



# When I Think Back...

by Neville Williams

## Our family's first wireless: a four-valve Colmovox

These days, a wireless set – sorry, a radio receiver – can cost next to nothing to buy and even less to run. But in 1923, when public broadcasting officially commenced in Australia, wireless sets were expensive, few in number and distinctly unpredictable in their behaviour. This is a true but typical story behind one such set, circa 1925.

In the early '20s, there wasn't all that much to do after dark, in the average working class country home. Clean up after the evening meal, sit by the fire, talk a bit and perhaps read for a while by the pale yellow light of a kerosene lamp. Then it was off to bed, ready for an early start next morning.

Occasionally, someone might play a couple of records on the wind-up phonograph. But records only lasted a few minutes apiece and there was a limit, anyway, to the number of times one could repeat the same old scratchy songs and monologues.

It was little wonder that country people in particular responded eagerly in 1923 to the prospect of regular wireless broadcasting, with the promise of up-to-date news, market and weather reports, plus regular talks and concerts to brighten the evening hours.

How do I know? Because I spent my boyhood in just such an environment. The four-valve Colmovox referred to above was the first radio receiver ever to enter our family home – and it was a memorable occasion.

To buy a wireless set at all was no light decision for my parents. Like most other people in the small country town, they worked hard and lived from one pay packet to the next, with little opportunity to save much in between.

To them, the cost of even a modest wireless set represented about two month's wages, plus the recurring expense of ordering heavy duty 'B' batteries from the city every two or three months. The only way they could ever own a set was to scrape together enough for the deposit, and sufficient after that to meet the weekly payments.

But what kind of a set? In the complete absence of formal specifications, wireless sets were evaluated in purely subjective terms, as often as not passed on by neighbours who had read something or heard something about them.

Rightly or wrongly, some sets were said to be too 'weak' to receive distant stations. Others were 'more powerful' but expensive and 'a bit heavy' on batteries. Some were 'real loud', but 'so thick it was hard to know what the bloke was saying'. Others were 'clear' but too 'soft'. Or maybe they were 'OK' on phones, but 'not much chop' on a loudspeaker. And so on.

### Why Colville-Moore?

I'm not exactly sure why or when my father settled for a four-valve 'Colmovox', manufactured by Colville-Moore Wireless Supplies Ltd and distributed from their modest shop in Rowe St, Sydney. (Little more than a lane adjacent to Martin Place, Rowe St disappeared some years later when the famous old Hotel Australia was demolished and redeveloped.)

The chances are that he, along with many other prospective customers, was



**S.V. (Sid) Colville, founder of the Queensland branch of the Wireless Institute.**

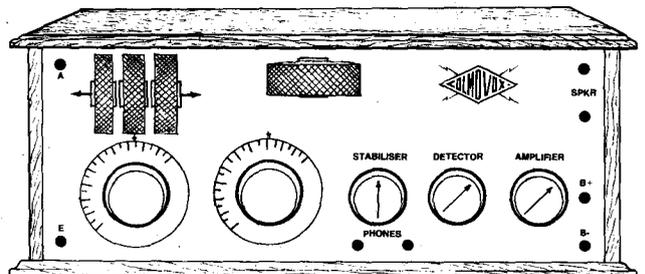
influenced by the well established reputation of the respective proprietors.

According to the *Australasian Wireless Review* for January 1923, S.V. (Sid) Colville had earlier founded the Queensland branch of the Wireless Institute, becoming its first secretary and organiser. He had begun experimenting with wireless in 1912 and in that same year had acquired a spark transmitter



**The logo of Colville-Moore Wireless Supplies Ltd, well known in the Sydney area during the battery set era of the '20s.**

**An artist's sketch of the four-valve Colmovox, dating from 1925.**



and a receiver using a coherer type detector. He subsequently changed to a crystal detector and later still to a valve circuit.

He had installed a valve transmitter at the Wireless Institute rooms, achieving



**Also an avid enthusiast and pioneer, A.L. Moore was the holder of a Commercial Wireless Certificate.**

ranges of up to 80 miles (130km) using two type V24 valves. Says the *Wireless Review*: "Transmitting is his forte and the firm is turning out a very compact transmitting set".

A.L. Moore, Colville's partner, had also built up a reputation as an enthusiast with many years of experience, starting off with a loose coupler crystal set and progressing to transmitters and valve equipment. The holder of a Commercial Wireless Certificate, his pride and joy in 1923 was said to be a three-stage RF amplifier set covering a range from 150 to 25,000 metres (2000 - 12kHz) using plug-in honeycomb coils!

With the motto 'Everything in Radio', the Colville-Moore shop in Rowe St had become a mecca for enthusiasts, even before the inauguration of official broadcasting, based on the activity of amateurs and occasional demonstration wireless concerts.

In the same issue of the *Australasian Wireless Review* which carried their biographies, a 2-column advert featured a crystal set capable of covering the long-wave and medium-wave bands from 150 to 1600 metres (2000-187.5kHz). Also featured was a range of 'Col-Mo' variable condensers (capacitors) from 100 to 2000pF, and a 'Col-Mo' Amplihorn - a metal horn which could be clamped over a headphone to double as a modest loudspeaker.

## Colmovox sets

Try as I may, however, I have not been able to verify from accessible literature my recollections of their 4-valve receiver - the first ever to enter the Williams household, circa 1925.

The nearest I've come to it is a 3-valve ready-to-run Colmovox 'Junior' kit, as advertised in *Wireless Weekly* for August 13, 1926. The basic kit, including 'polished maple cabinet', engraved 'pure bakelite' panel and sundry components cost £6.5.0. Essential accessories, including headphones (but no loudspeaker) plug-in coils, valves, batteries and aerial fittings added another £5.6.10.

In today's currency that's directly equivalent to about \$24.00, but in 1926 it represented something like six week's wages - for a modest kit which still had to be wired. (For a complete 7/8-valve receiver near the top of the Colmovox range, the figure would have been five to six times as much!)

The 'Junior' kit used a regenerative triode detector tuned by a 0-100 dial, set below a group of three panel-mounted plug-in coils. Of these, the fixed centre coil almost certainly provided the main tuning circuit; the swivelled coil on the left would have been for variable aerial coupling and the one on the right for 'reaction' (regeneration).

Other controls on the front panel included a rheostat to vary the filament voltage (and gain) of the detector, and another for the filaments of the two audio amplifiers.

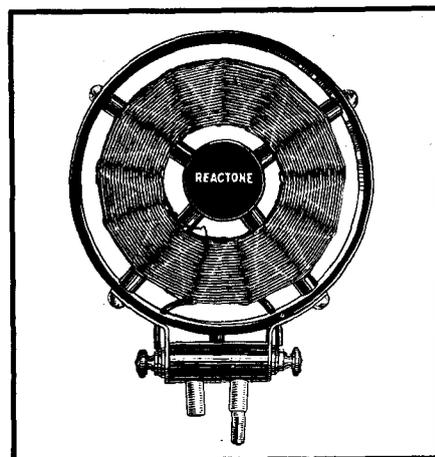
In addition, there were terminals for Aerial, Earth, Phones, Loudspeaker, B- and B+. The idea of having the last two on the front panel was to keep them well away from the filament connections at the rear, to minimise the risk of error and of 'blowing' all the valves!

The valves supplied with the kit offered a choice of Radiotron, Philips, Geco or De Forest. They would most likely have been 4-pin 'UV' types (see illustration), fitting into tubular sockets not unlike an over-size lamp socket.

## Vital extra stage

As distinct from the kit, the four-valve set that my father actually bought had an extra tuning dial and capacitor, and an extra plug-in coil at right-angles to the other three. Including the slightly projecting base and lid, it measured 7-7/8 x 20-1/4 x 9 inches (H x W x D), or 200 x 510 x 230mm.

While the extra components clearly indicated a tuned RF stage ahead of the



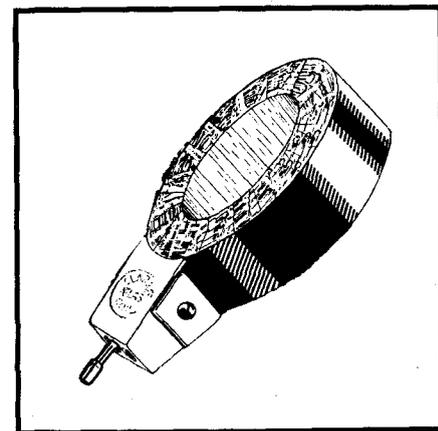
**A typical plug-in 'basket-weave' coil. The type shown was available in steps from 25 to 150 turns, to suit different bands.**

detector, I am hazy about the internal layout or circuit arrangement; in particular, whether it provided any form of neutralisation for the RF amplifier.

I certainly remember a knob marked 'Stabiliser', looking rather like a third filament rheostat. It was, however, a 400-ohm potentiometer, which (I think) swung one or more grid return circuits progressively from filament negative to positive. By thus modifying the effective grid/filament bias, it probably served to vary the gain of the RF and/or detector stages.

As with the kit, there were two transformer-coupled audio stages and provision for using phones or loudspeaker. As I remember, using the phones involved only the first two valves, with much reduced current drain. For the loudspeaker, the full audio system had to be used.

The plug-in coils (as pictured) were a heritage of the early '20s, when there

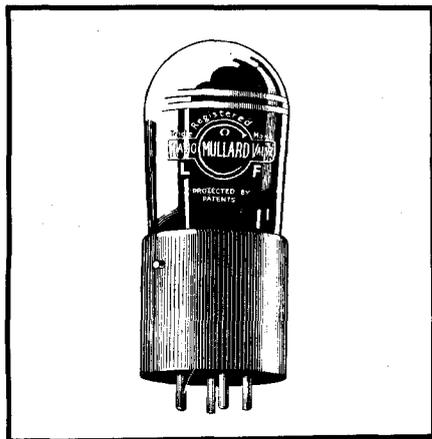


**A 'honeycomb' wound plug-in coil, available in 8 steps, from 25 to 250 turns. When tuned with a 1000pF capacitor, its coverage extended down to 4150 metres or 72kHz.**

## When I think back

was some doubt as to how the various stations would be distributed across the long- and medium-wave bands. So also were the large 1000pF tuning capacitors, on sale at the time and fitted to many early receivers.

Details aside, my lasting impression of the four-valve Colmovox is that Messrs Colville and Moore must have got the design right. It was loud enough for comfortable family listening and clearer than most. On the southern highlands, about 100km south-west of Sydney, it could receive Sydney stations reliably by day, and plenty of interstate stations on lightning-free nights – without costing the earth to run!



**A typical triode from the early/mid '20s with a 'UV' bayonet style base. Note the locating spigot on the side.**

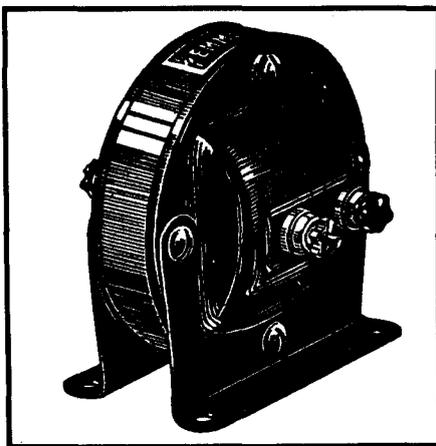
### First things first

But I am getting ahead of myself. Before wireless reception could become a reality for the Williams's or anyone else in the country, we had to provide the obligatory outdoor aerial and earth, complete with aerial switch and lightning arrester.

In those days, most broadcast stations used horizontal wire aerials strung between tall towers – an arrangement that tended to radiate a large proportion of the signal skywards. While this provided interstate listeners with interesting night-time signals, it was at the expense of the ground wave serving listeners within 100km or so.

The depleted ground wave, plus limited transmitter power and none-too-sensitive receivers made it essential for country listeners to provide a large outdoor aerial and an effective earth return, to capture a sufficient level of signal.

In our case, it meant scouring the



**Over the years, the family Colmovox was refitted with various replacement audio transformers, usually because of burnt out primaries. Typical was this popular Australian-made EMMCO.**

nearby bush for a couple of tall saplings, felling and stripping them and dragging them home, to be erected in the open near the house. Passers-by, at the time, didn't need to be told that we had ordered a wireless from 'the big smoke' (Sydney).

Without getting too involved in the detail, accepted wisdom was that aerials had to be at least 60ft (20m) long and supported between porcelain 'egg' or pyrex glass insulators, at least 25ft (8m) above the ground. An insulated stranded steel and copper lead-in ran from the near end of the aerial, through a small porcelain tube set in the wall, to an aerial switch and thence to the receiver.

In the absence of a reticulated water supply, an impatient enthusiast might simply clamp the earth wire to an odd length of galvanised water pipe driven into (hopefully) moist soil.

In our case, if I remember rightly, the wire was rivetted and soldered to an offcut of galvanised roofing iron which was then buried deeply in a handy garden plot. In dry weather, it became something of a ritual to keep it moist with waste water.

### Lightning arrester

On an indoor window frame near where the aerial entered the listening room, my father mounted a knife switch-cum-lightning arrester. With the switch in the up position, the aerial was connected to the set. In the down position, it was isolated from the set and connected directly to the earth wire – the preferred position when the set was not actually in use.

But the switch assembly also included two small brass tabs, with serrated edges which almost bridged the gap between the aerial and earth connections. The idea was that any electrical pulse or charge that might appear on the aerial would jump the sub-millimetre spark gap to earth, instead of damaging the set, or causing a flash-over in the house, or initiating a possible lightning strike.

Looking back, it might seem that we were rather hung up about lightning in those days – but not without reason. Over the years no less than three large gum trees were struck by lightning, within 100 metres of the family home, and blown to pieces by having their internal moisture flashed suddenly into steam.

Three huge explosions like that breed a certain respect for the elements, as did the experience of opening the knife switch and watching an almost constant electrical discharge across the arrester points.

Perhaps it was because, in an area devoid (at the time) of any overhead phone or power wiring, tall trees and lofty aerials in cleared areas were that much more exposed to natural electrostatic charges.

And, if you need to be further convinced, let me quote from page 9 of *Wireless Weekly* for March 9, 1923:

#### COMPULSORY IN USA

**Lightning arresters are now a necessity of radio equipment and have been made the subject of a special ruling by the National Board of Underwriters. Each installation must be provided with an arrester that will operate at a potential of 500 volts or less.**

Even today, lightning is still lightning, as I was reminded recently when, from my back porch, I saw and heard a direct strike on the studio tower of ATN-7 in Sydney, a few streets away. It's just that, buried in a jungle of overhead wiring, with powerful local signals, sensitive receivers and indoor antennas, we are much less aware of it.

### Static, fading & 'DX'

But if local thunderstorms were an occasional hazard, lightning activity at much greater distances was a constant bugbear to country listeners in the mid '20s. Reliant on relatively weak signals and notoriously inselective receivers, even distant lightning could produce annoying bursts of static.

With magazines like *Wireless Weekly* carrying both local and interstate programs, my parents would search each issue for what, to them, were the high-

lights. Hopefully, they would be from Sydney but, inevitably there would be desirable sessions that they might manage to receive from Brisbane, Melbourne or Adelaide.

Unlike today, listening had to be strictly rationed to conserve the B-batteries and to avoid flattening the filament accumulator too often.

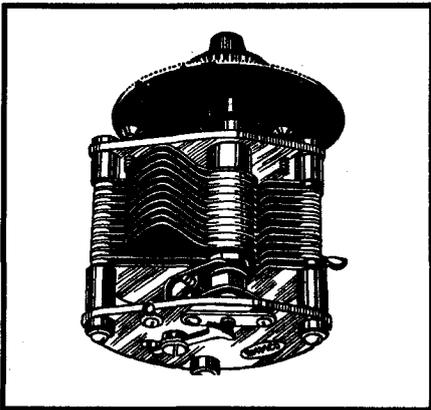
Quite early in the life of the Colmovox, I learned the art of tuning wanted stations with the filament rheostats turned well back. Anybody could get loud signals with the valves full on; it took an expert to get results with the filaments almost off!

But many were the occasions when planning and miserly operation alike were nullified by storm activity somewhere in eastern Australia; or by even more pervasive atmospheric effects that caused night-time signals to fade and distort, due to interference between ground and sky waves.

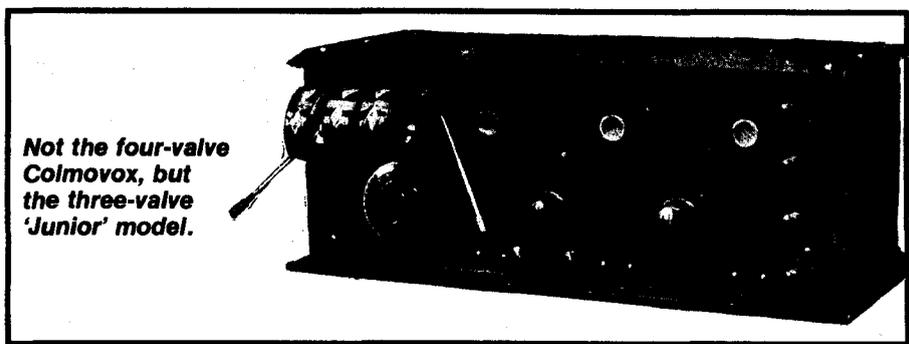
Frustrating as they were, such experiences were balanced by other occasions when programs would be heard from totally unexpected sources. It wasn't long before a carefully prepared log card appeared on top of the Colmovox, recording the knob settings for what had been received at some time or other, and therefore might be heard again under favourable conditions.

As the number of sets in the town gradually multiplied, the content of those log cards became something to boast about – certainly for the fathers, but often for the kids as well. A set that could regularly receive 7ZL Hobart was obviously better than one that couldn't!

Even station personnel were quite flattered to receive reports of long distance (DX) reception. Did it not indicate the extent of their coverage?



**Another popular EMMCO product – a tuning condenser and dial, available either 'plain' or fitted as shown with a concentric knob and provision for vernier tuning.**



## Improvements

Not surprisingly, all this had the effect of adding an enthusiasm for wireless to my father's many other interests – an enthusiasm that must have rubbed off on myself.

Deciding quite early that he had no use for the long-wave coverage, my father stripped down the redundant long-wave honeycomb coils and removed half the plates from the 1000pF tuning capacitors to bring them down to around 500pF – more suitable for the medium-wave band.

Valves that failed or were suspect were gradually replaced by others that were reputed to be better, or that seemed like a bargain too good to be missed.

The original, rather unpretentious horn loudspeaker was replaced by the latest goose-neck Amplion – which I still have, and which still works in a fashion.

Annoyed by an interstage audio transformer that suffered an untimely open-circuit primary winding, he carefully removed the secondary winding, exposed and repaired the break in the primary, rewound the whole thing (by hand) and restored it to normal operation. That's a feat at which I never cease to marvel, and which I have never aspired to emulate!

When the great depression hit the town, money ran out and there simply wasn't enough to buy new B-batteries. Determined not to be deprived of his beloved Colmovox, my father collected several dozen medicine bottles, an equivalent number of discarded dry cells, a fistfull of scrap sheet zinc and the wherewithal to make a sal-ammoniac solution.

The medicine bottles were duly beheaded with a hot wire and cold water, and installed in a home-made wooden crate. A carbon rod and de-polariser bag from a dry cell was inserted in each to serve as the positive electrode, along with a strip of zinc for the negative pole.

When the cells had all been suitably

connected in series, he poured in the sal-ammoniac. The homemade B-battery worked like a charm, but it did smell a bit and it did grow an impressive crop of slimy green verdigris – which soon began to threaten the linoleum. I was not party to the reason for the subsequent disappearance of the home-made B-battery, but I gather that it was the subject of a marital edict of the 'that or me' kind.

The depression was also responsible for many of the sets in the area becoming temporarily illegal, when there was no longer any money to pay the obligatory licence fee. If the Colmovox seemed strangely muted around 1930, it was more likely to have been the result of discretion rather than any technical problem.

## End of the line

But the days of the faithful four-valve Colmovox really were numbered when, shortly afterwards, my family moved to the city. Designed for the bush, the set didn't like being so close to so many stations. It couldn't reasonably be adapted to work from the power mains, and the once-prized goose neck Amplion speaker seemed as out of place as Dad Rudd in parliament house.

So the faithful old set was pensioned off, too old to be worth keeping but too young to be a relic of the past. Pretty soon, I had pinched some of the bits to build a crystal set, and the bakelite panel for another constructional project that seemed more important at the time. I kept the Amplion loudspeaker for sentimental reasons but the valves, sockets and audio transformers ended up, along with other unwanted bits, in a private museum in the Blue Mountains.

That left the polished maple box with base and lift-up lid. My father fitted it with a 3-ply panel and used it for fishing tackle. When he passed on, some years ago, it ended up as an oddment box in my brother's workshop.

If you were wondering, that's how I was able to quote its exact dimensions! 