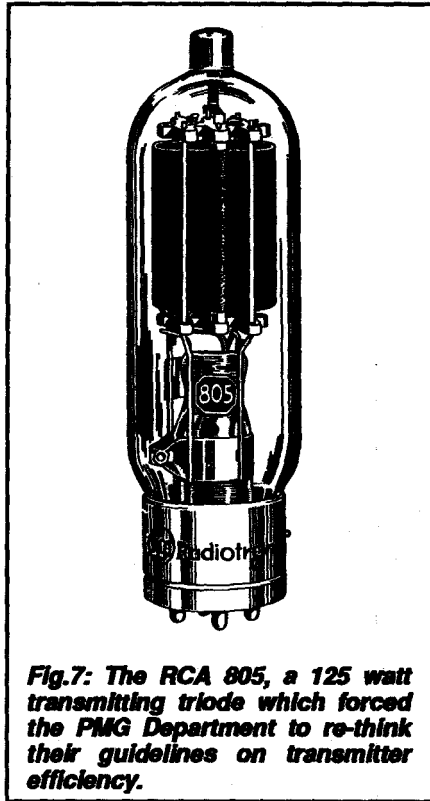

Fig.7: The RCA 805, a 125 watt transmitting triode which forced the PMG Department to re-think their guidelines on transmitter efficiency.

Unless I'm much mistaken, and despite the spelling discrepancy, my guess is that Tom McNeil is the same T.A.E. (Tom) McNeill I remember as the chief engineer of 2UW in the late 1930's and listed as an IRE member at the World Radio Convention in 1938.

Winston Muscio knew T.A.E. McNeill well, and says that Tom was dismayed by what he found at 2UW's inner city installation — the end product of an administrative decision. The base of the tower and everything bolted to it was apparently way above earth in terms of RF, and it was anybody's guess what the radiation pattern might have been.

Tom McNeill had first to convince management to reverse the decision, and then commission the new installation when he won the argument Winston recalls that Tom faced a major problem with intermodulation involving other Sydney broadcasters and, for good measure, a problem with salt-laden moisture eating away the copper risers which connected the buried counterpoise to the base of the vertical mast.

But that aside, and getting back to 2LM, Lismore, Stan Tonkin's letter provides yet further evidence that the *PMG* authorities, along with the transmitting fraternity, was also clambering up their own learning curve. I quote from his letter:

The transmitter at 2LM was a brand new type using four 805 valves in the final. It was actually one of the first to use a class-B modulator and high-level (anode) modulation.

In those days, PMG regulations covering transmitter installations stated that, if suitable measuring equipment was not available, one could assume the final RF output to be 60% of the DC power input to the final stage.

As it happened, measuring equipment was available at 2LM and it showed that the final stage was operating at about 75% efficiency. This the Department refused to believe, and despatched a team of experts to Lismore to discover the reason for the anomaly.

Unfortunately for their peace of mind, their equipment showed that the efficiency was indeed 75%. Caught between their instruments and their regulations, they finally decided that the latter had to be sacrificed, which they effected by scrubbing out the 60%".

Out of curiosity, I looked up RCA's ratings for the 805 in their contemporary manual TT3: 'Air-Cooled Transmitting Tubes'. In plate modulated class-C telephony service, the typical maximum DC input per tube was shown as 1250V and 160mA, or 200W. For this, the rated RF power output was 140W, representing an efficiency of 70%.

Commenting on this, Winston Muscio — who, prior to retirement, headed up STC's transmitter Division — said that the ultimate efficiency of a class-C stage depends on the finer points of its design. 75% would have been entirely achievable and, in fact, in special cases he had seen figures approaching 90%. This startled me, I must confess, but my own experience with transmitters *has* been •limited to the much less pretentious communications type equipment.

The technology of electronics never stands still!