When I Think Back...

by Neville Williams

Public Address Systems - 2: Laurie Simon, SA's professional PA pioneer

In complete contrast to last month's article on the evolution of small scale public address (PA) systems, we present this month the story of an old timer who is credited with having pioneered commercial PA in South Australia. It underlines the huge gulf that separates equipment needed for large-scale public functions from the 'handyman' systems installed in local community halls and churches.

As an 'old-timer' in the radio industry, L.K. (Laurie) Simon (Fig.1) first contacted me in May of last year, expressing his appreciation of the 'Think Back' series. He had read then-current instalments with special interest, he said, because as a one-time manufacturer/supplier to the South Australian market, he had experienced at first hand the various aspects I had discussed of the design of 1930's-style mains powered receivers. However, the real highlight of his technical career had been in developing commercial PA equipment. He had long been tagged in SA, he said, as 'the pioneer of public address', without apparent dissent in his home state.

He accepts that he may have been anticipated in the eastern states. An ex-employee of STC, for example, recently claimed that STC had a long history in the field, having set up PA equipment in Canberra for the opening of the original Parliament House — in 1927 — while Laurie was still an impecunious teenager!

In fact, Laurie Simon was born on what is now Main South Road, Mile End, SA, in November 1912. The eldest of seven children, he attended primary schools at Remark and Loxton and then spent a year at Sacred Heart College, close by the the family home in Somerton.

That saw him to the legal age of 14, when he left school, officially literate but showing signs of having, in the process, been bitten by the 'wireless bug'. He found a job immediately — as assistant mechanic in his father's motor garage. That was cut short, however, by the great depression, which brought the motor trade to 'a complete standstill'.

A new career

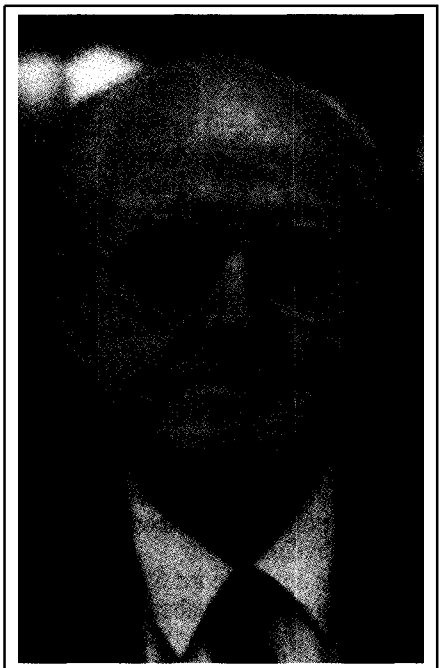

Fig.1: A recent snap of Laurie Simon, still alert and well for his 80 years. He recalls a career combining technical achievement with community service.

As it turned out, Laurie was fortunate to find another job with Newton McLaren Ltd, a large electrical engineering and wholesaling company — one of the first to market AWA battery powered wireless sets. Laurie's job, initially, had to do with servicing lead-acid batteries, which left him with "lots of little holes" in his clothes!

Proving deft with eyes and hands, he subsequently inherited the task of rewinding bobbins for headphones and horn loudspeakers, involving extremely fine enamelled wire. For this he was paid the grand sum of 12/6 ($1.25) per week — from which he could hopefully spare 3d for a copy of *Wireless Weekly*, by way of technical nourishment.

Laurie notes that the only trade training school available in SA at the time was the School of Mines, which covered electrical engineering 'but with no wireless/radio content'. The modern term electronics, he adds, 'wasn't even part of the local lingo'!

After a year at Newton McLaren, Laurie felt convinced that he could earn more by repairing headphones and loudspeakers on his own account and by building crystal sets and other small receivers for private sale. So he set up his own workshop in the backyard garage at the family home at Somerton, and convinced his father that he should display them for sale to his remaining motorist customers.

In 1929, the Simons family registered a separate company to cover the new activity. It was Laurie's company but, since Laurie was only 17, his father had to endorse the paperwork. They arrived at the name 'Nomis' by the simple device of spelling the family name backwards. The notion to do so was picked up from a large warehouse company, Cornell; when they set up a new company to handle British motor cycles, they called it Lenroc Ltd!

Speaking of motor cycles, Nomis Radio's first vehicle was a BSA, which was later fitted with a sidecar modified to carry a battery wireless in a rear compartment. Laurie recalls that, long before they had sealed roads, he and his father would head off into remote farming areas seeking buyers. Sales were hard to come by in those days, he said, but 'we were prepared to do anything, anytime for an extra quid'!

Fifty years later (Fig.2), at a golden jubilee celebration attended by SA Premier David Tonkin, Laurie Simon recalled that he had felt like a 1929 reincarnation of Marconi as he assembled simple sets and wound coils and transformers in his very own factory.

Make, buy, sell, service

It would seem that, from the outset, Laurie Simon had decided to keep his fledgling company as broadly based as possible. He would sell parts and receivers wholesale or retail, building what he could and buying in what he couldn't. He would also provide comprehensive back-up service.

For extra measure, he says, he became `infatuated with a new toy': the idea of adapting wireless technology to amplify speech and music at public functions indoors or outdoors — in short, the concept of public address. In the absence of accessible information or ready-built amplifiers, he had to work out the practicalities for himself. And he certainly didn't waste any time. I quote from his notes:

Maybe I had a bit of a flair for amplifying sound, because I set to and custom built units to suit particular venues and conditions. Despite the lack of proper tools and crude working conditions, I somehow managed to make my own transformers, inductors and metalwork.

In that formative period, he must certainly have been a very busy young man. A brochure covering 'The New Nomis Radio 1933 Series' depicts a 6-valve superhet for £29/10/0, a 4-valve set for £18/17/6 and a 3-valve model for £10/17/6, all in upright console cabinets. Obtainable 'on a small deposit and easy terms', all were covered by a 12-month guarantee.

The brochure further notes that Nomis could supply battery sets for country use, and special receivers for areas serviced by DC mains.

Nomis were also offering receiver service and 'rebuilds by experts at reasonable prices', plus radio replacements, accessories, valves and so on.

For extra measure, the brochure listed `Speech Amplifiers' — 1933 speak for PA — supplied to order or available for hire. Prospective customers had the option of enquiring at the Nomis factory at Cudmore St, Somerton, or showrooms at Jetty Rd, Glenelg.

Sound amplification

It would seem from Laurie's notes that his urge to get involved in public address was no mere fad. Around 1930, he says, 'Bing Crosby fever' hit Adelaide, giving rise to big bands, and to crooners and masters of ceremony, using cardboard megaphones to assist voice projection. One scarcely needed to be a genius to predict an ultimate role for voice amplifiers.

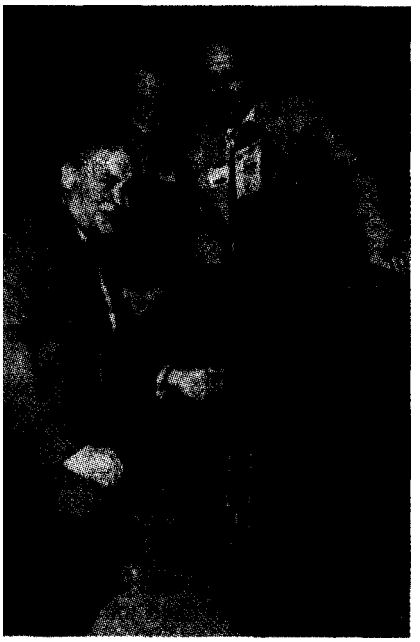

Fig.2: As featured in a newspaper on the 50th anniversary of Nomis Electronics — SA Premier David Tonkin (left) tunes in a vintage radio produced by Laurie Simon (right) shown with his wife Eve (Yvonne). Atop the cabinet is an early American Jensen electrodynamic speaker, often favoured for quality music and PA systems.

As it happened, one of Nomis' early contracts was to provide a loudspeaking paging system for the well known South Australian Hotel — at the time (I quote) `Adelaide's only elite establishment'. The first such system in the State, it generated unsought publicity when `touchy' patrons created a fuss about their names being called out loud in a public place!

The system used a Nomis 'home-made' Reiss (transverse current) microphone which fell victim to an idle switchboard operator/announcer, toying with an old-style office pen. The tip penetrated the metal grille mesh and split the mica diaphragm, allowing the carbon particles to cascade out onto the desk!

The first installation in a public dance hall by Nomis was in the Rinca Hall, next door to Adelaide's St Francis Xavier's Cathedral. It also used a Nomis Reiss mic.

In 1932, Laurie set up a rather more pretentious system in Adelaide's Palais Royal, now a parking station opposite the Royal Adelaide Hospital. The occasion was an old-time ball, expected to attract around 900 patrons. On stage was Harry Boake's 12-piece band, with popular vocalist Frank Kennedy — who had been enticed from the `Rinca'.

`Palais Royal' system

In retrospect, Laurie rates the Nomis system installed for the occasion as `rather crude', even if it reflected current technology. The single microphone was the faithful old Reiss, feeding straight into the front end of the amplifier.

This, in turn, comprised a normal voltage amplifier feeding into a 2A3 power driver, transformer coupled to a pair of type 50 output triodes in class AB push-pull. These delivered 10-odd watts to two 8-inch (20cm) electrodynamic loudspeakers, mounted in large, home-made wooden horns. (Remember my observations about horns, in Part 1)

Proceedings got under way with the Big Band doing its normal thing. But instead of the vocalist reaching for his cardboard megaphone, he walked over and sang into the microphone. The dancers were amazed by the new sound and so many paused to listen that, for a while, it seemed more like a concert than a ball!

Not surprisingly, the amplifier became a fixture in the Palais Royal, being subsequently up-dated with an Astatic D-104 crystal mic and later with a studio quality capacitor (condenser) mic, which gave sensational results. (More about this in part 3)

Over the mid 1930's, Nomis was commissioned to fit out a whole string of SA dance venues, including the 'Embassy', the 'Palladium', 'King's Ballroom' and many others — with virtually all of them clamouring for a condenser *microphone.*

Condenser microphones

In essence, condenser microphones comprised a thin aluminium foil diaphragm stretched tightly and clamped across the machined face of a heavy, circular metal disc, essentially part of the `earthed' body of the microphone. Thin insulating washers around the edge of the diaphragm isolated the foil, allowing a

DC potential of 100 or more volts to be applied to the diaphragm through a high value resistor (e.g., five megohms).

When sound waves caused the diaphragm to vibrate, the capacitance between it and the body of the unit would vary, causing a sympathetic voltage change across the resistor. By feeding this to an adjacent preamplifier stage, sufficient signal could be obtained to drive a sensitive amplifier.

Condenser microphones owed their reputation for faithful sound reproduction to the fact that the only moving part was a paper-thin diaphragm, by nature relatively free from mechanical properties likely to cause resonance effects or non-linear movement.

Laurie Simon says that he bought the first two of them second-hand from the PMG's Department, when they were pensioned off from radio station 5CL. In their original form, as still pictured in Adelaide's Telecommunications Museum, they were positively ugly, with the capsule and preamplifier mounted in a rectangular wooden box (about 170 x 170 x 150mm) atop a heavy wooden floor stand.

For stage use, Laurie clamped the capsule inside a brass ring atop a less bulky metal stand, with a cable running down, either to the amplifier alongside or to a wooden box on the floor containing a preamp and batteries, with a low impedance lead to the power amplifier elsewhere.

The one problem they encountered with this arrangement was with would-be Bing Crosbys that breathed all over the microphone, either huffing and puffing it sufficiently to cause a mechanical short or creating internal moisture droplets through pinholes in the foil. In an emergency, a standby capsule could be substituted in one minute, with an ex-PMG mechanic on staff who was able to remove and renew suspect diaphragms.

(The modern 'electret' microphone is similar in principle to a condenser type, but a metallised polycarbonate diaphragm or other relevant surface is processed to store a permanent dielectric charge, thereby obviating the need for an external polarising voltage. The buffer amplifier is usually a miniature battery-powered transistor type built into the microphone case.)

Amplifier philosophy

Reflecting on that original 'Palais Royal' amplifier, with a 2A3 triode driving class AB triodes, Laurie added that, `from day one, he had been a triode man'. Fed from a power driver through a step-down transformer, big triodes could cope magnificently with signal peaks and the vagaries of loudspeaker loads.

Over the years, to cope with competitors, he had manufactured hundreds of amplifiers with 807's, 6V6's, KT66's, KT88's and the like. On the bench, with resistive loads, power tetrodes and pentodes were fine, he said, but if abused in the field, they `fell over' with distortion.

Laurie Simons' pride and joy in the old days was a big integrated job — all on one chassis —offering 300-odd watts of output from a pair of transmitter-style 805 triodes, each 8.5" (21.6cm) tall. Nomis built quite a few such amplifiers over the years — some for hire at large public functions, others to provide speech, communication and music in large factory complexes.

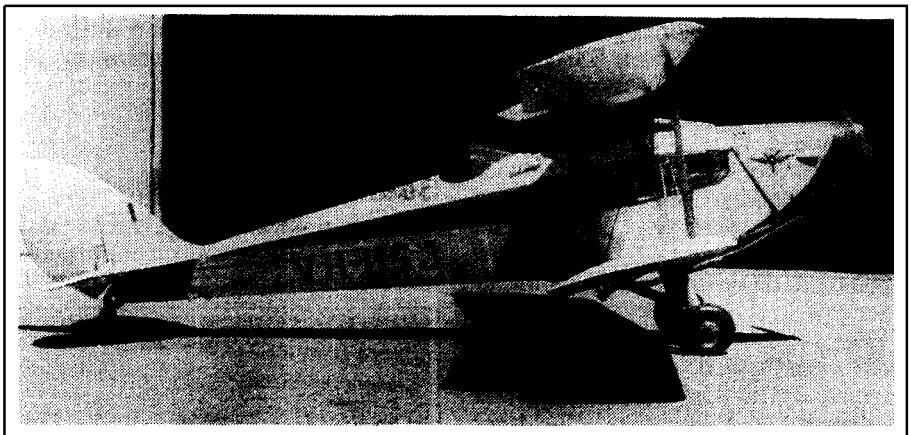

Fig.3: A typical De Havilland Fox Moth biplane, as used for aerial PA by Nomis, and subsequently in WA by the Flying Doctor Service. Note the open cockpit and the tiny cabin between the wings, immediately behind the motor. (By courtesy of Anson, WA).

Fig.4: A Nomis communications system produced for the Adelaide Children hospital. it provided bedside music, radio, TV sound, paging and intercommunication for the hospital proper and associated nursing homes.

Two 6J7-G's up front provided access for two microphones, typically dynamics fed in via balanced lines and Trimax input transformers. Next came a 6A6 twin triode, providing channel mixing and additional gain to drive a triode-connected 6F6-G through a simple network offering optional bass cut.

This was transformer coupled to push-pull 2A3's, which turn drove the 805's through a double push-pull class-B transformer. As per ratings, the 805's operated with zero grid bias, with a current meter in the heater centre-tap earth return as a check on idle and dynamic current levels.

The chassis carried two separate power transformers, one to provide the filament voltages and HT supply for the lower powered stages, the other the 1200-odd volt HT supply for the 805's — per medium of a pair of 866 mercury vapour rectifiers. Filtering for the latter involved a 'swinging' choke, its impedance varying in inverse proportion to current drain, followed by four 16uF series-connected electrolytics.

Outdoor PA

Dwarfing the installations necessary for dance venues, multiple amplifiers of the above proportions were needed for a whole series of outdoor occasions serviced by Nomis in Adelaide and elsewhere.

The first of these, according to Laurie Simon, was at the Adelaide Oval in September 1935 for the presentations which marked the climax of SA's national football season. Thanks to a boldly labelled Nomis Reiss microphone visible in the press photo, the crowd not only got to

enjoy the second semi-final match, but also to share in the presentation of the Margarey medal for the most brilliant and fairest player in the league — a notable first!

In the meantime, Nomis had achieved another quite different 'first': loudspeaking advertisements from a low-flying plane. The idea had emerged as early as 1934, but it took a long time to work out how to go about it; to locate a suitable plane; and, last but by no means least, to gain the necessary permission from the Civil Aviation Department.

Nomis was better placed than most to come up with amplifier equipment and the means to power it aloft for an hour or so at a time. It involved a mains type amplifier, a DC/AC rotary converter, lead-acid batteries and a separate 200V/100mA DC supply for the loudspeaker field.

The most suitable plane appeared to be a Fox Moth owned by McRobertson Miller Airways, then based at Parafield. It had an open pilot's cockpit and a very small passenger cabin (Fig.5), just able to accommodate four (small) people. With the equipment in place, there was room to accommodate (awkwardly) one lone operator. The plane could be chartered by the hour, which was sufficient (in those days) to overfly Adelaide city and suburbs.

Laurie said that they also worked out a way to mount an American Jensen M-20 electrodynamic loudspeaker in a protective baffle, bolted between the wheels and facing downward. The equipment had to be installed and removed before and after each charter. The idea was to climb to the minimum practical height, then throttle back and 'coast' for long enough for the announcer (Laurie Simon) to say his piece. Fortunately, firms like John Martin, Foy and Gibson and Myers were co-operative enough to pay an appropriate fee to have their messages proclaimed from 'on high'.

For Laurie Simon, it was an interesting challenge but one that left him in two minds, on occasions, whether to reach for the microphone or a paper bag! On some flights, he said, he ended up 'as sick as a dog'!

Variety of venues

1936 proved a particularly busy year for Nomis PA, with SA's Centenary celebrations at the Glenelg Oval — including a re-enactment of the first landing, which necessitated the use of several Nomis Reiss mics, each assembled on/in a block of wood measuring 4 x 4 x 6 inches (100 x 100 x 150mm).

In the apparent absence of competitors, Norris was commissioned to cover a succession of other public functions, including 'practically all' the race/trotting/ coursing meets, along with country shows.

At the time, according to Laurie, the regulation of the AC supply from the Adelaide Electric Supply Co was notorious. Nominally 210V, it sometimes fell to a low of 170V, necessitating switchable tappings on the power transformer primaries. Not infrequently, in those days, mains power was simply not available at some sites, making it necessary to rely on a back-breaking combination of rotary converters and heavy duty lead-acid batteries.

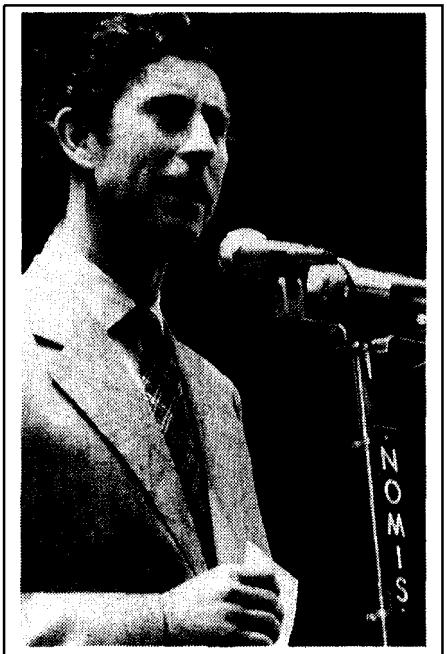

Fig.5: Noma always attached their logo to mic stands. On this occasion, featuring Prince Charles, it provided magnificent free publicity on TV, newsreels and the press.

On Anzac day, 1936, Nomis engineers had to cope with a new problem of a quite different kind — to work out and provide sound coverage for the annual parade. The length of the route and the number of spectators anticipated demanded 'a massive amount of equipment' plus street wiring for the audio feed, complicated by trams plying the route right up to the start of the march.

1936 also saw a visit to Australia of the famous. American tenor Richard Crooks. His Adelaide concerts were held at the West's Olympia in Hindley St, using Nomis amplifying equipment, which was subsequently commended by the *Advertiser* reviewer.

Richard Crooks also personally thanked Laurie Nomis for the amplification arrangements, and observed to him: "We have nothing in the States like that". Crooks insisted, moreover, that the promoters arrange to have the same system installed in the old Exhibition Building in Melbourne, for his farewell concert on September 19 of that year.

Organ buffs may be interested to learn that, to a presentation featuring Richard Crooks and combined (Victorian) choirs, the program leaflet listed a 30-minute recital of popular classical excerpts by LE. Warner on a 'Hammond Electric Organ'.

Back to the race tracks, 1937 saw the installation of permanent PA facilities, plus the introduction of 'racecasters' at Morphetville, Victoria Park and Cheltenham — followed by Gawler, Oakbank and Balaklava.

Postwar PA

If life at Nomis was busy and varied prior to the war, it certainly remained so during the postwar years — from premises re-styled in 1949.

A permanent sound system was installed in the Adelaide Town Hall around 1948, to cater for all comers — including the ABC. Not surprisingly, it came under on-going scrutiny and was constantly being up-graded to take advantage of the latest technology.

In this same period, Nomis installed literally hundreds of sound systems in churches, schools, hotels, hospitals, stores, and shopping centres (Fig.4). At the other end of the scale, loud speaking paging systems were installed in major industrial plants, where speech had to compete with extremely high levels of ambient noise. Here again, the faithful old 805's came into their own.

In terms of scale, however, such assignments paled before the Royal tours and visits which occurred in Adelaide in the postwar period (Fig.5). *The Journal of Industry* for April 1954 gives a rundown on what was involved for the Queen's visit during the previous month.

Nomis amplification equipment had to cover a schoolchildrens' display and music festival at Wayville Oval, plus an ex- servicemen' assembly at the University Oval, plus a State Banquet and fireworks display at Victoria Park, a church service at St Peter's Cathedral, an open-air official function outside the Town Hall and a half-million spectators along the 4.5-mile (7km) route of the Royal procession.

The installation involved miles of street wiring, hundreds of loudspeakers,

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multiple amplifiers and strategically located control centres. While the prime function of the installation was to allow spectators to share in the progress and the events, it was interlinked with PMG, press, radio and newsreel services, and to the police and, fire brigade for crowd control and/or emergencies. Sufficient back-up equipment had to be accessible to cope with any possible malfunction.

As if all this was not problem enough, Nomis had been commissioned by the Tasmanian Government to provide sound coverage for Hobart and Launceston, just two weeks previously. This had involved air-freighting nine miles of street wiring and 120 loudspeakers, with the intention of sending a control van and sound tower by sea. At the last minute these, too, had to be despatched on a specially chartered Bristol freight plane.

With all this going on, it may come as a surprise that Laurie Simon still found time for community activities — as, for example, a member and chairman of local kindergarten and college committees. A member of the IREE (Institution of Radio & Electronics Engineers), he also served as a president of the SA Division.

Again, he was a member, committee member and past president of the BREIF Club (Broadcast Radio Electrical Industries Fellowship) supporting under-privileged children. And as a member, committee member and past president of the Rotary Club of Unley, he also helped formulate Rotary at Mt Barker. Last but not least, Laurie was elected to the Unley City council in 1963 and served as mayor for two years. His wife Yvonne has also been an active participant, in her own right, in community affairs.

Seven years ago, at age 72, he retired in time to celebrate their golden wedding anniversary, with their four sons and their own families. He also sold up his business, which now operates under totally new management as 'Network Nomis'. With new and enlarged premises at 51 Glen Osmond Rd, Newtown, Laurie says it is "a very professional audio-visual company". He is obviously happy that they are keeping alive his family name — even if, as ever, it is still being spelt backwards!

Due to lack of space, I am holding over a number of anecdotes from Laurie's memoirs. All being well, we should be able to publish them next month.

(To be continued)