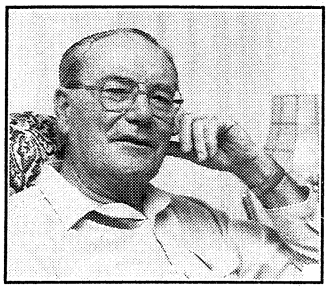

When I Think Back...

by Neville Williams

Charles D. Maclurcan: Engineer, businessman, hotelier and top Australian amateur broadcaster — 2

While helping to set the scene for public broadcast stations, Charles Maclurcan also directed considerable effort to promoting normal two-way communication between amateur operators, locally, interstate and worldwide. And realising that they might soon be banished to the unused part of the spectrum below 200 metres, he set out to investigate and demonstrate its potential. This was before being overtaken by full-time family business committments.

Australia-wide, but especially in the Sydney area, Charles Maclurcan provided a commendable role model for post-war amateurs.

On the basis that there was strength in numbers, he did so from within the ranks of a restructured WIA (Wireless Institute of Australia), where he served as Vice-President to Ernest Fisk and later as President in his own right.

Typically, *Sea, Land and Air* magazine for February 1, 1922 (et seq.) recorded a well attended meeting of the WIA, NSW Division, where the results were announced of a successful six-week wireless receiving competition conducted on Sunday mornings from 2CM at Strathfield — Maclurcan's own station. It was said to have been the first such competition in Australia. Using both telegraphy and telephony, the transmitter power could be varied in steps by switching up to four V24 valves in parallel as the oscillator. Four other switchable V24's served as a Heising modulator. The power supply employed a 1/4hp AC to 600V DC motor/generator set, with a step-down transformer for the filaments.

At the April, 1922 WIA meeting, Charles Maclurcan reportedly presented a lecture describing the construction (or reconstruction) of an audio transformer — a not-unusual project in that era, because of recurrent burn-outs. Questioned about the effect of eddy currents in the core, he suggested, facetiously, that eddy currents might be more cooperative if identified by their full name: 'Edward Currents'. (Humour, 1922 vintage!)

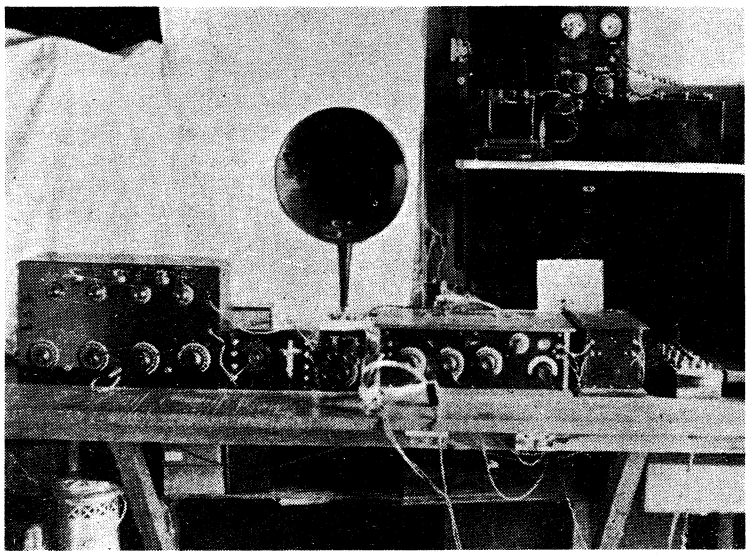

Fig.5: Long distance reception depends as much on the receiver as on the transmitter. Pictured is the long distance receiver in use at 2CM during 1923.

At the Annual Meeting on May 1, 1922, in the absence of the President E.T. Fisk, Charles Maclurcan took the chair and was subsequently re-elected as one of the Vice Presidents, with Phil Renshaw as Hon. Sec. and Malcolm Perry (AWA) as Hon. Treasurer.

Low power records

As distinct from *Sea, Land and Air*, copies of *Wireless Weekly* from the early 1920's are dotted with references to pace-setting long distance contacts or reception reports relating to 2CM, using low transmitter power — i.e., eight watts or less. Included were reports from Darwin, New Zealand, Pago Pago and ships at sea.

The wavelength/frequency used for the tests is not stated but, by inference, it would appear that, even at this early stage, Maclurcan was investigating the behaviour of wireless waves in the region 'below 200 metres' (i.e., frequencies above 1.5MHz), to which the amateur fraternity was to be confined once public broadcasting had been established.

The December 8, 1922 issue of *WW* reports that special low-power test transmissions from 2CM were heard in daylight by Mr L.V.G. Todd of Tamworth, 200 miles (310km) north of Sydney, and by Mr Channon of Inverell at 350 miles (490km).

Mr Channon's receiver was using a single Expanse-A valve and, according to his report, the CW signals were coming through with power to spare. He was surprised to learn that the plate

input power at the transmitter was a mere 0.4 watt!

To cap this, a further test a few days later with Mr Todd resulted in clear daylight reception with a transmitter input power of 1/7 watt!

A one-page follow up story in *Wireless Weekly* for October 12, 1923 was headed 'More World's Records Gone West'. It details preliminary day- time tests on Sept. 24 and 28, 1923 between 2CM and a Melbourne station, 3JU — operated by the renowned Ross Hull. ('The Ross Hull Story' appeared in the February 1989 issue of *EA*). Ross reported that he had been able to copy signals with 2CM's power reduced respectively to .07 and .044 watt — in the latter case despite a degree of jamming from the Melbourne PMG station VIM.

Trans-Tasman on 3.7mW

These contacts were followed by supervised tests between Charles Maclurcan 2CM and Frank Bell 4AA at Waihemo, Shag Valley, New Zealand, commencing at 9.00pm on Wednesday October 3, 1923.

Beginning at 'full power' of seven watts, the input was progressively reduced to 0.0037 watt (a rounded decimal) with Bell acknowledging reception with: 'OK QSA. Sigs strong and steady throughout. Another world's record gone west. Mim. Congratulations OM. G.M. Bell'.

The point should be made, perhaps, that credit for such reception belongs as much to G.M. Bell for his receiver, as to Charles Maclurcan for his transmitter. (The same remark would apply to Messrs Todd and Channon, above).

As if to emphasise that the contact was no fluke, Maclurcan received an unsolicited telegram from a listener in Charters Towers, Qld, which read: 'HEARD YOU ON LOWEST POWER LAST NIGHT. ODGERS.'

Apart from coverage in the technical press, *Wireless Weekly* (January 4, 1924) reports that the low power tests were written up in the *Sydney Morning Herald* under the heading 'Wonderful experiments by NSW amateurs'. The *SMH* detailed the trans-Tasman contact and said that in previous weeks, Charles Maclurcan had, himself, been experimenting with receivers, with particular emphasis on unpretentious circuits able to receive overseas code transmissions, while drawing minimal battery power.

Behind all this lay spirited argument in the early 1920's between three major groups:

- Professional operators, who saw wireless primarily as the communications medium of the future, with formally trained operators (like themselves) exchanging messages in Morse code. Morse, they maintained, would always be preferable to telephony under adverse conditions. Speech and music transmissions would be a waste of time and technology!
- Traditionalists, who accepted wireless as an all-purpose medium but considered long and medium waves to be the natural and useful part of the spectrum. The use of relay stations and/or increased transmitter power were seen as the obvious answer to long-distance reception, with Sydney's new 5000W station 2FC a prime example.
- Visionaries like Charles Maclurcan and Ross Hull, intrigued by the behaviour of short waves — below 200-odd metres. Range appeared to depend on wavelength and day/night propagation rather than power. As they saw it, high-power multi-hop relays would be inherently costly and inefficient.

Build your own sealed set!

With public broadcasting due to begin shortly ... *Wireless Weekly* will continue to publish articles on non-regenerative receivers, both crystal and valve, which will be suitable for broadcast reception.

Care must be taken to ensure that the sets will receive only on 350 metres, although a variation of 10% above and below that wavelength will be allowed.

Each set must be enclosed in a box suitable for effective sealing. The Radio Inspector, McDougall House, Sydney, will seal the set on a fee of 2/6d being paid.

(From Wireless Weekly for October 26, 1923. 2SB Sydney, later re-registered as 2BL, came on air on November 23, as the first sealed-set station, with a designated annual subscription fee of 10 shillings.)

Bridging the Pacific

The *SMH* article went on to say that amateur operators Charles Maclurcan and Jack Davis were planning to travel to America aboard the *RMS Tahiti*, on which would be installed short-wave equipment similar to what had been used in the tests from Strathfield. A detailed log would be kept of the range achieved throughout the voyage, for contacts back to Australia and onwards to America.

Why Jack Davis? It would appear that he was a young and progressive engineer and a keen amateur, as well as being an employee of AWA, with its links to Marconi, UK. As such, he would be well qualified to observe the performance of the conventional Marconi marine equipment with which the *Tahiti* was fitted.

Equally, he could evaluate the comparative peformance of Maclurcan's high frequency technology, on which Marconi/AWA's proposed 'Beam Wireless' system was to be based. (See 'Australian Radio Communication Services' by L.A. Hooke, in the *Complete Proceedings of the World Radio Convention*, Sydney, April 1938). It would seem that some contemporary amateurs had had reservations about low-power shortwave transmission tests, even to questioning whether a valve would oscillate reliably if the input power was as low as had been reported.

Maclurcan's characteristic answer was to set up a practical demonstration at his Strathfield home, and invite members of the Kuringai Radio Club to be present and monitor all readings. I quote (*Wireless Weekly* 12/10/23):

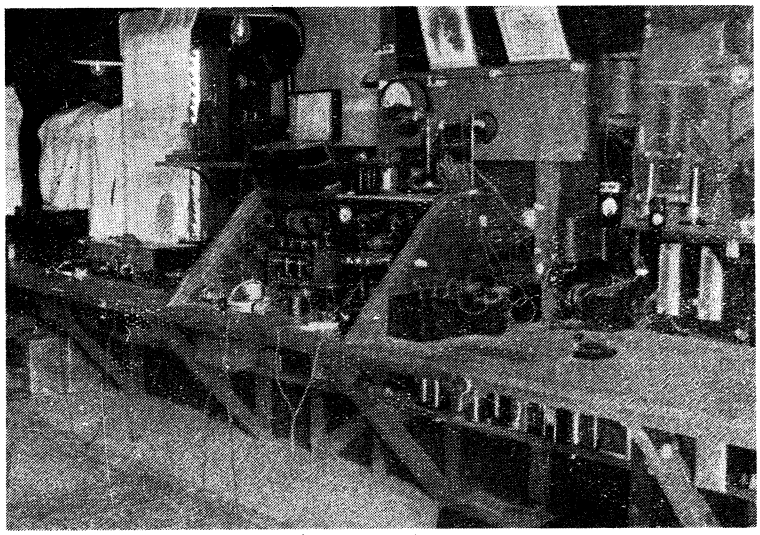

Fig.6: The wireless room at 2CM, Strathfield in 1923. Central is the transmitter normally used for the regular Sunday Night concerts. Set up on 388 metres, it provided an excellent signal, even though of modest power.

The power input was regulated by the filament rheostat of the Kenotron rectifier valves. The measuring instruments used were a Weston volt ammeter, model 280, and a Paul unipivot galvanometer with thermocouple, both of which had been certified correct within 1% by Mr E. Joseph.

The President of the Kuringai Club, Mr E. Wilson, manipulated the oscillating wavemeter which was used to make sure that the transmitter was still functional. Other members of the Club recorded and checked the meter readings.

Beginning at 3.5V and 4.2mA (.0147W) the input was reduced progressively to 0.4V and 0.8mA (0.00032W) at which point *the valves were still oscillating strongly. All members present showed their good faith by signing Mr Maclurcan's log.*

As a valve man from way back, I must take off my provervial hat to anyone who manages to operate a self-excited oscillator with an HT supply voltage of 0.4V. On the other hand, I am conscious that, as described, the operating conditions are ambiguous, as it often was with directly heated valves. An HT of 0.4 volts in respect to what?

If referenced to the negative end of the filament, the plate would itself be negative with respect to most of the emissive surface — a most unpromising situation. On the other hand, if referenced to the positive end, the plate voltage would effectively be 2.4, 4.4, or 6.4V with respect to the negative end, depending on the filament supply. With AC on the filament, the situation would be different again.

Official recognition

This reservation aside, it is evident that Charles Maclurcan's approach to wireless/radio technology was both informed and methodical. In the early 1920's, when expertise in the subject was very thin on the ground, it is not surprising that the Authorities should acknowledge his standing in the industry.

So it was that the July 1922 issue of *The Australian Wireless Review* reported the second of the special roles accorded to Charles Maclurcan by the Federal Authorities. With NSW Radio Inspector Crawford unable to keep up with the growth of the amateur movement in his area, Charles Maclurcan was appointed an Honorary Inspector, along with H.E. Stowe, E.B. Crocker and J.W. Robinson. In particular, wavelength/frequency measurements made through 2CM would be accepted as accurate and official.

In the next issue (August 1922) an unnamed — but apparently impatient — staff writer stated that sufficient amateur broadcasters had appeared on the air to provide and operate a formal roster for two to three hours of voluntary broadcasting every night of the week in the Sydney area.

We don't need to wait for the Government to make up its mind, he suggested...

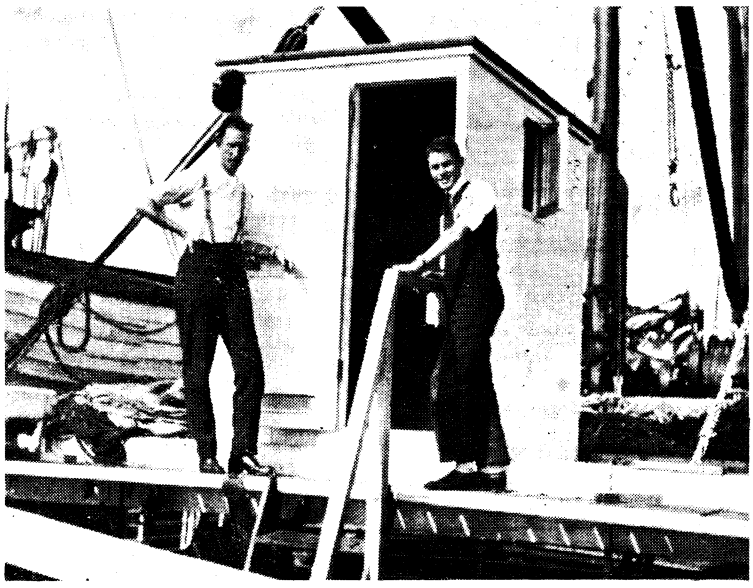

Fig.7: Charles Maclurcan (left) and Jack Davis and their bolt-on 'ham shack' on the stern of the RMS Tahiti. At sea, vibration proved to be a serious problem.

He went on to suggest that 2CM's existing Sunday evening broadcasts should be central to the proposed roster, kept clear of interference from other stations and regarded as an example of reliability, signal strength and presentation.

In drawing up the roster, precedence should be given to stations which could offer a powerful, well modulated signal. Other aspiring amateur broadcasters should seek the guidance of their more successful peers and pursue their experiments at least 40 metres away on the dial, to minimise the risk of interfering with any rostered broadcast.

Wireless every evening

Elsewhere in the same issue, the magazine listed a dozen amateur broadcasters or groups in the Sydney area which were, indeed, working out a provisional schedule, each contributing 30-minute sessions extending to about three hours each evening. They were identified as:

2GB	405m	Mr Marks, Rose Bay
2JM	365m	Mr Marsden, Edgecliffe
2CM	380m	Mr Maclurcan, Strathfield
2DS	375m	Mr Jack Davis, Vaucluse
2BB	350m	Mr Crockett, Marrickville
2LI	410m	Radio College
2LX	200m	Burwood Radio Club
2KC	415m	Mr Fry, Croydon
2WV	410m	Burgin Electric Co
2UW	350m	Mr Sandel, Manly
2WC	250m	Mr Morey
2ZG	380m	Mr McIntosh, Lane Cove

The magazine was seeking similar information about potential amateur broadcasters in Queensland, Western Australia and New Zealand. All told, according to the *Macquarie Book of Events*, there were some 200 amateur radio stations in Australia at the time.

While the amateurs certainly helped rally a basic but keen group of wireless listeners, their efforts were eclipsed when official broadcast stations began to appear on air from November 1923 onwards. By present-day standards, the new public broadcasters were quite primitive but, with commercial backing, professional — even if immature — staff and extended schedules, they soon dominated the scene.

With the emergence of public broadcasting, it was perhaps inevitable that the licensing authorities worldwide should jointly ban the transmission of music by amateur stations, confining their role to experimentation and communication within their own ranks, by means of speech, tone or code. It was this move which Maclurcan had foreseen.

Maclurcan and Davis

In its issue dated February 22, 1924, *Wireless Weekly* mentioned the 'farewell transmission' from 2CM on the previous Sunday evening — this was a few days before Maclurcan's departure on the projected voyage to America. The reporter had obviously been amused by his send-up of the market reports which 2BL and 2FC had apparently begun broadcasting, with much gravity. Said Maclurcan:

Sussex St remained stationary. I'm very

glad to hear it, because last time I was down that way it was moving round in circles. I'd been to a dinner — but I'll spare you the details.

Treacle was scarce, owing to adverse reports from the Great Cobar treacle mine. But a fresh vein is expected to show up shortly. Also the miners are complaining that they are insufficiently paid — but they're on a sweet thing, already!

Onions were greatly affected. This is an affecting fruit any- way. I've been so affected, at times, by an onion that I finally burst out sobbing!

With Jack Davis, Maclurcan sailed on the *Tahiti* on February 28, 1924, the latter leaving behind a technical article for *Wireless Weekly* published in the February 29 issue: 'How to Keep Below 10 Watts'. Based on a simple self-excited oscillator, the author explained how to optimise the aerial feed current as shown on a thermocoupled meter, while conserving plate current and staying within the 10-watt limit imposed by the licence.

On board the *Tahiti*, the amateur wireless gear was installed in what looked rather like a small garden shed bolted to the after deck, with an aerial and counterpoise strung to the mast. Officially, it would operate under the callsign 2DCM. What the operators didn't anticipate was that, at sea, the 'shack' and its contents would vibrate in resonance with the ship's propulsion system!

Showdown at sea

Testing began with the ship's departure from Sydney, but was interrupted shortly after by a burned-out generator and a number of failed valves, presumably due in part to rough seas and severe vibration. Replacements were obtained in New Zealand but, in the meantime, contacts of up to 2000 miles had been made using a standby 1.5W transmitter.

An Australian amateur and WIA Vice President, F. Basil Cooke, undertook to coordinate the on-shore monitoring. But he faced frustrations of his own with fellow amateurs, who interfered with the contacts — unconcerned by, or unaware of, the *Tahiti* research project.

An interesting sidelight was that another Australian wireless amateur, 2JM, helped keep the schedules spot on time by transmitting time signals, obtained from a Mr James Nangle's private observatory — a stellar amateur!

In the interview with *People* magazine, quoted in Part 1, Charles Maclurcan confessed that they had not been particularly welcome aboard the *Tahiti*. 'Professionals and amateurs don't love each other much', he commented!

As it turned out, when the ship was 700 miles from Australia, the ship's radio lost contact with Sydney — but Maclurcan and Davis kept right on transmitting and receiving each night. They were still in contact when the ship reached San Francisco, which that city's newspapers described as little short of colossal.

On the return journey, the Mayor of San Francisco, who was on board, wanted to send a sheaf of telegrams back to his city. The ship's own radio was out of range, and the professional operator had to swallow his pride and seek Maclurcan's assistance.

Back in Sydney, Charles Maclurcan received a congratulatory letter from Ernest Fisk. It, together with his log and other related papers, are on file at the NSW State ('Mitchell') library. I understand that Basil Cooke's log is filed with them, replete with references in the vernacular to local amateurs who created unwarranted interference during the tests!

(One of Maclurcan's many receivers is stored for safe keeping at Sydney's Power House museum, along with a scrap book. They are not currently on display.)

As it turned out, the *Tahiti* experiment demonstrated to amateurs on both sides of the Pacific that two-way contacts on shortwave, using modest power, were entirely practical. They also shed further light on the shortwave 'skip' effect — a phenomenon which Maclurcan and other amateurs worldwide continued to observe. In the *People* profile he is quoted as saying:

"By appointing official checkers all over the world, we verified this peculiar fact."

Radio magazine (August 15, 1928) made the point that Maclurcan had also shown the way to working Britain and South Africa on 20 metres. It was now up to his fellow Australian amateurs, he had said, to make better use of the band instead of leaving it to 'sleep so peacefully'. Ironically, he was to vacate the scene himself within a couple of years. 6: The wireless room at 2CM, Strathfield in 1923. Central is the transmitter normally used for the regular Sunday Night concerts. Set up on 388 metres, it provided an excellent signal, even though of modest power.At the time, however, Maclurcan was able to express his opinions through more than his own amateur station and the technical press.

Curiously, for a fee of 100 guineas ($220) he prepared a set of 100 cigarette cards for W.H. and O. Wills, each featuring a technical snippet about wireless. As

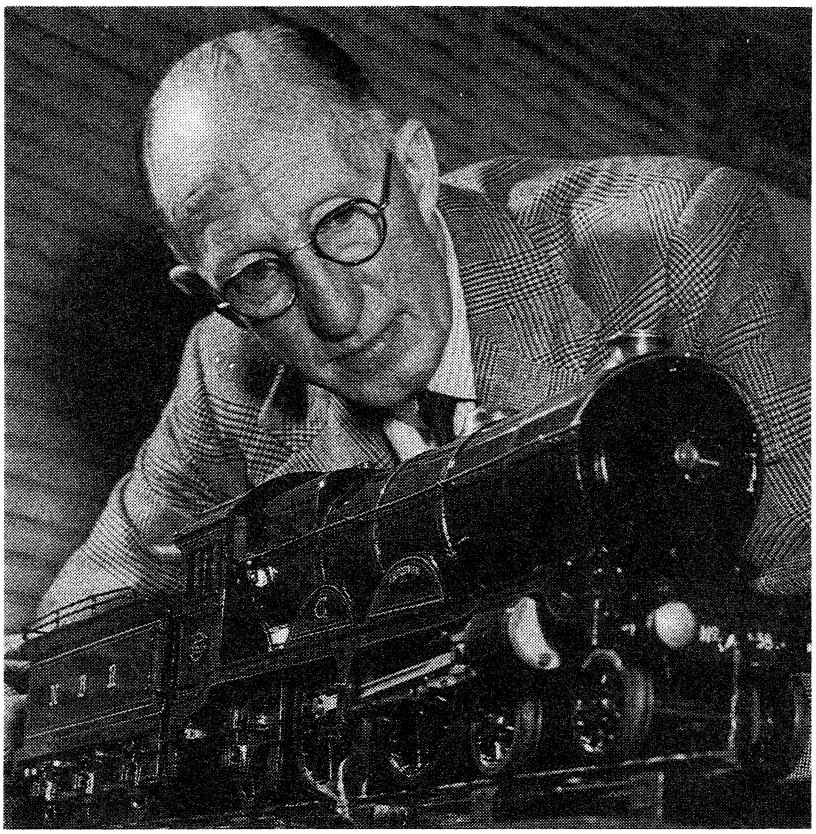

Fig.8: A retired Charles Maclurcan looks back at one of the magnificent models he built in his younger days — a live steam loco. Amongst his other projects was an impressive radio controlled model of the battleship 'Lord Nelson'.

would have been the case in those days of undisputed puffing, they would have been perused, saved and swapped to obtain the full set.

In 1926, his personal news value in the community prompted a Sydney newspaper to commission him to prepare a full page of wireless news once a week. Many journalists were said to have envied his fee of sixpence a line... Apart from technicalities and station notes, the feature exposed him to countless ill-informed, prejudiced and even superstitious readers' letters, inviting characteristically whimsical responses.

Back to business

In the late 1920's, with his mother approaching retirement, Charles Maclurcan found himself progressively more involved in the operation of the Wentworth hotel, with less time to devote to amateur radio. The crunch came in 1930, when he had little choice but to divert his full time to business interests, in particular his family heritage, the Wentworth. He gave up 2CM and sold his equipment to a Newcastle buyer, who used it as the basis for a new commercial station. It would appear, however, that he retained a formal link with the industry by membership of the IRE Aust. (Institution of Radio Engineers, Australia).

While the Wentworth Hotel had been a popular — and profitable — rendezvous, it was not a good place to stay around 1930 because of blasting and other noise associated with construction of the Sydney Harbour Bridge and the road, rail and tramway access. The Hotel's one-pound ($2) shares had slumped in value to three shillings (30c), and it was facing ultimate bankruptcy.

Rising to the challenge, Charles Maclurcan addressed himself to a task which dominated the next 15 years of his life, working up to 18 hours a day and spending countless nights in a room at the hotel rather than going home.

In an operation which was arguably his greatest achievement (*People* magazine), Maclurcan turned his family's fortunes around to the point where, in 1937, he was able to envisage taking on a loan to cover the addition of 50 new bedrooms on two extra floors.

The bank agreed, on the condition that he undertake to continue as the Managing Director. The extensions were built and the shares climbed to five pounds ($10). But the effort had cost Charles Maclurcan his robust health and, by arrangement, Qantas Empire Airways acquired a controlling interest in the Hotel, to serve as their Sydney Headquarters and for the convenience of their stop-over passengers. But that's another story.

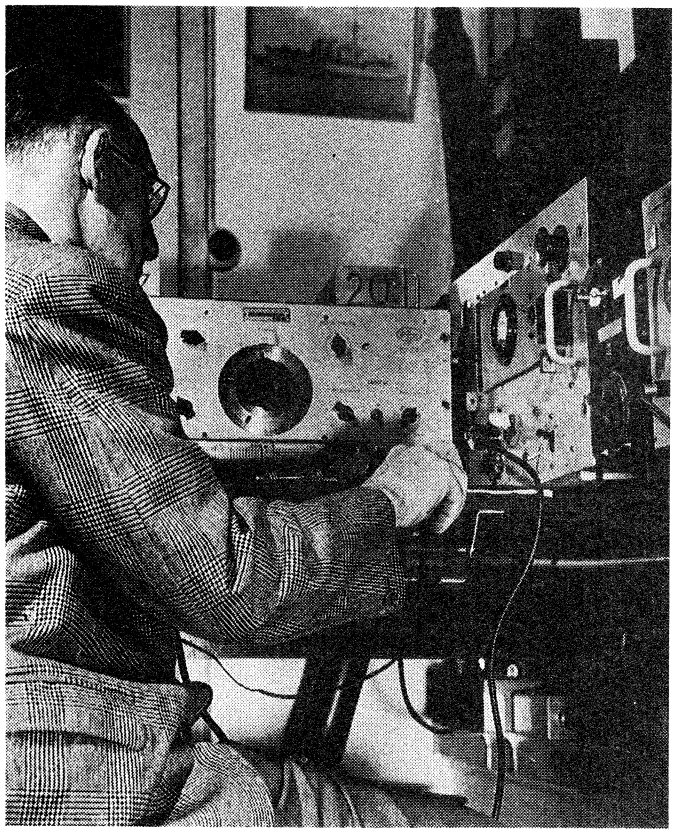

Fig.9: Retired, but not quite able to 'give the game away' — Maclurcan with an array of post WW2 equipment, surmounted by a photograph of his friend's ship on the Barrier Reef.

Charles Maclurcan, the businessman, had retired but the career of Charles Maclurcan, the amateur, was not quite finished. I was told by his sons that, around 1947, a friend had taken over a war surplus small ship to transport tourists to and around the Barrier Reef. At Maclurcan's insistence, he also purchased two Army 109 ex-disposals transceivers, which were modified for use on the amateur bands. One ended up on the ship, the other in the Maclurcan home.

Charles Maclurcan suffered a serious heart attack in 1951 but fellow amateurs, including the late Don B. Knock, sought to convince him that old amateurs are like old soldiers: they never die, even though they may have sold up their gear 20 years before!

People magazine carried a picture of an ageing Charles Maclurcan surrounded by an amateur 'rig' assembled from war-disposals modules. On the wall behind him is a great-circle map showing the compass bearings to major centres throughout the world. How much he used it is not stated, but the answer would appear to be 'not much'. Chatting with Pierce Healy, *EA*'s former amateur radio correspondent, I reckoned that, if anyone would have been aware of Charles Maclurcan on air, it would have been Pierce — particularly as they had both served as Presidents of the WIA.

Pierce said he had met Charles socially on two or three occasions and had been visiting Victoria during his own presidential year, when Charles Maclurcan's death was announced. But he could not remember contacting him or hearing him on air. Be that as it may, *People* magazine's last word on the subject was that he had ultimately found himself with 'a magnificent 80-20-10-6 metre transmitter in his home at Neutral Bay' (Sydney). But at the time of the interview, he was all set for a trip to Europe with his wife and radio was not a priority. As he told an old friend, he might be able to "build up to the pace again", but "for now, I'm really a retired gentleman".

"Correction. I'm putting on airs. I'm a retired bloke!"

Which brings me to the third distinction conferred on Charles Maclurcan by the Federal Administration. On his death in 1957, they set his callsign aside as unique to Australia's most notable wireless pioneer — never to be re-issued.

FOOTNOTE: With the material supplied by Mr Robert Maclurcan for use in this article came a tape, from the community FM radio station in Orange NSW. It carried a program of light classics, hosted by Bob Maclurcan, who had previously presented to the station a photo montage as a reminder of his pioneer father. The callsign: 2CME! But while Charles' son has done the occasional broadcast on FM, his grandson Richard is preoccupied with — computers!) ❖