

When I Think Back...

by Neville Williams

WORLD WAR II: 'Funny-peculiar' things happened in radio, 50 years ago!

Can you imagine a team of radio 'techs' and muscled he-men toiling long and hard to carve a complete studio complex out of solid rock — underground in the heart of Sydney! Bomb-proof, gas-proof and self-powered, the complex was to have provided the Federal Government with a hopefully secure, official, recognisable broadcast voice in the event of Australia being invaded by an enemy force...

Strictly speaking, what follows is at odds with the 'When I Think Back' theme, because I have no detailed personal recollection of certain wartime initiatives that one would expect people in the radio industry to have known about. I can only assume that they were subject to wartime security regulations which prevented their coverage in the news media.

What I do recall from those days was that industry personnel were well aware that, for the first time in its history, Australia was involved in a major war during which the vast majority of its citizens were directly accessible via broadcast radio. Indeed, by 1939, the public had come to rely on the family radio set for the latest news — rather than on tomorrow's paper or next week's word of mouth, as had been the case in 1914-18.

It was evident that if scheduled broadcasts were suddenly to disappear off-air, confusion, wild rumours, even panic could well follow. And matters would be immeasurably worse if transmissions were to resume, but carrying voices, reports, sentiments and directions emanating from Berlin or Tokyo!

Without saying much about it, the Australian Government apparently decided that, if the worst ever did happen, an invading force must not find transmitters, towers, studios and microphones intact and functional. Installations that could not be defended would have to be disabled or demolished, at the discretion of the relevant military command.

The above remarks were prompted, in part, by the biography of Murray Stevenson published in these columns (June, July, August 1993) and repeated

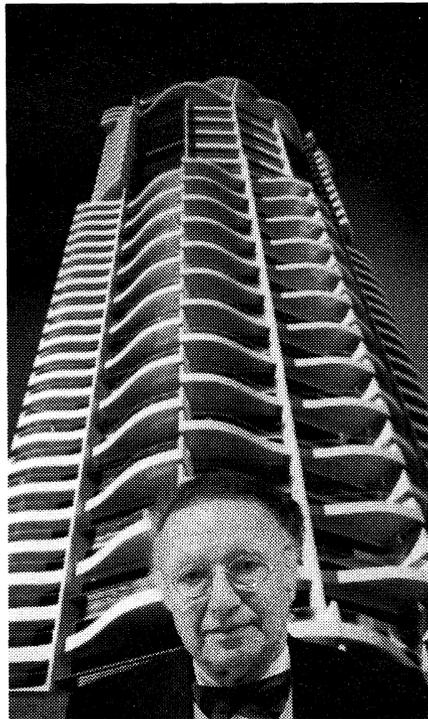


Fig.1: Architect Harry Seidler and a model of a new building proposed for a site in Darlinghurst vacated by the ABC. The story brought to light this month's story, of ABC efforts during WW2 to ensure continuous broadcasting services in the event of an enemy invasion. (Courtesy of John Fairfax Feature Services.)

in *Australia's Radio Pioneers*, chapter 29). As its then Chief Engineer, Murray tells how Radio 2UE in Sydney had just installed a more powerful transmitter and a new high efficiency vertical antenna on the river flats near Concord, Sydney. This was in July 1939, two months before the outbreak of World War II.

To Murray's dismay, the installation was no sooner operative than Army sappers appeared on the scene with instructions to attach explosive charges to the base of the mast. The explanation was brief and to the point: "If Australia was invaded, the Government didn't want the enemy to be provided with viable broadcasting stations"!

Fortunately, said Murray, the military had never needed "to press the button". To which I am tempted to add: Neither did roving vandals who later demolished the MBH factory, in much the same lonely area! (November '95 issue)

But why 2UE, which was just one of several transmitters in the so-called 'swamp'? Try as I might, I could unearth no similar reports to do with other radio stations — just vague 'could have beens', and rumours about explosive charges having been planted under certain bridges and key installations to impede an enemy's progress.

The one thing that might have set 2UE apart in this context was the kind of antenna erected. Most transmitting antennas at the time would have involved towers supported by guy wires. For a team of sappers with an Army truck and cable cutting equip-

So it was to be demolished and replaced by 43 floors of private dwellings, ranging in price from around \$200,000 to over \$2.5 million each for a couple of penthouses on the roof. Big deal! End of story — except for the civic arguments which seem to follow the announcement of any such new development!

But there was more to come. A few days later, I received a phone call and a tape from George Paterson, VK2AHJ, who was presumably reacting to the same news item. Did I realise that Seidler's new building would be sitting atop the bomb-proof underground studios which the ABC had set up at the site during the war?

Bomb proof studios?

What bomb-proof studios? I'd been Acting Editor of *Radio & Hobbies* during the war, and no-one that I could remember had ever mentioned any such project. If 'classified' at the time, the news blackout had been highly effective! But these days it's history, and George Paterson suggested that I contact the Archive Section of ABC/Telstra, which is currently housed at the television centre at Gore Hill, North Sydney.

On the tape, George said that he had joined the ABC as a trainee assigned to a two-storey studio complex at 96



Fig.2: George Paterson VK2AHJ, to whom we are indebted for this story. One of the original ABC 'troglodytes', he saw the establishment of the underground complex adjacent to Forbes Street and spent many long hours alone in the 'switch room' after broadcasting stations had closed down for the night.

ment, it would not have required much forward planning to bring any such array crashing to the ground.

But the 2UE site at Concord had been too small to accommodate conventional guy wires, and the antenna was a self-supporting vertical tower with three stout 'legs' resting on huge insulators set into concrete foundations. To bring it down would probably require explosive charges, strategically placed — beforehand!

(I discussed this with Winston Muscio, a retired engineer from STC's transmitter section, who said that he had never heard of formal measures to wreck transmitters being threatened by the enemy — but he had no reason to doubt Murray Stevenson's statement. Thinking back, it is quite possible that 2UE's self-supporting antenna was unique at the time.)

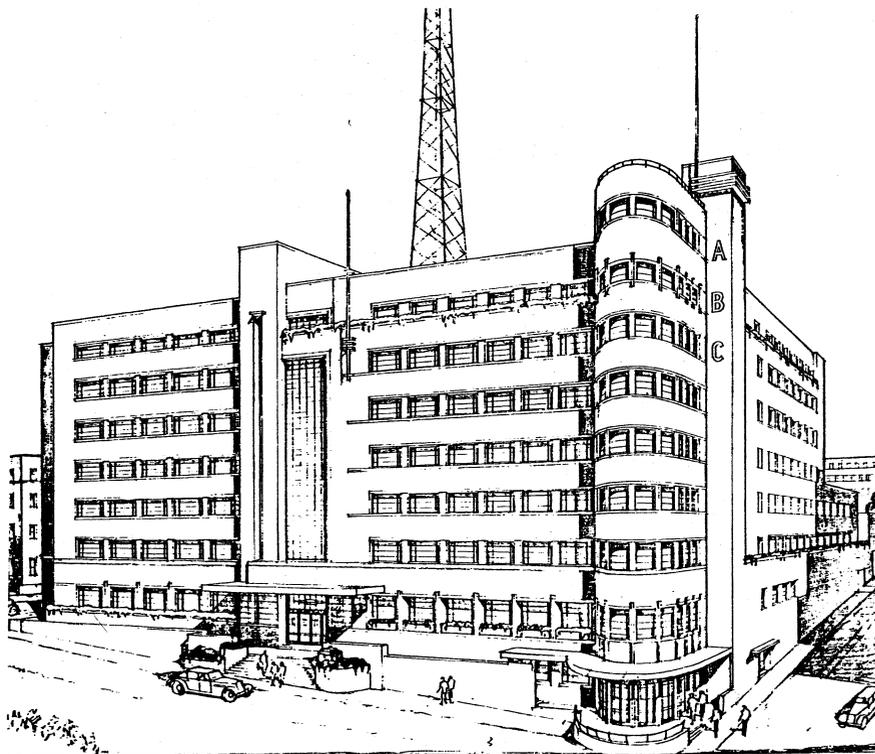
But how did I get involved in this off-beat subject? The answer: mainly because of an article in the *Sydney Morning Herald* dated August 24, 1995. It had to do with a proposal to erect an imposing 43-store apartment building, in the Darlinghurst (Sydney) area designed by architect Harry Seidler. The building would occupy the site on the corner of William and Forbes streets, formerly occupied by the ABC.

While, over the years, I had had reason to telephone ABC staff at the Forbes St. address, the only time I had ever visited the place was a few years

back when Stephen Pratley invited me to record an interview for use in his series 'Bright Sparks' — to do with the history of radio in Australia. The exercise involved an hour or more in a glass cubicle on the first floor (I think), but that's about as much I saw of the place.



Fig.3: A traditional 1930's style studio where George Paterson learned his trade. In 1936, ABC Chairman Charles Moses was calling for a more harmonious acoustic and visual environment for ABC announcers and artists. (Courtesy Telstra/ABC.)



ABC STUDIOS SYDNEY N.W. VIEW

Fig.4: The ABC headquarters planned for Forbes Street in 1936. Wartime conditions dictated a radical change of plans. The ABC now occupies a new headquarters in Ultimo, Sydney.

Market Street, Sydney. The site, he said, has since been obliterated by the Sydney Tower; but back in 1940, it was the main program distribution point for Sydney radio stations 2FC, 2BL, and their associated regionals. There was

also a feed to the shortwave service 'Radio Australia'.

The place already had a history and at least one of the studios dated back to the AWA era, prior to 1932, when the Australian Broadcasting Commission

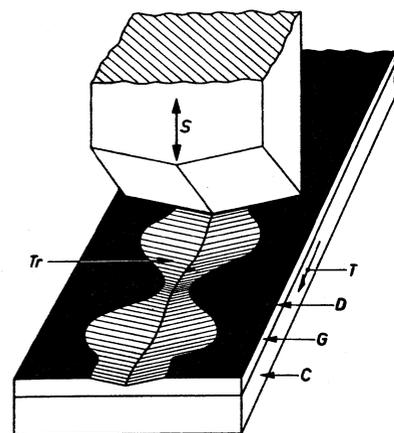
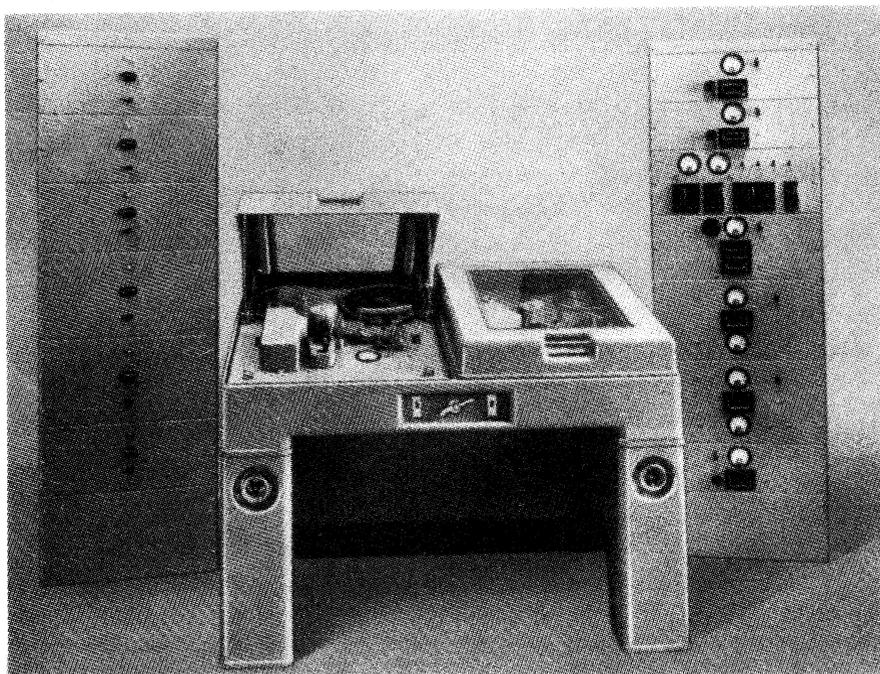
took over all A-class stations, with the PMG's Department assuming responsibility for technical facilities.

George's job had to do with individual studio and Master Control facilities — the latter referred to as the 'Switch Room'. He recalls that, early in the war, the studio windows, most of which overlooked Market Street, were bricked in, presumably as a precaution against bomb blasts.

During 1942, as George recalls, moves were made to transfer the market Street operation to a site on the corner of William and Forbes Streets. The new studio complex was to be bomb-proof, gas-proof and able to operate independently of the power mains. It would involve carving a huge hole down through the topsoil, into the underlay of solid sandstone. The hole was to be set back so that some 15 or 20ft of sandstone separated it from Forbes St.

As it happened, the ABC was able to contemplate such a proposition because they already owned the land. Back in August 7, 1936 our own magazine (then called *Wireless Weekly*) had published an interview with Mr (later Sir) Charles Moses, in which he announced that the Commission had purchased a 1-3/4 acre triangular site bounded by William St, Forbes St and Clapton Place.

The Commonwealth Architect, Mr Henderson, a man familiar with overseas trends, had submitted plans for a



At left is the Philips-Miller sound recording equipment made in 1936, and purchased by the ABC for use in Australia. The diagram above shows how the system worked: a vibrating cutter produced what was effectively a variable area sound track.

building appropriate for the ABC Headquarters, administrative and technical, and with ample provision for future expansion. In particular, Mr Moses was keen to see modern studios which would harmonise, acoustically and visually with the quality of current ABC programs.

The site was very accessible, elevated in terms of the cityscape, with an underlay of solid sandstone — ideal for the foundations of a large building. What Mr Moses could not know was that War would frustrate the Commission's best-laid plans, and that the sandstone underlay would be carved out for an electronic 'bunker' and later topped by a much humbler structure.

And that brings us back to George Paterson's underground complex. The 'roof' comprised a massive layer of laminated concrete, topped with rubble and topsoil so that there was little hint as to what was underneath.

Normal access was via a steel bomb-proof door, set into the rockface which opened into Forbes Street, across the road from the Sydney Church of England Girls Grammar School. To provide a second access for emergencies, a tunnel at the rear led up through the rock to the surface.

As it happened, the tunnel proved quite an asset, not for reasons of safety but because it provided a convenient route for ABC personnel needing to interact with back-up services in nearby above-ground offices.

Fifty years on, George confesses that his recollection of the underground installation is fading, but it followed along similar lines to what had been at Market Street. There were three main studios: one each for 2FC and 2BL, and a third for regional programs. The technical facilities were similar to those at Market St, although a touch more modern. Recordings were still a mix of 78rpm commercial pressings and 33rpm 'transcription' acetates, and the pickups still used steel stylii, which had to be changed after playing each side. (What a chore!)

With magnetic tape still several years away, the underground complex had its own facilities for cutting acetate discs.

In this context, George recalls that American radio shows used to arrive on 33rpm transcriptions branded 'Orthocoustic' — a term which, according to my Tremaine's *Audio Cyclopedia*, signified a recording characteristic adopted by RCA/NBC prior to adoption of the official and somewhat similar RIAA standard.

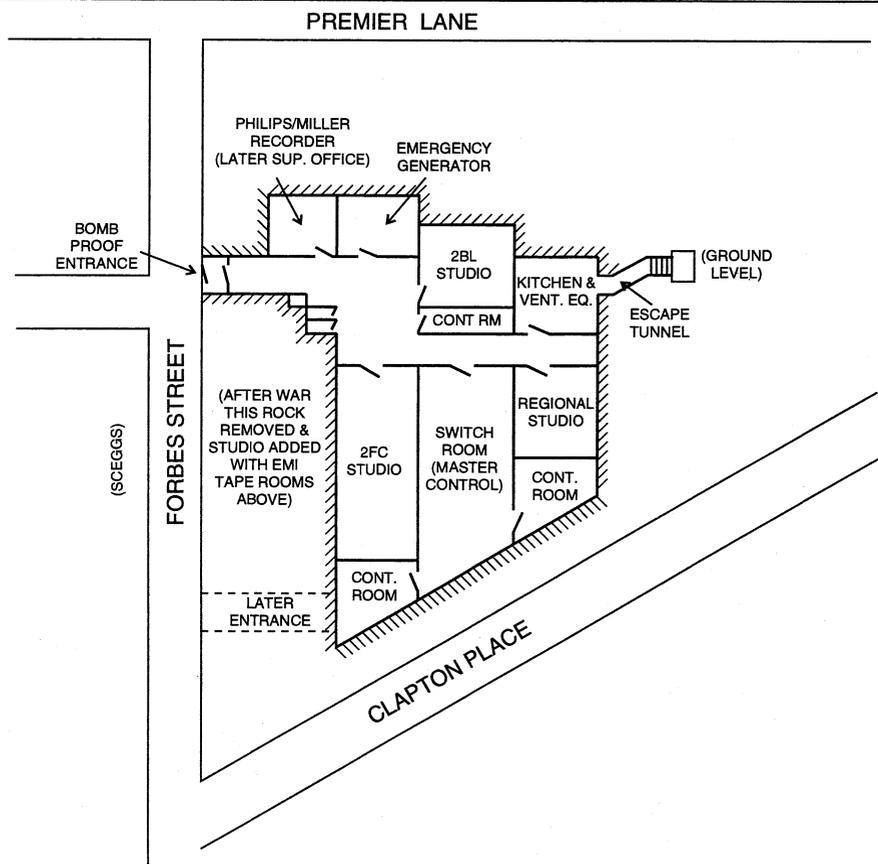


Fig.5: The layout of the underground studio complex (not to scale), as George Paterson remembers it. To the best of his knowledge, the facility was unique, certainly in Australia.

American practice was to play such records with an Astatic crystal pickup, but the ABC also experimented with magnetic types made by the PMG Labs in Melbourne. These were superseded by Decca and Ortofon models, which offered a memorable breakthrough at studio level by the use of diamond stylii — eliminating the tedious chore of replacing steel needles.

No less memorable, however, was the installation of a complete Philips/Miller recording system, which some old-time readers may remember. It used a quarter-inch (celluloid?) tape, coated on one side with a layer of clear lacquer (gelatin?) topped by an opaque layer. In use, it was drawn under a recording head with a triangular tip not unlike an acetate cutting stylus.

In the absence of modulation the stylus would scribe a clean line through the opaque layer into the transparent under-layer, producing an optically uniform track. However, with modulation, the head drove the triangular stylus tip more deeply or less deeply into the lacquer, producing a variable width track reminiscent of a variable area track on an early sound movie film.

George remembers the Philips-Miller as a genuine high fidelity system, but a "monster of a thing, with multiple racks of equipment and huge spools, large enough to dominate a complete room". His summation: "It produced a high quality recording, but in a very laborious way".

In fact, the ABC bought it at precisely the wrong time: the war interrupted the supply of tape from Holland and substitute tape from America proved unsatisfactory. So the system remained largely unused — ending up, to the best of his knowledge, in a Melbourne museum.

In the interim, broadcasters had glimpsed the less daunting and more practical magnetic wire and tape recorders being developed by Magnecord, Pyrox and others.

George said that he worked for some years in the underground Master Control room, on a roster covering 24 hours per day.

While radio stations in those days broadcast from 6am to 11.30pm, the roster ensured that one man was on duty each night outside those hours.

They were there in the event of an

emergency, but they also had to record overseas news broadcasts, particularly those emanating from the BBC. These were fed to Forbes Street over lines from receivers at Liverpool ('Snake Gully'), west of Sydney, the Receiving Centre at La Perouse (NSW) and Mont Park (Melbourne). The job of George and his colleagues was to select and record the best channel on the night, for subsequent re-broadcast.

He recalls that there was ready access from the Forbes Street complex to the news room and studio at 91 William Street, via a small bridge across Premier Lane.

In fact, said George, the ABC had studio facilities "all over the City" at the time. Included was the King's Cross facility (for the Orchestra); Broadcast House, Pitt St (Variety); Piccadilly Arcade (Children's sessions); two studios at Burwood; and a special 'Emergency' studio in the basement of Broadcast House. From the last named there were lines to the studios of all commercial stations, in case the ABC was required at any time to initiate a 'blanket' broadcast.

What George found surprising in all this was a noticeable lack of security. "People just seemed to come and go as they pleased. To be sure, a visitor might find a commissionaire in attendance at Forbes Street, but his main role seemed to be to answer the question 'Where might I find so-and-so?'... or this or that!"

After the war, some of the rock separating the underground complex from Forbes Street was blasted out, and the facilities extended to provide an extra control room and several tape recording rooms at an intermediate level.

Last but not least, a multi-storey building was erected over the lot, so that the underground installations became a virtual basement. 'Upstairs' they built extra studios, a new Master Control room and administration offices. That was apparently the building into which several of we old-

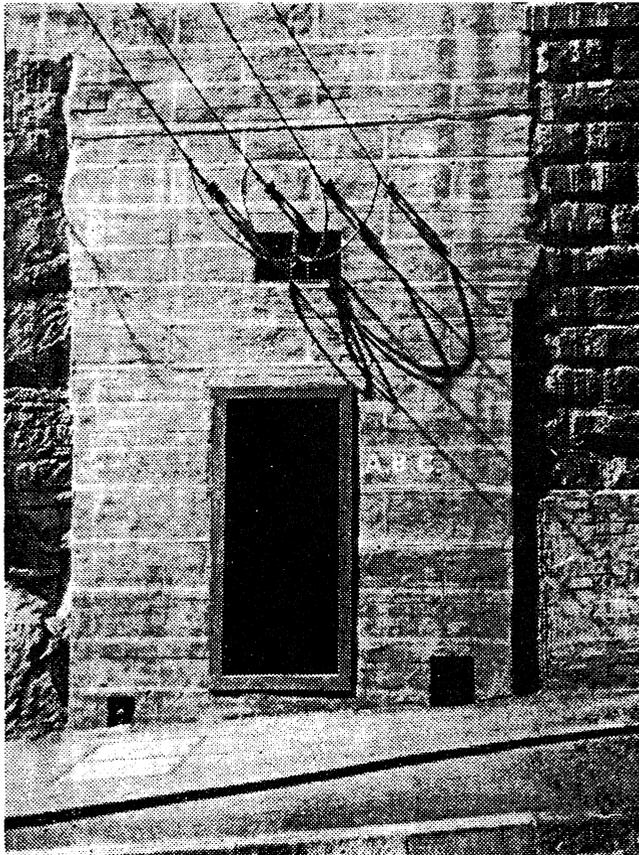


Fig.6 From the 'ABC Weekly' for April 27, 1946, the blast proof door opening onto Forbes Street. The pattern on the stonework is created by shadows cast by the incoming power supply cables.

timers were conducted a few years back to be interviewed for the 'Bright Sparks' series.

A more pretentious building was planned for the area, but never got past the architect's drawing stage.

And that's about where George Paterson's story comes to a close. As he says, his recollections of the era stand out fairly sharply, but it is 50-odd years ago and he could have confused some of the details. So also could a couple of contacts who worked with him in the same surroundings: John Warren (VK2QX) and Dave Capp, whose call-sign at the time was VK2AO.

One memory that does stand out is that George, John, Dave and the rest of the crew were referred to as 'troglodytes' — cavemen, or cave dwellers!

The ABC's resident Document Archivist, Geoff Harris, is well aware of the broad facts surrounding the Forbes Street centre but is unsure of how much is available by way of historical records, where they may have

been stowed and how long it may take to unearth them — if at all!

In recent times, the ABC has been fully occupied in moving to its new complex in Ultimo, Sydney, and they're far more concerned with the implications of tomorrow rather than of yesterday. Meanwhile, I gather, the Forbes Street premises have been virtually abandoned, with history presumed to become bulldozer fodder!

With a touch of nostalgia, George says that he would love to explore the historic site, but he isn't holding his breath! These days, it may not be accessible. If the Seidler building goes ahead, it may well involve an even bigger hole where residents will park their cars!

Fortunately, Geoff Harris' efforts were not entirely in vain. He came up with a photostat of page three of *The ABC Weekly* for April 27, 1946. Under the tagline 'The story can now be told' it carried an article headed 'A.B.C. Secret War-Time Plans To Carry On Radio Services'.

It is immediately apparent from the article that my early remarks about the authorities being 'aware' of a potential problem fall well short of reality. I quote:

The story of Australia's secret war-time plans for carrying on broadcast services to the Nation, in the event of bombing attacks or invasion can now be told.

It is a dramatic story of emergency studios, of special staffs standing by, of mobile units ready to speed to any spot and of properly equipped regional centres.

The action was taken by the A.B.C. (sic) in common with the P.M.G.'s Department and with the approval of the Defence Authorities. It had a priority place in the greatest of national emergencies.

Responsible for providing a reliable news and program service, and maintaining public morale, the A.B.C. was fully mobilised for action.

One of the early initiatives in Sydney was to set up an air raid shelter in the basement of Broadcast House in Pitt

Street. Incorporated was an emergency studio and control room, complete with its own power supply. As mentioned in George Paterson's tape, it also had on-line access to all local stations and was a key response facility pending the Forbes Street installation.

According to the *ABC Weekly*, the construction of the underground studios was 'massive'. Hewn from solid rock, the chamber had walls of reinforced concrete 3'6" (1m+) thick and longitudinal dividing walls 24" (0.6m) thick, cutting the interior into pill-box like compartments.

The roof had a 2'6" (0.76m) layer of reinforced concrete, with an overlay of concrete and boulders 7' (2.1m) thick. Entered by a narrow bomb-proof door, the interior was bomb-proof, gas-proof and 'scientifically' ventilated. It had its own internal power supply.

At the time of publication in 1946, the war had come to an end but the Forbes Street complex remained fully operational as a key source for the distribution of programs to the ABC National Network.

As a measure of the extremes to which the system was prepared to go, the article mentioned precaution-

ary measures adopted in other capitals and regions:

- In Melbourne, in the then-new ABC block in Lonsdale St, a Switch (Master Control) room was installed underground.
- In Brisbane, an especially strengthened studio was installed on the third floor of Penny's Building. It was used in its emergency role during a couple of alerts during in 1942.
- In Adelaide, an emergency studio was set up in the suburb of Prospect, while work proceeded to strengthen the main studio complex.
- Similar arrangements operated in Perth, where an emergency studio was set up in a private building in South Perth. As in Sydney, all of these emergency installations were provided with supplementary phone circuits and staffed for 24 hours per day.

Wherever possible, supplementary phone circuits were provided by the PMG's Dept to maintain a network feed to regional and other isolated transmitters. Mobile teams were also organised such that personnel could be rushed to any transmitting centre that had been cut off from the system feed,

or access by the Defence Authorities.

When I mentioned the above measures to George Paterson, they stirred a chord of memory. He couldn't remember exactly when, but he had been summoned from the control room and instructed to report to what was then 'the bush' on Sydney's western fringe.

At the time, the 2BL transmitter was sited at the beach-side suburb of Coogee. Realising its vulnerability, someone had decided that it should be moved to Kingswood. So a motley team erected two 120ft (36m) masts in the designated area. The lower half of each was a 'bush pole' and the top half a metal framework, with appropriate supporting guy wires.

Other members of the team erected a shed for the transmitter — but not before misreading the ground plan! But no matter, they installed the transmitter anyway. "She'll be right, mate!"

George said that, out of curiosity, he drove by the site a few months back. The masts and transmitter have long since disappeared, but the shed is still there — now a carpenter's shop. "And I mean, right where it always shouldn't have been: nowadays, an otherwise straight road skirts around it!" ♦