

# *The* **BROADCASTER**



Newsletter of the Broadcasting Division

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EARLY BROADCAST RECEIVER

The Broadcaster is the in-house newsletter of the Broadcasting Division and is published three times a year to inform and recognise the people who make up this organisation.

Articles appearing in The Broadcaster do not necessarily reflect the views of the management of Telecom Australia.

Written and photographic contributions are welcome. All material should bear the contributor's name and location and be directed to:

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In 1939, radio magazines in Europe, United States and Australia were giving considerable coverage to the concept of a Radio Home in which all new houses would be prewired, at the same time that the electric light cables were being installed, to give public radio in every room.

In the United States, display homes were erected by builders, and they were great drawcards. Hundreds of visitors inspected the homes every weekend.

It was considered by those promoting the concept that technically radio had reached a peak of perfection, and programs should be enjoyed by every member of the family at their leisure without having to assemble in one room. It was also thought that it would boost sales of radio sets, speakers and other products.

Whilst there was evidence that the scheme was being favourably received by the public, the Second World War ensured its early termination.

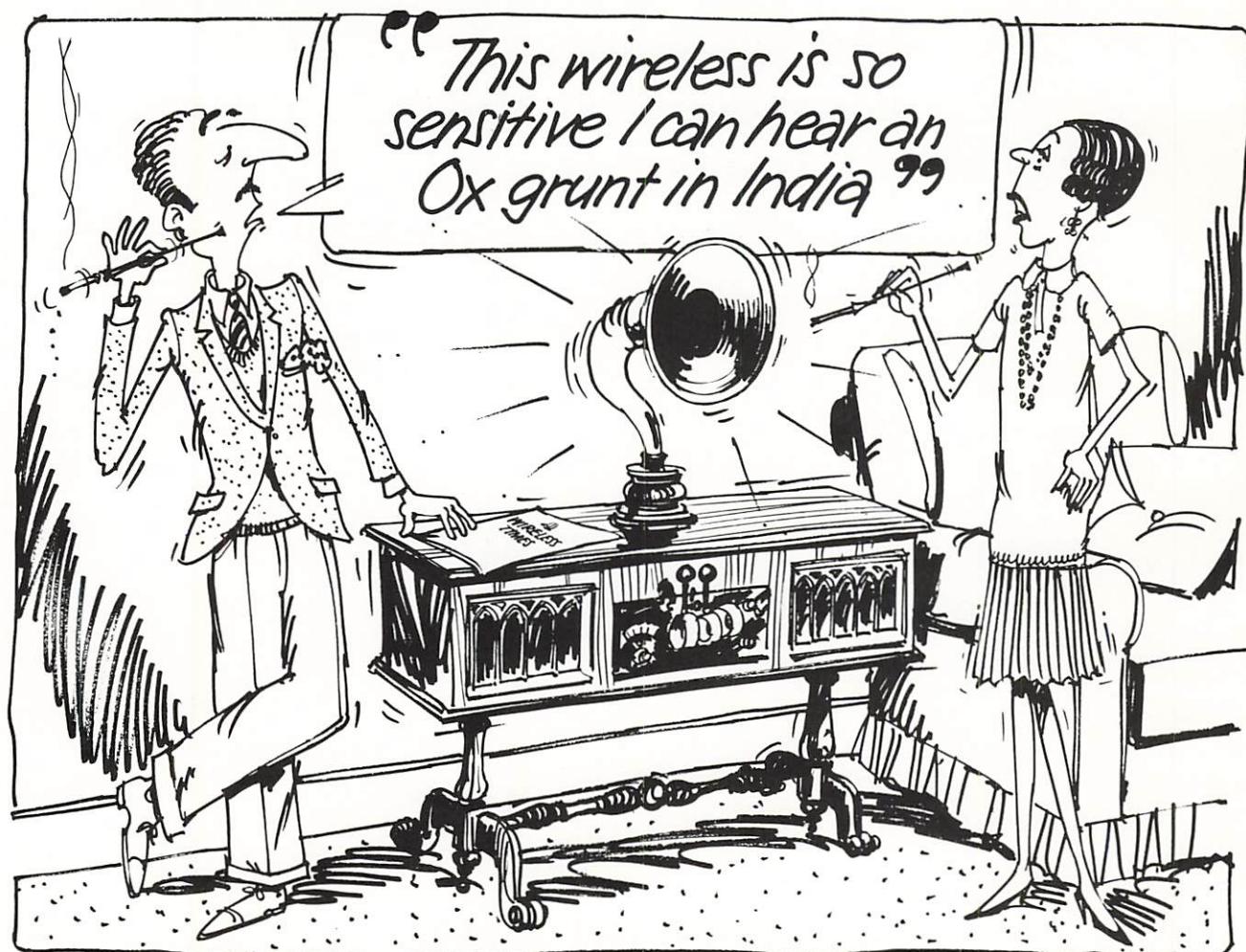
The Radio Home scheme has recently been revived by manufacturers using modern technology, and typical modern installations allow for selection of audio and video tapes, records, compact discs, preset AM and FM broadcasting stations and also television programs by using hand held remote control devices.

JACK ROSS,  
Editor.

*Front Cover: Battery receiver with basket weave coils, 1926.*

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Leon Sebire.

### FROM THE DIRECTOR'S DESK

In the mid 1930's, my father spent almost a full year's income on our first wireless set. Having arrived by carrier, the handsome walnut finished 'console' sat in the corner of the parlour pending commissioning. Some days later, father, finishing work at an unprecedented early hour, took the horse to the bush paddock and returned with two slender sapling poles, each about 50 feet long. These he installed to support a wire aerial about 200 feet long on a bearing pointing towards Melbourne. A length of water pipe was driven into the dry cracked earth outside the parlour window and aerial, earth and battery connections were quickly effected. Excitedly, our large family watched each step while mother constantly exhorted father to "be careful you don't blow the valves, dad".

At last the wireless was switched on, the volume control advanced and the dial swept from end to end. A very faint signal was heard at only one position on the dial. Had indeed a valve been blown? Father sat and thought for some time. Eventually he pronounced that the problem might be an inadequate "earth". We rushed to the dam with kerosine tin buckets and drew muddy water which we diligently poured around the earth stake.

Little by little the volume rose until the control had to be backed off. A subsequent sweep of the dial revealed at least four stations, all of adequate volume. We were spellbound.

Some 10 months later when the 'B' batteries were exhausted, the wireless was to remain silent for at least a year while father saved for replacement batteries. The wait seemed interminable because by now we had experienced the power of this new medium.

To my generation, the radio provided significant proportion of our education. Almost all of my knowledge of the world outside our little country environment and my ambition to pursue a career in a technical discipline came from that source.

I can say with certainty that I would not be writing this column from this desk had it not been for the sacrifices made by my parents in purchasing that 1935 Airplayer 5 valve battery wireless.

LEON SEBIRE

### STATION ROLL CALL

#### ABLV4 MT. TASSIE

Station ABLV4 began transmission on 30 September 1963 serving the La Trobe Valley and now with the aid of four translators, serves a number of populated areas in Gippsland.

Situated approximately halfway between Traralgon and Yarram, Mt. Tassie is surrounded by a mixture of small farms, natural reserves and planted forests of pine and native hardwood. The La Trobe Valley is one of Australia's most productive river valleys. South of the La Trobe River, large deposits of brown coal have been developed as a major source of Victoria's electricity supply. The coal reserves exceed 17 000 million tonnes and the seams can be worked easily by open-cut methods.

Power stations in the valley produce nine tenths of the State's electricity. The massive chimneys of Loy Yang, one of the largest power stations in Australia, are clearly visible from the TV station site. On a clear day, Wilson's Promontory, the southern most point of the Australian mainland, can also be seen. The station site is 742 metres above sea level.

Channel 4 has parallel operated NEC type CPCL-141A transmitters originally 10 kW sync power, but reduced to 8.5 kW at the time of conversion to colour. The horizontally polarised antenna system mounted on a 105 m tower comprises COEL TFO-16FS panels fed by a 3 1/8 inch styroflex cable.

The station is also the site for an ABC-FM stereo service using an NEC transmitter on 107.1 MHz. The service was commissioned during June 1983.

Emergency power facilities include a Dorman NE engine alternator set.

The staff are uniformly scattered between nearby towns, Morwell, Yarram and Traralgon, and among the staff are several Amateur Radio operators, computer enthusiasts, a chess player, and a hang-glider pilot.

ALEXANDER NAGY

#### 3MT OMEO

Station 3MT Omeo was commissioned on 18 April 1976 and is located at Tongio Gap near Omeo in the Great Dividing Range of eastern Victoria. The area is heavily timbered and scored by deep valleys and gorges through which the Mitta Mitta River flows. The station is not far from Mt. Bogong (1986 m) and Mt. Feathertop (1922 m), the highest points in the Victorian Alps and also Mt. Kosciusko (2228 m), the highest peak in Australia. Winter snows can remain on parts of Mt. Bogong until November. During spring, with the melting of the snow the country transforms into a wildflower wonderland.

The facilities include two STC 1000 watt transmitters combined in parallel to provide 2000 watts into the antenna. The transmitters are forced air cooled and use power amplifier tube type 5/500A. High tension is supplied from a silicon rectifier system. The equipment is installed in a prefabricated type building.

Operating frequency is 720 kHz and the service area covers a number of towns and settlements including Omeo, Benambra, Swift's Creek and Ensay.

The antenna system is directional comprising two guyed lattice steel masts each 108 m in height. They were manufactured by A.C. Miers and erected by the Victorian Radio Linestaff. The transmitter output is fed to the antenna via a 200 ohm open wire coaxial transmission line. An extensive copper radial earth wire system was provided to improve radiation efficiency.

The station electricity supply is normally provided by the SEC but a three cylinder Lister engine, driving a 15 kVA generator, provides emergency power when required. The area is prone to severe electrical storms which have caused equipment failures on several occasions.

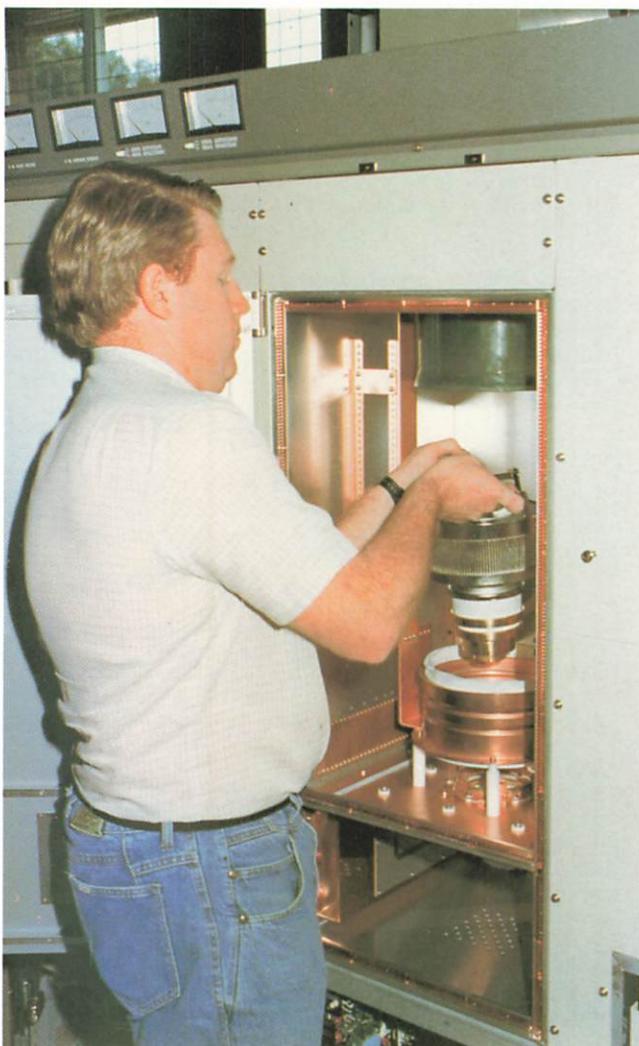
The station is maintained, in the first instance, by the local Telecom staff under guidance from staff at Mt. Tassie TV Station, the regional maintenance centre of the Melbourne and South East Broadcasting District.

DOUG McARTHUR

## REPLACEMENT ABW2 TRANSMITTER

The ABW2 Marconi transmitters installed at Bickley, Perth on 7 May 1960 were recently taken out of service and replaced by modern, more efficient solid state NEC equipment.

The Marconi BD 371 A vision and BD 325 C sound transmitters were similar to units originally installed at some other capital cities and at the time of installation were state-of-the-art equipment. Although subjected to some changes over the years including conversion from black and white to



Alf Blackley inserting tube into cavity of new Channel 2 transmitter.

colour transmission in 1974, the equipment provided reliable service for almost 30 years.

The NEC-1400 VHF transmitter is an IF modulation type and employs only one tube. The tetrode tube type 8F76R is used in the power amplifier stage. It is forced air cooled and operates as a grounded grid type linear amplifier. A strip line broadband matching circuit formed on a printed circuit board is used as the input circuit.

The transmitter has a Mimic Panel furnished with light emitting diodes (LED's) to display the operating and fault conditions of the transmitter.

Two transmitters have been provided and connected as a pair so that they will automatically provide continuous transmission should one of the transmitters fail.

Six transmitters currently operate from the Bickley site, two each for the ABC and SBS TV services and one each for the ABC's 6JJJ youth radio station and the fine music service 6ABC-FM stereo.

DEREK PROSSER

## LIGHTNING DAMAGE TO 4QS

The 50th Anniversary year of the commissioning of 4QS Dalby certainly went off with a bang. The station commenced transmission on 17 October, 1939 and was the third National Regional station to go to air in Queensland. In addition to a program from the ABC Toowoomba studio in which Doug Sanderson participated to mark fifty years of operation, the heavens had opened up earlier in the year and during a violent thunderstorm - all too frequent in the area - the 219 m high radiator received a direct lightning strike which severely damaged one of the two aircraft warning lights at the top of the mast.



Damaged mast lamp fitting.

The mast which sticks up from the flat plains of the area like a monstrous steel finger pointing to the sky has had its fair share of lightning strikes over the years. Charred walls and burnt out components in the coupling hut and in the transmitter hall have borne witness to damage on numerous occasions. At one stage the cardboard scale face plate of the line current meter in the transmitter had to be replaced with a metal face plate because the paper face plate frequently turned to carbon during the stormy season. On another occasion during a severe storm, lightning travelled down the mast, down the coaxial copper tube transmission line into the tank circuit of the transmitter and then leapt to earthed metal in the ceiling a metre or so above the transmitter. For years the punctured hole in the ceiling remained for all to see.

MARK CURRY and WAYNE TRAPP

## THE GREEN MACHINE

In some installation projects, staff work under extreme pressure. Transmitter difficulties are often easily handled but power plant and weather problems can be the last straw. The Knights Hill staff know this only too well.

The situation was that two additional UHF commercial TV transmitters installed under the Aggregation/Equalisation Plan, against all the odds, were transmitting from Knights Hill on schedule and carrying program. This was despite a 14 hour period of total no-power when fitting of a new power board overran its estimated installation time. But then the installation of a second emergency diesel power plant to carry all the UHF services struck unforeseen snags, and to honour Telecom's commitment to the commercial services - in case of mains power fail - a large and weighty mobile standby diesel generator unit (soon dubbed the 'green machine') was hired and brought up. The fun started when the crane sent to unload this unit became bogged on-site in ground saturated by days of constant rain. When the low-loader transporting the diesel generator arrived, its first job was to tow the crane out! It was then found that the crane was unable to lift the 'green machine' off the low-loader. This problem being overcome by the crane driver using the support arms of the crane to raise the diesel generator sufficiently to allow the low-loader to be driven out from under. All this in driving rain and fog.

Bob Spears and Chris Seath, into their third night on the station with minimal sleep and little food, supervised all these operations and were very exhausted men before the night was through. Next problem was that the cables supplied for the diesel generator were too short. This was overcome by joining cables together for each of the phases, running them through the pumphouse by way of the fanlight and louvres, and suspending them from rods hanging from the lighting conduit. Everybody was thoroughly soaked by this time and I vividly remember passing the cables overhead through the louvres with water running down my arm. And I was inside in the dry!!

Three 150 watt outside lights had been procured and by their light in the atrocious weather conditions the cables were connected up. Then, some 10 minutes before the job was completed, the mains failed! The remaining work was finished virtually in the dark, the regular station diesel choosing that moment to refuse to auto start. Great relief was felt when the diesel generator fired up satisfactorily, allowing the UHF transmitters to be powered up again. Meanwhile, I had returned home for a brief respite as I had been selected to work the overnight shift, and on my return journey to the station I found the fog so thick that twice I had to stop the unheated Telecom vehicle and use a torch to see where I was positioned on the mountain road! I got back to the station just in time to join in a welcome cup of coffee. But, before I could get the cup to my lips the roar of the diesel died and we all piled outside again. The hired diesel lacked a battery charger and it appeared that low battery voltage had caused the solenoid to drop out. Another battery was hastily called into service and away the diesel went again. But not for long.

The next time we lost power it wasn't the diesel failing, but for some unknown reason it had dropped its breaker out. When this was reset comparative calm returned to the station, although normal mains power was not restored until about 0320 that morning.

What remained of the miserable night was an anticlimax as there was no further trouble, although the shifts remained ready to get the 'green machine' going should the mains power fail again.

KEN FROST

## YOUTH RADIO IN WA

Station 6JJJ began transmission in Perth on 29 October last year in the FM band. It is part of the network of ABC's Sydney Youth Radio Service 2JJJ-FM which began service in the FM band in July 1980. Prior to that, the station had operated in the MF band as 2JJ since January 1975, being the first ABC station to operate for 24 hours a day.

The service provides a diversity of youth programming with access to all genres of contemporary music, news and current affairs, drama, comedy, cultural affairs and forums for critical discussion of issues affecting young peoples.

The 6JJJ transmitter is an NEC 20 kW model using a single valve and cut back to provide 5 kW into the antenna on 99.3MHz. It is located at Bickley, the site for the ABC and SBS TV transmitters as well as the ABC-FM stereo service. 6JJJ shares the ABC-FM stereo antenna system using an RF Systems combiner.

Program for the service originates in Sydney and is sent to Perth via satellite delayed to come into line with local time and processed by the ABC's 'optimod' audio processor before being fed to the transmitter.

MIKE GARNER

## YOUTH RADIO IN VIC

After several months of uncertainty, the installation of a new FM transmitter at Mt Dandenong Victoria for the JJJ Youth Radio Network was finally given the "go ahead" in May 1989. By the end of May, the appropriate items had been delivered to the site, and three staff members from the Broadcasting Installation Service Centre commenced installation of the equipment, while local staff assisted with the installation of the program input equipment. The new transmitter was mounted next to the existing 20 kW ABC-FM transmitter. The 3-1/8" rigid line output feeder was then run via the basement to the combiner where the ABC-FM service and the new 3JJJ service were combined and then fed to the antenna. The installation proceeded without difficulty and by the end of June the manual work had been completed and the transmitter was ready for retuning and commissioning.

The transmitter output power was reduced to 4 kW to ensure the ERP did not exceed 10 kW.

The service was officially opened on Sunday 22 October, three months after completion of the installation.

ROBERT MEWS

## GOLF CHAMPION

Alan Hubbard, a Technician in the Northern Territory District, recently showed that Darwin is about to enter a new era in golf.

Not long ago he swept aside the best Darwin golfers to win the Darwin Golf Club Championships by three strokes. Alan has been playing the sport for twelve years and currently plays off a handicap of five.

Before joining the Broadcasting Branch in January 1985 as a trainee T.O., he represented the Territory at secondary school level for five years.

In 1983 he was selected in the all Australian team. This gave him the opportunity to gain experience in playing golf at top level. He played alongside such people as Craig Parry and Brett Ogle who are now in the world's top professional ranks.

Alan decided when leaving school that a career in electronics held a brighter future for him than playing golf against the world's best - who knows!

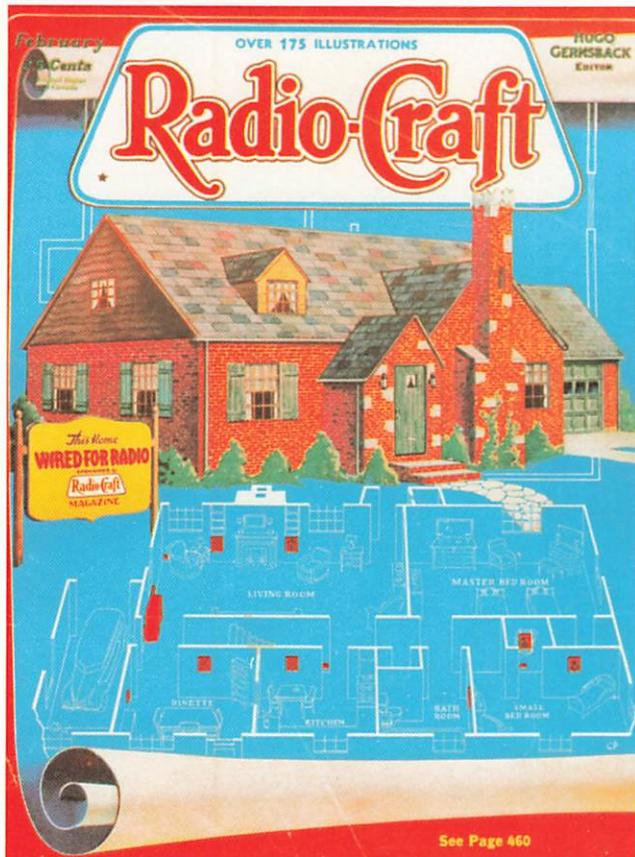
Next time you need a partner for that important match on the golf course, you know who to call.

RALPH DENISON

## RADIO AND TV IN EVERY ROOM

Technology today enables people in every room in a home to enjoy the benefits of colour TV, stereo AM and FM radio, video and high fidelity music systems. These facilities have the ability to make life richer and more exciting.

The borders between various separate units have been eliminated so that they can operate together and be controlled collectively. Various items or units communicate with each other through a data link. This means that it is possible to put together an integrated audio/video system on the basis of a person's particular ideas. The owner is not even restricted by a need for collective placement. The TV/video system can be put in the corner or part of the home and the music system in another. It will still function as one collectively controlled system.



Front cover Radio Craft magazine, February 1939.

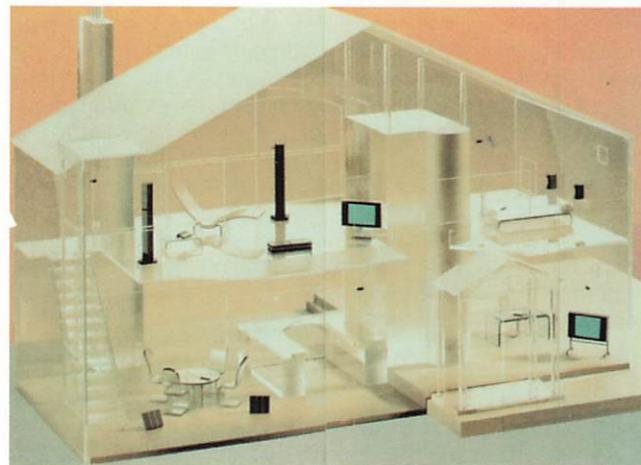
The forerunner to this modern facility was the Wired Home which had its beginning in the 1930's before the days of television and video tapes.

In order to prop up the radio manufacturing industry, Radio Craft, one of the leading radio magazines in the U.S.A. sponsored homes which were publicised as being WIRED FOR RADIO. With the co-operation of a home builder and several radio manufacturers, display homes were erected and open days held to show people the benefits of having 'an average American Family Home' wired to make the best possible use of broadcasting services.

The magazine and advertisements associated with the project pointed out how everyone concerned would benefit; how the entire system could be built at the time of construction; how the home owner could have radio in every room with remote control of the master radio; how the builder could use even a radio system as a powerful talking point for stimulating the sale of homes; how the radio manu-

facturers would thus have a vast new market opened for receivers, remote speakers, push button tuning switches, volume controls, wiring cables etc.; how manufacturers of such allied products as mercury contact light switches and electrical telechime paging systems could profitably tie in and finally, how the radio servicing industry would have an entirely new and lucrative maintenance field thrown into its lap.

The installation revolved around an RCA Victor high fidelity radio receiver and phonograph combination. In certain of the rooms, outlets were provided so that stations could be remotely tuned-in by plugging in a remote control device. The modern version of remote control is a 'wireless' device so no interconnecting cabling of units is necessary.



Modern home sound and picture system layout  
(Courtesy Bang and Olufsen).

Units available today—50 years down the track—are such that sound and picture systems work according to the same operating language. This means that the button which is used to fast forward a videotape, for example, is also used to fast forward an audio cassette in the music system.



State-of-the-art home entertainment equipment  
(Courtesy Bang and Olufsen)

With a hand held master control link unit, the owner has complete control of the facilities of the TV, the video unit and the music system—not just within the same room but also through walls.

JACK ROSS

## MARCONI SWITCHES ON LIGHTS BY RADIO

On 26 March 1930 while anchored at Genoa in the Mediterranean Sea, Guglielmo Marconi, one of the world's foremost radio pioneers, pressed a telegraph key on his yacht ELETTRA and operated apparatus in Sydney to switch on 2800 electric lights at the Electric and Radio Exhibition in the Sydney Town Hall.

Trials involving Marconi and Ernest Fisk of AWA the previous week had indicated the practicability of the exercise. However, ionospheric conditions were far from ideal at the time for a direct link to Sydney, so a series of relays and the beam wireless system were used.

A radio telephone link was set up and information conveyed to Marconi that everything was in readiness. At that time the Town Hall was dimly lit. When the Chairman of the Committee, Mr P.H. Pettyfor, advised Marconi to proceed, a signal was transmitted from the transmitter aboard the ELETTRA.

The signal was picked up by the Marconi station at Dorchester in England and relayed from there to the beam wireless station at Grimsby where it was transmitted and then received by the beam receiving station at Rockbank in Victoria. From Rockbank the signal was sent over the PMG land line system to the Town Hall, Sydney.

The signal on arrival at the Town Hall operated a relay which caused the electric lights to be switched on, signifying the official opening of the Red Seal scheme featured as portion of the exhibition.

Marconi never visited Australia, but the charisma of his name lent magic to any occasion. One historian reports that many of the witnesses at the Town Hall 'became intensely

emotional, sensing the presence of an invisible hand'.

The ELETTRA purchased by Marconi in 1920 was fitted out as a floating radio laboratory. For 17 years Marconi used it in making major contributions to radio science, particularly in the field of long distance transmissions.

After Marconi's death in 1937 the Italian government purchased the vessel and kept it as a museum piece. In 1944, it was hit and sunk in the port of Zara and subsequently parts of the hull were salvaged and erected on shore as a commemorative monument.

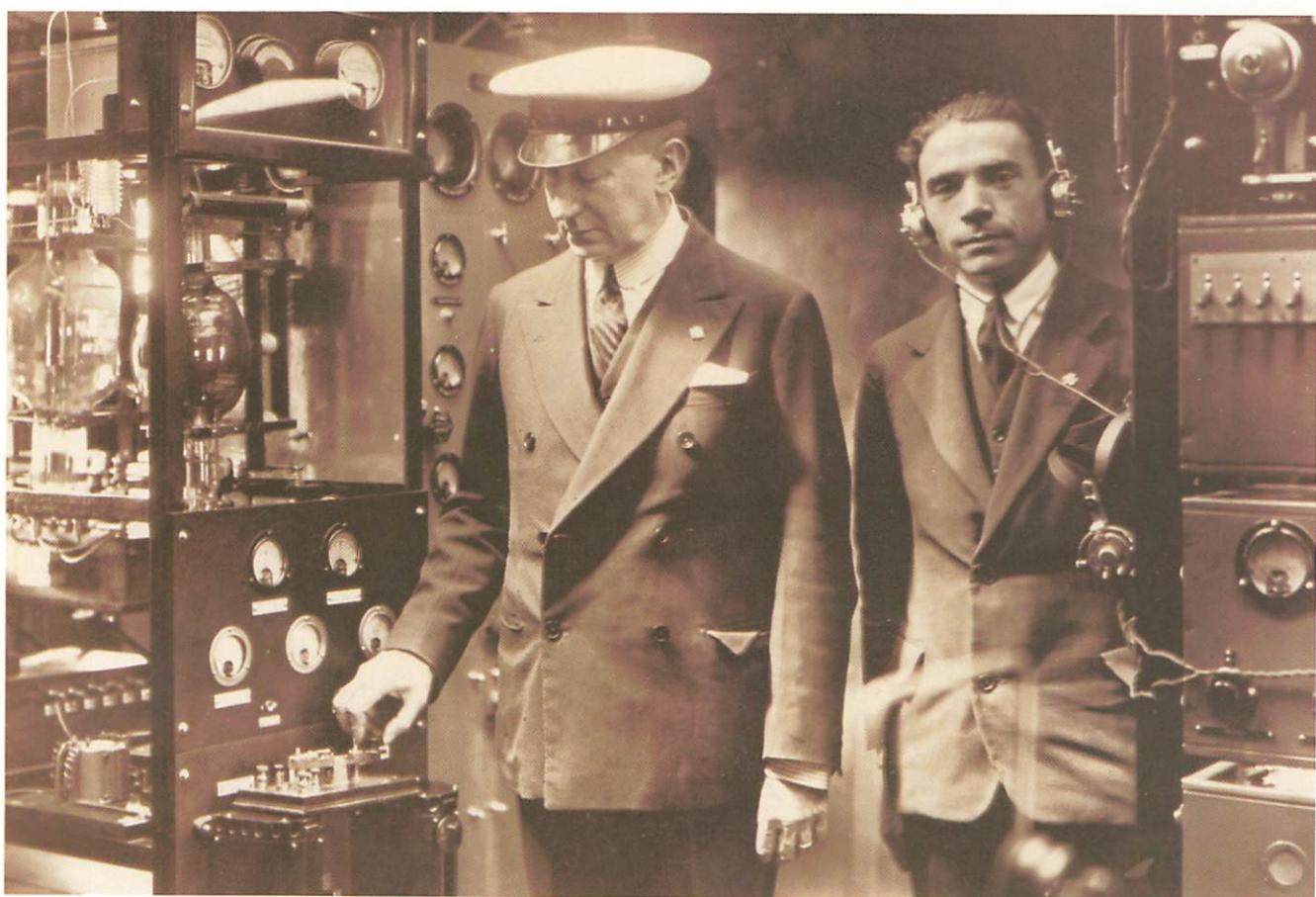


*Marconi's yacht ELETTRA  
(Courtesy The Marconi Co. Ltd.)*

On 12 October 1980, just 50 years after the original exercise, Marconi's daughter participated in a re-enactment of the 1930 event.

At 8.50 p.m. a signal was transmitted from the wreck of the ELETTRA at Bologna. The signal switched on lights on the Harbour Bridge, in the Opera House and triggered a fireworks display.

JACK ROSS



*Marconi pressing the key on board the ELETTRA  
(Courtesy The Marconi Co. Ltd.).*

## 4 RK GRACEMERE - CATTLE COUNTRY

The area in which 4RK is established, about 10 km out from Rockhampton has been the focal point of a large cattle industry from early settlement days. Gracemere was the centre of the Archer Bros., cattle station, established in 1855 even before Rockhampton was settled. The old homestead beside Gracemere Lagoon is still occupied and is only a short distance from the transmitter.

Station 4RK was the first regional station of the National Broadcasting Service to be established in Queensland. It was commissioned on 29 July 1931, using an STC 2 kW water cooled transmitter and flat top antenna. The transmitter was replaced by an AWA 2 kW unit in 1946 followed by an STC 10 kW model in 1954 and the current Nautel 10 kW solid state transmitter in 1988. The main antenna is a 128 m sectionalised radiator installed in 1954. The original flat top is now a standby.

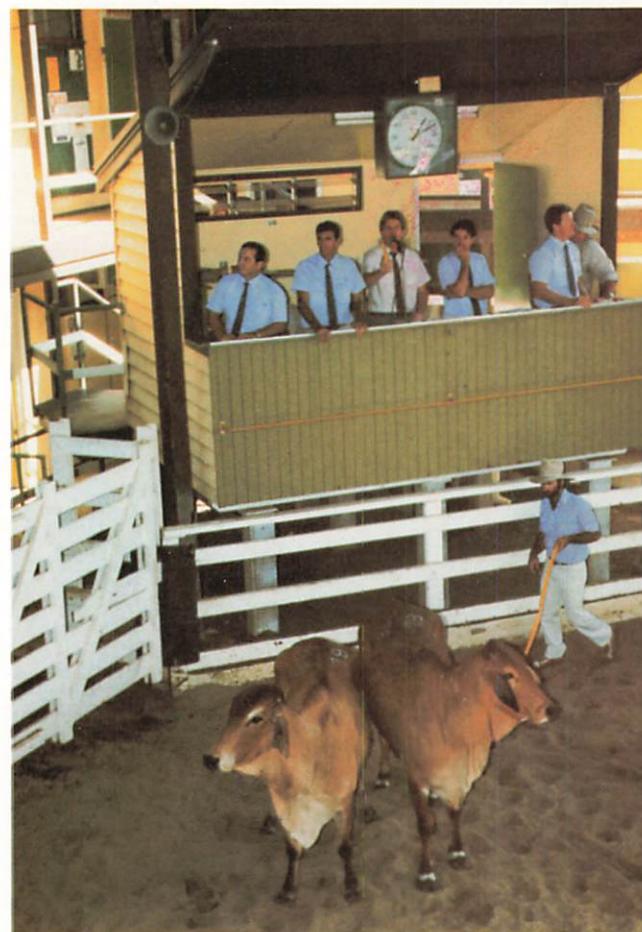


4RK station radiator.

Although the station was fully staffed for about 56 years with the OIC living in a house on the station site, it is now operated in an unattended mode.

In more recent years the cattle industry has received a major boost with the introduction of the Brahman. In 1986 it was reported in the media that cattle men filed into the Gracemere sale yards from all over Australia for the largest stud bull sale the world has witnessed. More than 200 studs from Queensland, New South Wales and South Australia entered thousands of hump backed Brahmans. During 1987-88 Gracemere sales yard handled 104,000 cattle.

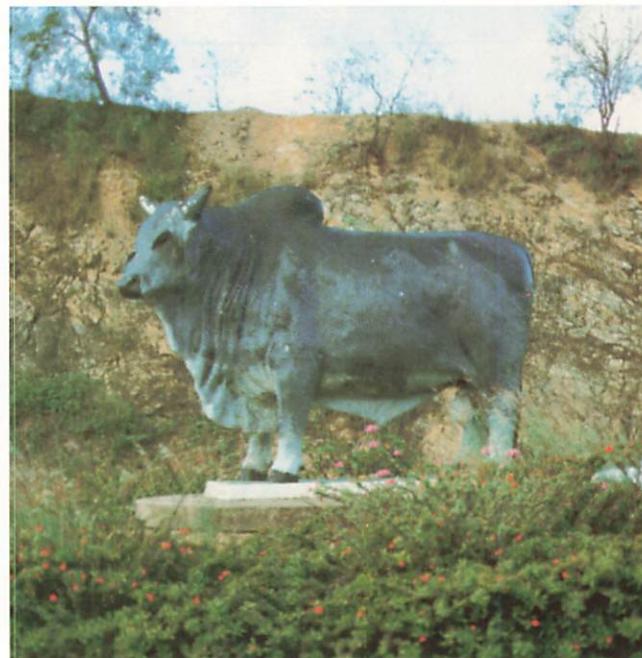
The Brahman - a descendant of the Zebu which roamed India for centuries - was brought to Australia in 1933. Its hardy, drought tolerant qualities has increased its popularity to an extent that it now outnumbers the 45 or so other Australian breeds. In the early years, the Brahman struggled against blind prejudice with breeders preferring the traditional British breeds but today it is estimated that 75 per cent of the Queensland cattle herd contains some Brahman blood.



Cattle auction in progress.

The rich Fitzroy district which 4RK serves is the home of three million beef cattle, the most densely populated cattle area in Australia. Rockhampton claims to be the cattle area of the nation and the traveller driving into Rockhampton from any direction will be greeted by a giant bull. On the Northern side a model Brahman stands on the nature strip. Other road entry points feature Braford and Santa Gertrudis breeds.

JEFF CIRSON



Roadside Brahman bull statue.

## OUR BROADCASTING PIONEERS

### SIR HARRY BROWN

Harry Percy Brown was the first Director-General, Posts and Telegraphs of the Postmaster General's Department. He had served with distinction in the British Post Office for 25 years before coming to Australia in January 1923 at the time when broadcasting was about to commence in this country.

Harry Brown was born at Hylton near Sunderland in England on 28 December 1878 and educated at Bede College, Sunderland and Durham College, Newcastle-on-Tyne. During his 25 years service in the British Post Office, he occupied many positions including that of Staff Engineer in the Engineer-in-Chief's office, London. As a telecommunications engineer, he was in the forefront of his profession. The Commonwealth Government invited him to come to Australia as technical adviser in relation to Post Office matters and in December 1923 he was appointed to



*Sir Harry Brown  
(Courtesy NSW Historical Section, Australia Post).*

the position of Secretary of the Postmaster General's Department. In 1934, his designation was changed to Director-General, Posts and Telegraphs.

Throughout his long association with the Department, he took a keen interest in the operation and development of broadcasting and has been considered by some observers as 'the father of the National Broadcasting Service'.

Since 1905, the Postmaster General had exclusive rights to issue wireless telegraphy licences, which included broadcasting, and when consideration was being given to the establishment of broadcasting stations, Brown built up a position of power and was closely involved in all discussions concerning broadcasting. He was insistent that a national broadcasting organisation be formed to co-ordinate all matters associated with broadcasting. He was equally insistent that the P.M.G. Department should regulate the technical aspects of broadcasting.

The idea of the dual system of A Class and B Class stations originated with him and was accepted by the Government of the day.

However, with separately owned A Class and B Class stations, broadcasting encountered many problems, particularly in relation to programs and service to country

areas. In 1927, the Government set up a Royal Commission to look into the future of broadcasting in Australia and following the Commission's Report, the Government appointed an Advisory Committee to assist the Postmaster General in implementing the proposals and to examine the implications. Harry Brown was appointed Chairman of the Committee. The Committee prepared a detailed scheme for the establishment of a National Broadcasting Service and extension of broadcasting generally throughout the Commonwealth. The scheme involved the amalgamation of all A Class stations to form the N.B.S. with the P.M.G. Department undertaking the provision and maintenance of the technical services of the transmitters, program circuits and studios, while the program service was to be let by tender to a company. The program company so formed was the Australian Broadcasting Company. Brown visited England in 1928 and was well briefed on the B.B.C. arrangement. He was keen to establish a system similar to the B.B.C. and when the Australian Broadcasting Company decided not to seek renewal of their program contract after June 1932, he drafted a Bill to replace the Company by a Commission modelled on the B.B.C. but leaving the B Class or commercial stations intact. After much debate following a change in government, the Australian Broadcasting Commission Act became law on 17 May, 1932.

Although the Commission made a number of approaches to take over the technical facilities, Brown vigorously resisted any change. So, the A.B.C. continued to deliver programs to the microphone and having the P.M.G. take them from there to the listeners of the nation. There was no change until 1964 when the A.B.C. became responsible for technical facilities at its radio studios.

Throughout his long association with broadcasting, Brown was a driving force in the expansion of the National Service. When he addressed the World Radio Convention in Sydney in 1938 organised by the Institution of Radio Engineers (Australia) during Australia's 150th Anniversary Celebrations, he reported that there were 23 National and 93 B Class stations serving more than one million licensed listeners.

Another of Brown's posts was with the Radio Research Board formed following a conference set up by the Council for Scientific and Industrial Research on 17 November, 1926. He was a member of the Conference and acted as Secretary for the first meeting of the Board held in his office in Melbourne on 27 June, 1927. He was a member of the Board up to his retirement and attended his last meeting in November 1939, his 39th meeting with the Board.

In September 1939 at the start of the Second World War, he visited Sydney to discuss with the Minister certain aspects in relation to the control of commercial radio broadcasting. When the Minister disclosed an intention of placing Sir Ernest Fisk of AWA in a position of authority in this area, Brown was appalled. He had a poor opinion of Fisk extending over many years. There was a heated discussion and he rose, collected his bowler hat and left the room. Next day he forwarded notice of his retirement to the Minister to be effective from some date in January, 1940.

Throughout his long career he was not without his detractors. Politicians were critical of some of his decisions and Smith's Weekly newspaper referred to him as "Horse Power Brown"—a play on his initials which was a recognition of his power and influence in the community. Others referred to him as "Pooh-Bah".

H.P. Brown already held the honour M.B.E. on his arrival in Australia, in 1934 he was awarded the C.M.G., and knighted in 1938.

Sir Harry passed away peacefully on 5 June, 1967 at age 88 in Sydney.

JACK ROSS



Crystal set, 1925.



Radiola 20 five valve TRF, 1925.



STC Radiogram, 1953.

## 70 YEARS OF DEVELOPMENT

When broadcasting commenced in the USA in 1920 the majority of radio sets first sold to the public were crystal sets which could be used with a vacuum tube amplifier. These were soon followed by sets consisting of a tuner, vacuum tube detector and amplifier. By the time Australian agents began to import radio equipment the receivers had reached a high level of sophistication.

Broadcasting officially started in Australia in 1923 and the radio craze quickly burst upon the nation. Manufacturers of radio equipment were found to be quite unprepared to meet the demand for home receivers. This left the way open for anybody to enter the manufacturing field.

They did in bewildering numbers all over Australia. It mattered not to these newcomers that they were openly infringing patents. The Australian public needed broadcast receivers and fly-by-night manufacturers including backyard amateurs were keen to reap a golden harvest, immune by very numbers from restraint by law.

Not all of these manufacturers of radio sets were of pirate blood. Some of them bargained for licences to use essential patents. Agents imported large numbers from Europe and the USA and radio dealers sprung up like mushrooms. In 1925 there were 150 licensed dealers in Adelaide alone.

Early receivers were prone to burst into oscillation causing interference with neighbouring receivers. The neutrodyne circuit solved the problem. This was basically a tuned radio frequency (TRF) amplifier which employed neutralisation. Neutrodyne receivers had stable characteristics, tuning dials could be logged when stations were first tuned in and they were relatively simple to operate. Any set carrying the name neutrodyne was certain of a large share of the sales market in the early 1920's.

Most early speakers were horn types and their design often left much to be desired from the aesthetic point of view. Some speaker manufacturers moved to remedy the situation. They dressed their products as elaborate bits of fancy furniture, styling with hand-carved solid hardwood, jigsaw cut fretwork plywood and steam pressed wooden grilles. In collaboration with cabinet manufacturers who made the cabinets for the electronics, the designers arrived at the concept of a matching cabinet and speaker. The most popular wood used was solid mahogany or teak with a flat stain finish.

About 1926 a few expert furniture manufacturers saw an opportunity to make cabinets which matched the Jacobean and Queen Anne furniture common in many of the upper class homes. Unfortunately the technical performance of the receiver incorporated in many of those costly furniture pieces was very poor indeed and those elaborate and costly designs had only a short life.

About 1930 phenolic plastics became available and were soon used in cabinet designs even though the only colour available was mottled brown or black. The big advantage of the plastic cabinet was that it gave free rein to the cabinet designer, not possible with wood. The wooden cabinet manufacturers soon took up the challenge and began using plywood to produce interesting curves and non-rectangular forms. The use of exotic wood veneers with elaborate inlay patterns soon became popular with the buying public.

The period between 1924 and about 1932 was a pioneering stage of growth with not a great deal in technological advancement, but the period 1932 to the outbreak of the war in 1939 was a period of great progress in development and sales.

In addition to radio shops, nearly all major department stores geared themselves up to stock this bulky but profitable merchandise. Radio set manufacturers were kept busy producing sufficient quantities to meet the demand. Each large store insisted on having its own brand name and the buyer soon became confused in trying to make a selection. Technical performance reached a peak about 1936 and to entice the buyer, many gimmicks became the order of the day. These included multi-coloured dials, magic eye, noise limiter, motorised press-button tuning, dual dynamic loudspeakers, automatic volume control, dual wave receivers, built-in record players, etc.

The reason for the popularity of the large floor console model receivers is not clear but several suggestions have been advanced. These include (1) a receiver was an expensive luxury and the buyer wanted a fair sized volume for the money, (2) a large volume was required to allow dissipation of the heat from the valves and components of mains powered sets and to accommodate large batteries for battery powered sets, (3) a large 12 inch (30cm) speaker gave superior performance and required a big baffle board, (4) announcements from a box with a certain solidarity of physical presence with width equal to that of a man's shoulders and speaker the size of a man's head created an atmosphere of authenticity. One suspects that people took the wireless medium, comparatively speaking, more seriously in those days.

About the mid 1930's with the widespread introduction of the superheterodyne circuit by all receiver manufacturers and the development of components of much smaller physical size than previously, opportunity existed for the production of receivers of the mantel or table type which was very much smaller than the console and allowed greater flexibility in home use. For example, the radio moved into the kitchen where the housewife could listen while she went about her normal chores in the kitchen. Mass production of the smaller sets resulted in a sharp drop in prices and hence greater sales.

In 1939 portable receivers using battery valves with 1.4 volt filaments became popular and ac-dc battery sets were selling in most radio shops. This was soon followed by the miniature receiver which weighed only a couple of kilograms and which was powered by readily replaceable dry batteries. Further attempts at miniaturisation resulted in a pocket radio imported from the USA with subminiature valves and very small components.

Although a number of large console receivers incorporating gramophone facilities were produced soon after the war the main market was with miniature plastic cased table receivers and portables. By 1960 the transistor was well entrenched and the number of receivers using valves declined at a rapid rate. Also, local manufacturers found it difficult to compete with the flood of cheap products from Japan and Hong Kong with a result that there are no longer large receiver manufacturing organisations in Australia.

In the early days of the home receiver the market looked for distinctive, different, personal-choice sales attractions but nowadays with an international north-south market underpinned by television and a conforming anonymity of style the conditions are poles apart. However, sound radio broadcasting, or steam radio as it is so frequently referred to by some broadcasters, is very much alive with plenty of technical progress lying ahead as witnessed by the rapid expansion of the number of frequency modulation stereo stations established throughout Australia in recent years and also the introduction of AM stereo.

At a time when people appeared to be wavering on the possible transfer of their loyalty to television, they fell under the spell of the transistor which sparked a revolution in receiver design. The ubiquitous 'tranny' is nowadays rarely absent from homes, cars, tractors, streets, sports-ground grandstands, countryside, beaches and rivers throughout the length and breadth of the nation. Some models are so compact that they can be carried in a purse or strapped on the wrist.

The interest of people in the principles of operation of their radio receivers is not as keen as it was in the earlier days of broadcasting. The authors of a book on Practical Radio published in 1927 summed up the position in those days as follows:

"A community which has few radio receivers may be regarded as unprogressive and of low intelligence. Community or family interest in the fundamentals of radio apparatus is an evidence of intellectual progress. The everyday communication of boys and girls, as well as men and women often includes a surprising amount of discussion of radio circuits and auxiliary radio equipment. They want to know how to build them and how to keep them in good working order."

How public interest has changed!

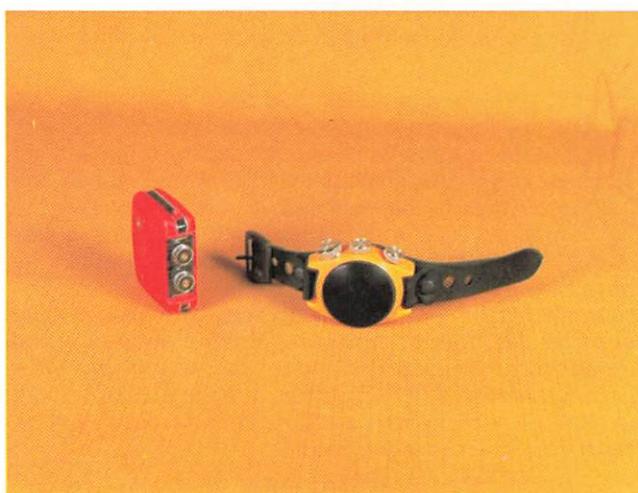
JACK ROSS



HMV seven valve bandspread wooden cabinet mantel receiver imported from New Zealand 1947.



Gladiola console, 1940.



Transistor receivers. Purse set (L) and wrist set.

### FRASERBURGH REVISITED

Following my retirement as Officer-in-Charge at the South East Broadcasting District in South Australia, I paid a nostalgic visit to my Scottish home town, Fraserburgh, which is situated some 64 km north of Aberdeen and was thrilled to come across an interesting item of historical importance.

The great Guglielmo Marconi, inventor of the first practical system of wireless telegraphy and considered by many to be the father of radio, made a number of visits to Fraserburgh in 1904 and later years. The reason for his visits to the area was in the establishment and operation of an experimental wireless telegraphy receiving station at Broadsea. The role of the station was to obtain further data associated with transatlantic experiments being conducted with the Poldhu transmitting station in Cornwall.



*Guglielmo Marconi  
(Courtesy The Marconi Co.Ltd).*

The Poldhu station had been operational since 1901 and was used in Marconi's successful transatlantic test in December of that year. The size of the Poldhu installation was gigantic compared with other stations previously built and played an important role in experimental work for many years.

By 1904 the Poldhu station had been substantially re-equipped and the magnetic detector had been developed to a high level of sensitivity and efficiency for receiving purposes. Further experimental studies were planned and as an alternative to the equipping of a boat to travel the Atlantic with specially installed receiving apparatus, it was decided instead to construct a receiving station within the British Isles but as far away from the Poldhu transmitter as possible so that the signals would travel by a shorter route but under the more difficult conditions because of signal propagation over land rather than the sea. In this way, Marconi reasoned that he could pursue the studies without the glare of publicity which would probably occur had he used a floating laboratory at the sea.

The Poldhu and Fraserburgh sites were about 880 km apart and the tests showed considerable promise, as it was found that reception as Fraserburgh with the magnetic

detector was possible using only 1 kW of transmitter power at Poldhu.

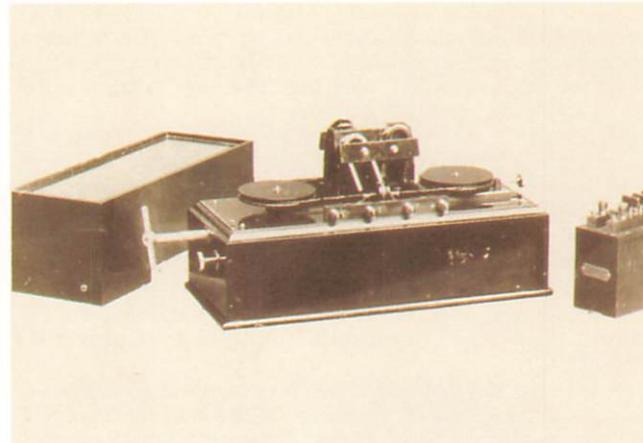
On 29 April, 1904 the Provost, Magistrates and Councillors of Fraserburgh honoured Marconi at an official dinner where his work was praised. The newspaper of the day commented:

"He won his way to fame by bringing a new source of power to humanity. When the honours of history are properly distributed, he will assuredly be judged to be known as great".

Marconi's name has been given to a street which runs through the site where the station was constructed.

The Fraserburgh Station was one of the earliest land based stations to employ the magnetic detector for receiving purposes. It was widely used on shipboard installations between about 1903 and 1912. The detector was more sensitive than the coherer and while less sensitive than a good crystal detector, its great reliability caused it to be generally preferred.

In the magnetic detector, an endless band consisting of a number of strands of insulated iron wires passed over two pulleys which were made to rotate by clockwork. Two horseshoe magnets were fixed near the band with similar poles adjacent, and at this point, where a large number of lines of force passed into the band, the latter passed



*Marconi's magnetic detector which employed the effect of HF oscillatory currents on the magnetic properties of soft iron (Courtesy The Marconi Co. Ltd).*

through a tube surrounded by two coils. The inner coil was connected with the aerial and earth wires and the outer coil with the telephone receiver.

As the iron band passed through the field of the permanent magnets, it became subject to a continuously changing magnetic cycle. The passage of oscillatory currents from the aerial through the inner coil surrounding the iron band was believed to reduce the hysteresis of the iron, and the sudden change in the magnetic state of the moving band which was caused by the arrival of a train of waves induced a current in the outer coil connected to the telephone receiver.

The magnetic detector used with Marconi equipment was patented by Marconi in 1902. The action of the magnetic detector was based on the work of Ernest Rutherford, a New Zealander.

It is of interest that Rutherford, while on his way to Cambridge in England in 1895, had with him a model of his magnetic detector and called into Adelaide to show it to Professor William Bragg, who was conducting wireless telegraphy experiments at the time. Unfortunately Bragg saw no merit in the magnetic detector and continued to improve the coherer for signal reception purposes.

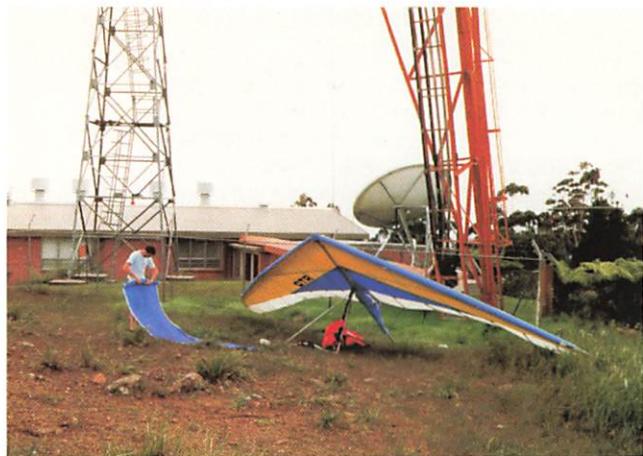
RAWDON MITCHELL

## HANG GLIDING

### LAUNCH FROM TOWER BASE

Hang gliding is certainly not a modern sport. It is older than radio, but the placement of some television towers on the tops of mountains and the construction of access roads to those towers has enabled hang gliding enthusiasts to increase the number of suitable sites from which to launch. One such site is at Middle Brother Mountain on the New South Wales mid north coast.

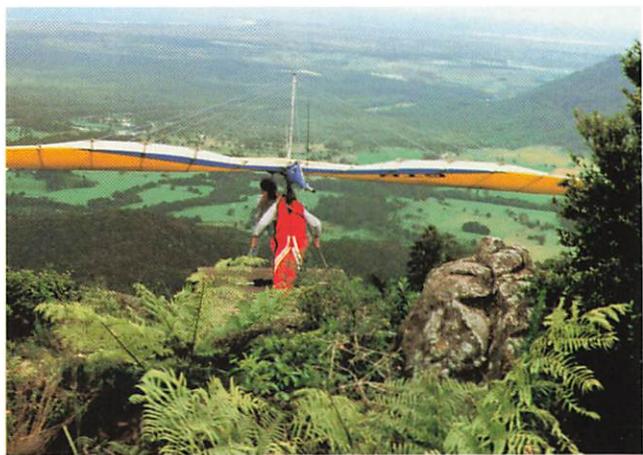
The mountain was named by Captain Cook during his voyage up the coast in 1770. It is 556m high and is the site for a television station housing the National transmitter ABTN-1 and commercial transmitter ECN-8 as well as a Telecom radio-communication station and a Forestry Commission lookout tower.



*Assembly of the glider*

The wooden launch ramp is only a few metres from the base of the 153 m tower and as can be seen in the photographs, it is necessary for the pilot to assemble the glider under the tower and then manoeuvre it through the tower legs to stand on the platform and wait for a suitable wind condition before taking the plunge.

Although a number of attempts to fly were made in the early 1800's using large modified kites, it was a German Engineer Otto Lilienthal who flew what is now called a hang glider. Between 1891 and 1896 he made controlled glides up to 250 m but unfortunately was killed in 1896 - the year Marconi was granted his patent for a system of wireless telegraphy.



*Waiting for the right moment to take the plunge.*

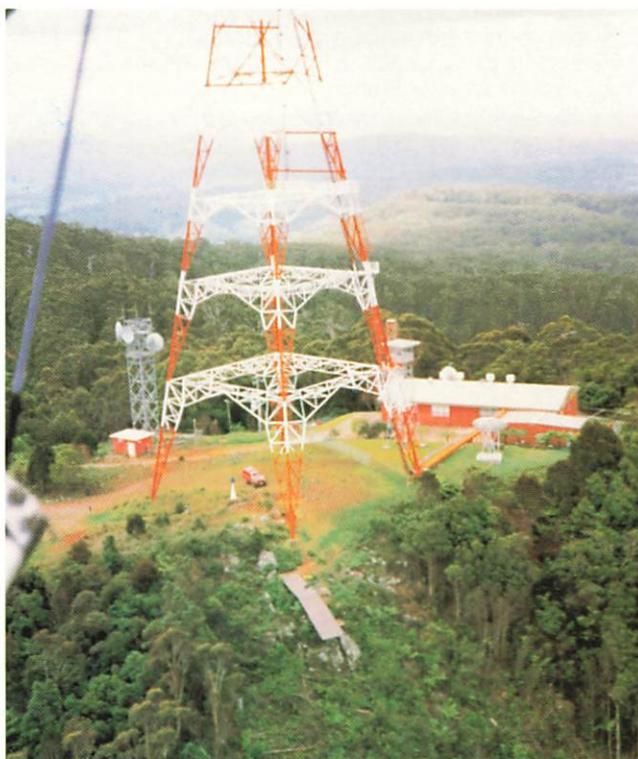
Most hang gliders consist of a triangular sail of synthetic fabric attached to an aluminium frame. The pilot takes off by holding on to the aircraft and running down the windward side of a hill on a ramp until the glider is airborne. In the air,

the pilot hangs from a harness and steers the glider with a control bar. The control bar shifts the framework of the aircraft in relation to the pilot's weight, thus changing the glider's flight path.

The following comments by Rodney Bernard the pilot who also took the aerial photograph showing the station buildings, tower and launch ramp are of interest:

"At the mercy of stiffening breeze and ever present gravity, I stumble a path to the wooden ramp which will be my gateway to the sky. Atop the ramp I pause to compose myself and ponder the forthcoming flight - is the wind still the right direction - will it be strong enough or will there be thermals to help keep me aloft - will it be good enough to fly cross-country - will those rain clouds on the horizon be a problem?

Satisfied with all parameters, I point the apex of the glider into the wind and begin running down the ramp, increasing speed as I near the end. As the wing begins to lift, the weight is taken off my feet and the end of the ramp passes beneath me. I slide my feet back into the harness and draw the zipper to secure it. One hand moves to my chest to check that the emergency backup chute is secure and accessible (I never expect to use it, but I rehearse this sequence religiously).



*View of the station and ramp as seen by the pilot.*

Wow! What a beautiful view. But I must find some lift if I want to extend the flight. The wind is north east so I head for the northerly facing escarpment and soon I'm gently rising above the terrain. Looking down at where I had launched, I flew back over the ramp below the tower.

One hour and twenty minutes later the flight was reluctantly ended when my ground crew (my wife Santina) radioed me to remind me we had to continue heading north to Port Macquarie that day. A gentle touchdown in a vacant paddock beside a creek was a perfect way to conclude a most enjoyable fly from "Middle Brother". I have never before flown a site that is graced by such a majestic structure as the transmission tower and it is an experience I will not easily forget".

**JACK ROSS.**

**NATIONAL OFFICE**

New staff welcomed to National Office Human Resources Section include Liz Minns, Budgets & Assets Officer from Corporate Customer Division and Vivian Barallon, Registry Assistant.

The Operational Services Section has lost BOM Bill Edwards to Broadcasting Branch Western Australia as the new State Manager, STO2 Laurie Hatch has also returned to his native State of WA after one too many Melbourne winters while Admin Officer Victoria Saporito has headed for greener pastures following promotion to Material Services SRU.

Terry Said from SA Broadcasting Branch has replaced Bill Edwards as the new National Broadcasting Operations Manager and along with Terry, Admin Officer Kathy Dimitropoulos has returned from Radio Australia, Shepparton on a permanent basis with another new starter in this area being Admin Officer Simon Peatt from Metropolitan Division.

Mike Dallimore, also from WA Broadcasting Branch, has taken over from Operational Studies Section Supervising Engineer Brian Rowlands due to the latter's promotion to Telecom Network Engineering SRU. Works Programming Engineer Charles Edmunds has also transferred to Network Engineering to be replaced by Jason Simms from the Victorian Broadcasting Branch.

Senior Supply Officer Martin Val recently resigned with our best wishes after 18 years with Telecom to accept a similar position with L. M. Ericsson.

In the Engineering sphere, Buildings Services expert David Naismith has been promoted back to the Telecom Network Engineering Telepower Group, Gavin Williams has joined John Webb's Section as Engineer Class 1 while Jenny Datskevich from the Soviet Union has joined John Bray's Engineering Services Section as an air-conditioning and ventilation consultant.

**VICTORIA**

The Engineering Services Group has seen a number of changes recently with the commencement of Rene Mol, Fitter and Turner and Paul Madill, Diesel Mechanic and the resignation of Dene Townsend and James Fisher.

Other new Branch staff members are Dermot Daley, STO3 (Buildings), John Streader, Radio Lineman, Guy Samson, Gardener and Admin Officer Kerrie Hayward. Welcome also to Tech Chua, Engineer Class 3 from the National Office and Wendy Hui Fox, Admin Officer from Metro NCS.

Congratulations go to Paul Thomas on his promotion to STO2 Technical Co-ordinator, Broadcasting Operations as well as to Jason Simms, Engineer Class 2 and Kathy Dimitropoulos, Admin Officer Grade 2, on their promotion and subsequent transfer to the National Office.

Best wishes go to Andrew Buchanan and Colin Beasy on their retirement at maximum age as well as to Bruce Gillies on his retirement due to ill health.

**NEW SOUTH WALES**

Engineer ranks in the Branch have been bolstered by the arrival of Henry Wyatt and Cyril Yau.

Bill Papadatos Engineer Class 2 recently married and so did Chris Cooper Engineer Class 2. All the best Bill and Chris.

The Drafting group has been increased with the arrival of Ray Soree and Darren Bromley who have both settled in well to the broadcasting environment.

Sandra Prout, Robert Valera and Rachel Komaravalli recently took up duty in the Clerical area to provide much needed assistance there.

Welcome to all.

**TASMANIA**

The Branch recently lost the services of some valued staff members. David Johnstone, STO(T)1, resigned and is now employed by Hobart commercial television station TTV6. Mike Jenner, TO(T)1 accepted an offer of redundancy and bought a 40 foot ketch to spend his leisure time sailing. A hard life for some! Graeme Ralph TO(T)1 has retired due to ill health. Steve Toth, TO(T)1 resigned to take up a position at Hobart's new FM station.

Brian Hey was welcomed to the Branch as State Broadcasting Manager on 18 September 1989. Brian was formerly a Principal Technical Officer at Network, Tas Country.

John O'Mara joined the Branch in June 1989 as Senior Engineer from Broadcasting Branch, Western Australia. Shortly after John and his wife celebrated the birth of a son.

Rodger Gascoigne has commenced with the Branch to relieve in the Costing and General Officer's position while Sonia McKay is on leave.

**QUEENSLAND**

Recent arrivals in the Branch include Jim Quabba Engineer Class 1, Ron Walker AO2, Sue Ashton AO1, Kerri Wovatt AO1 and Eric Neumann STO.

Chris Patrick Engineer Class 1 returned to the Branch after nearly a year in National Office.

Greg Anderson Technician resigned after seven years to start up a boat building business, Anna McLean Registry Officer retired in January and Allan Cartmill and Morrie Malmer both of Brisbane MIC retired last October.

Peter Werden from the Cairns District is now 2 OIC at the Townsville District.

Graham Christie PTO returned from an extensive overseas visit to Canada and England with wife Jan.

Many staff have celebrated additions to the family including Greg Duncan and wife Kath, Kent Lechmere and wife Samantha and Steve Roberts and wife Judi.

Richard Womack Engineer Class 3 ex-England married a local girl Elizabeth last December after being with the Branch for two years.

**WESTERN AUSTRALIA**

Doug Blackney Engineer Class 2 resigned at the end of extended leave to work in far flung parts of the world, while Bryan Raynor Engineer Class 1 resigned to take up an offer too good to refuse and has been replaced by new Engineer Class 1 Joe Triscari.

Steve Atherton has recently joined us from the Department of Aviation to take up the STO1 Buildings position vacated by Phil Wood. Ian Gibbs, Senior Draftsperson resigned to take up a position in Bunbury and has been replaced by Peter Wellman. Draftsperson Kevin White also left for greener pastures.

Murray Little long time OIC at 6WF/WN Hammersley, recently retired after 43 years service. All the best Murray. Another retiree was Bruce Magaard, Labourer at 6WA Wagin.

Other staff to leave recently include Phil Tones, Technician; Karen Campbell, Admin Officer Gd2 and Peter Shingler, Radio Lineman.

Some of these losses have been balanced by recruitment of new staff including Thanh Tran, Technician; Jeremy Wheeler, Stephen Humble and Russell Thompson, Assistant Technicians and Alan Seward, Senior Tradesman.

**SOUTH AUSTRALIA/NORTHERN TERRITORY**

Vivien James AO2 previously employed in the Darwin office commenced work at Radio Australia, Cox Peninsula. Vivien replaced Veronica Pattison who transferred to the Adelaide office.

John Casey TO2 The Bluff retired last November following 42 years service and Ilma Saat retired in February 1990 after 29 years service. All the best John and Ilma.

Ian Boscence Human Resources Manager returned from an exciting five weeks holiday in Nepal.

## BROADCASTING DISTRICT

### BROKEN HILL

The Broken Hill Broadcasting District covers the western-most section of New South Wales. Situated 50 km from the South Australian Border with a population of 27000 people, Broken Hill was, in its hey day, one of the world's major mining centres.

ABC sound programs are fed via Telecom links from Adelaide, some 550 km away, with local content from their own studio and transmitted at 2NB Broken Hill and 2WA Wilcannia. Station 2NB which was commissioned in July 1948 transmits with a power of 2 kW. The 2WA transmitter went to air in December 1975. Television came to Broken Hill in December 1965 with the commissioning of ABLN2, followed by ABLN9 Menindee in February 1977. There is also an RATV site facility at Wilcannia.

The local mining industry once boasted the richest silver, lead and zinc deposits in the world, but has declined in recent years causing the people of this city to look to tourism as a future. Silver deposits were discovered in 1883 by a boundary rider and a settlement grew up around the deposits. In 1884 prospectors discovered lead ores. In the following year the Broken Hill Proprietary Company Ltd, was formed to exploit the ores. The company later branched out into other areas including steel, gas, oil and manufacturing and is the largest company in Australia in terms of funds employed, people employed and numbers of shareholders. The company ceased operations in Broken Hill in 1939 when its leases were exhausted.

There is a large Royal Flying Doctor base at the local airport and a major RFDS communications centre on the outskirts of the city.

There is a thriving film industry in Broken Hill with enough



Historical landmark of Burke and Wills expedition, 1860-61.



Weir on Darling River at Pamamaroo.

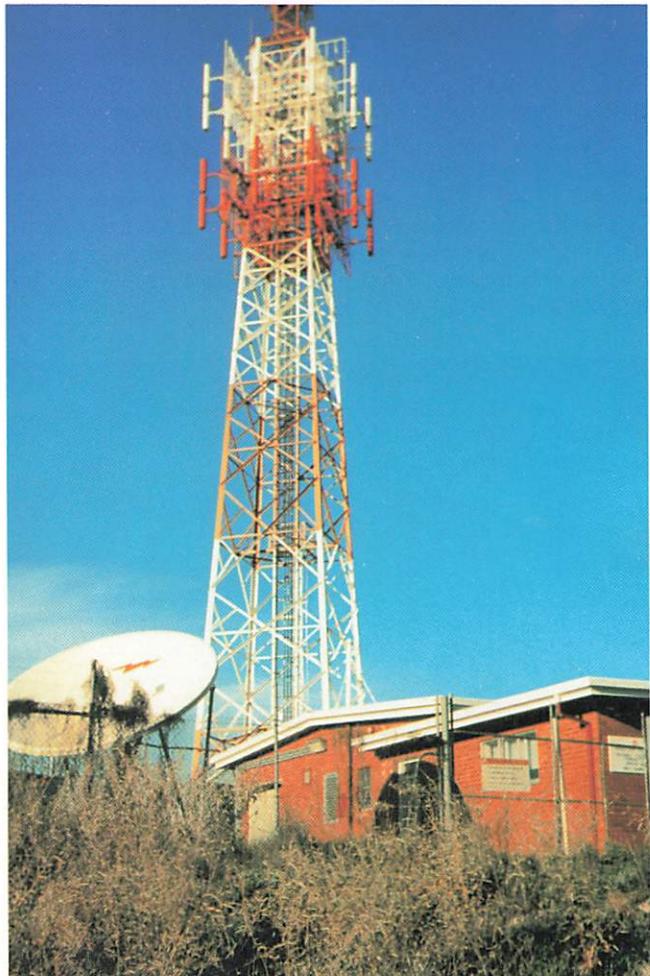
feature films, TV commercials and telemovies being shot in the area to keep several support groups employed.

Water is pumped 110 km from the Menindee Lakes storage scheme to cater for the city's requirements. This lake system holds several times more water than Sydney Harbour and provides a popular centre for sailing, power boating and other water sports.

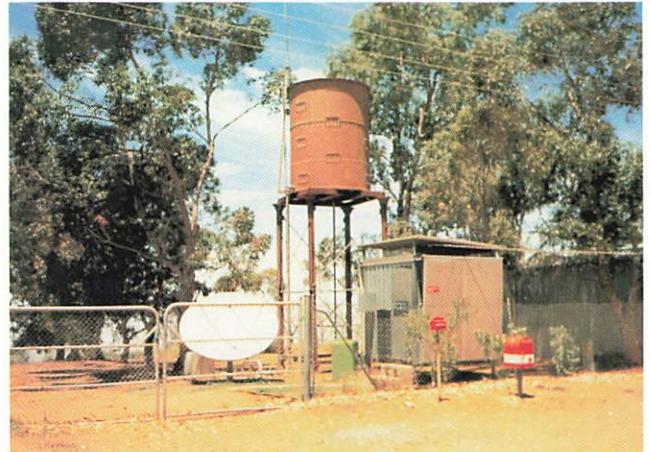
There are many large pastoral properties throughout the area running sheep and cattle. They talk in acres per sheep carrying capacity, rather than sheep per acre as in the higher rainfall areas.

There is a very active art community in Broken Hill with perhaps the best known member being Kevin "Pro" Hart. The city has several art galleries with extensive world class collections.

**JOHN RUBY/BOB BARNETT**



ABLN2 Rocky Hill.



IMPARJA translator, Sunset Strip.

**JOHN DAY**

John Day, Principal Supply Officer, National Office, commenced with the Postmaster General's Department in 1964.

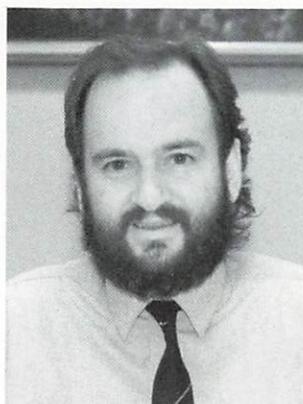
John is head of the Supply Section which is part of the Finance Accounting and Supply Branch. He has had extensive experience in Supply activities and associated functions.

As well as having worked in various Supply areas of the PMG Department and later Telecom, and being directly involved with the purchase of a wide range of equipment, including switching, radiocommunication, sound broadcasting, television, cable, conduit and ADP equipment, he spent a period as Projects Officer in the Supply Policy and Operations Branch which he has found to be of valuable assistance in his present position with the Broadcasting Division. A background in Mathematics and Computing Science studies has also been invaluable in his work.

Outside of work, John's interests include chess, being a player and official of the API Chess Club for over 20 years, cricket, being a member of the local church team for 15 years, fishing and maintaining a wine collection. More recently, he has been part owner of trotters with some degree of success. When he has spare time, he can be found engrossed in French literature.



*John Day*



*Garry Ross*

**GARRY ROSS**

Garry Ross, Senior Supply Officer (Commercial) within the Supply Section of Finance Accounting and Supply Branch, National Office, has worked with the Postmaster General's Department and Telecom for 15 years. He is currently head of the Commercial Cell.

Prior to joining the Broadcasting Division, Garry worked with the Research Department for five years and then the Accounting and Supply Department. His work in the Accounting and Supply Department gave him an ideal background for his present role being engaged in the purchase of a wide range of equipment and services. He established many contacts in industry which are proving to be invaluable in meeting the Division's broadcasting equipment requirements.

Garry maintains a number of interests outside the work area including playing and coaching basketball which helps to keep him fit. He also follows the fortunes of Collingwood in the VFL and is one of their most vigorous supporters. Garry has a keen desire to travel to many of the out-of-the-way tourist attractions in Australia and overseas and in his spare time has been making plans to have these dreams fulfilled at sometime in the future.

**TERRY McMANUS**

Terry McManus, formerly Senior Engineer in the Supply Section's Technical Cell of the Finance Accounting and Supply Branch, National Office, commenced work as a Clerk in the Telecommunications Division of the Postmaster General's Department in 1964. After a period of Acting Traffic Officer in the Melbourne MTX and Senior Technical Officer in Central Office Radio Section, he was appointed Engineer Class 1 in 1973 and promoted to Engineer Class 3 in 1977.

Terry's work involved broadcasting activities with emphasis on Radio Australia, particularly HF propagation.

In 1983, he was promoted to Engineer Class 4 in the Department of Communications involving among other things, the Gore Hill tower project, six weeks in Geneva for the Satellite WARC Conference in 1985, dealings with State Departments of Environment, and negotiations with the Australian Broadcasting Corporation on a number of issues.

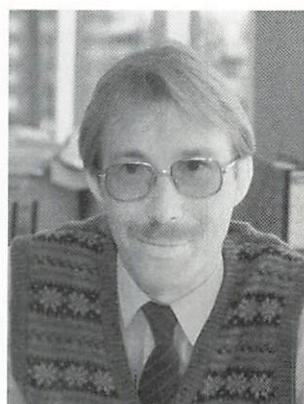
In 1986 Terry left the Department of Communications and undertook work as a consultant on Equalisation matters, FM licence applications and other projects. He rejoined Telecom the following year and has been involved in the Broadcasting Division's purchasing activities, writing tender schedules and assessment of tenders.

In addition to attending the Geneva Conference, he has made a number of other overseas visits on broadcasting matters. These include visits to Europe and U.S.A. on the use of computer techniques associated with HF propagation studies and in tender preparation for transmitters.

Since preparation of this profile article Terry has transferred to the Major Projects Section as Engineer Class 4.



*Terry McManus*



*Martin Val*

**MARTIN VAL**

Martin Val, formerly Senior Supply Officer (Finance) within the Supply Section of Finance Accounting and Supply Branch, National Office, commenced work as Clerical Assistant in the Postmaster General's Department in 1972.

His initiation into the Public Service was in the Public Relations Department and following a five year period in the Advertising Branch of the Commercial Services Department, he transferred over to the Central Office Supply Branch of the Accounting and Supply Department in 1982. In this area, he obtained valuable experience in a wide range of Supply activities concerning most of Telecom's material and service requirements. Following a further shift, he worked with Network Engineering Supply, and in September 1988 transferred to his present position with the Broadcasting Division.

Outside interests which keep Martin busy include computers, philately, chess and model railways. His three children aged 9, 6 and 3 ensure that any spare time he may have, is devoted to their attention.

Since preparation of this profile article Martin has left Telecom to take up a position with L M Ericsson.

## MAINTENANCE INSPECTION

In 1984 the replacement of the cyclone damaged log periodic antennas was completed at Radio Australia Darwin. The seven antennas installed are TCI 611 and were the first of their type installed in Australia.

Each curtain array consists of four sets of four vertically stacked folded broadband dipoles. The complete dipole array including screen, has all conductors manufactured from Alumoweld, a "self healing" aluminium coated steel.

Having been in service for five years a major maintenance inspection was required. The reliability of the complete system has been very good with only minor repairs to halyard guides, feeders and feeder insulators. To inspect each antenna requires lowering the 90 metre array to the ground, allowing all the conductors and insulators to bunch in what would seem to be a huge tangle of wire. This bunching is alleged to reduce the damage that could be caused by a seemingly orderly laying of the huge dipole array flat on the ground.



Antenna bunched on ground after being lowered.

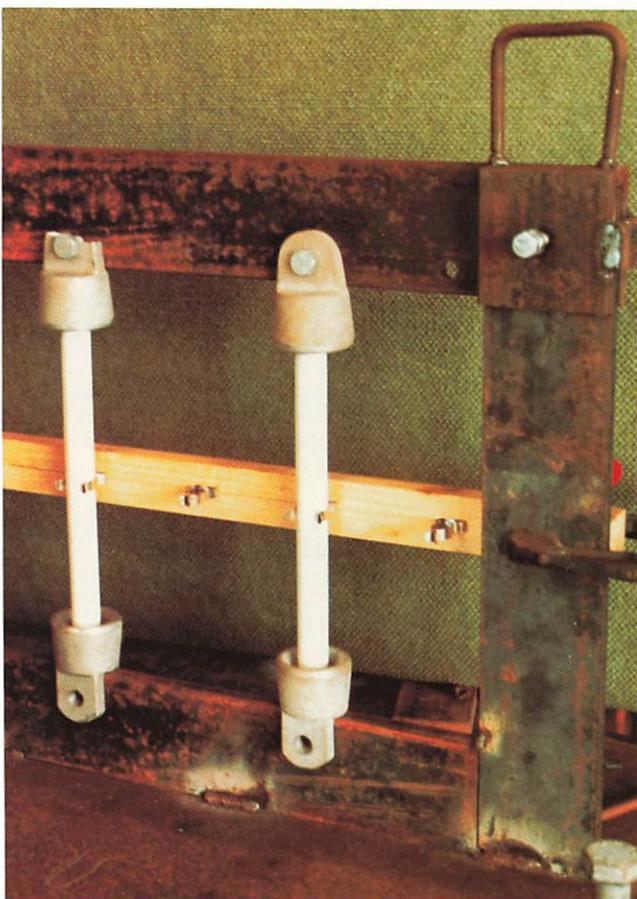
Two winch trucks are used to attach tails to both the end support halyards. With a co-ordinated effort both halyards are released while staff attend to the "bunching" of the curtain as it accumulates on the ground. The maintenance requires very close inspection of the halyards and blocks as these are subject to continuous motion when the counter weight balances the wind load. Although some wear and corrosion were evident none of the fourteen halyards required replacement.

As the curtain reached the ground, close inspection of the rod insulators used throughout the array indicated that on one antenna only, the aluminium yoke end had broken on 63 insulators. This resulted from incorrect tensioning during installation and has taken several years to fail. All clamp and crimp connections were also checked during the lowering process but none was found faulty.

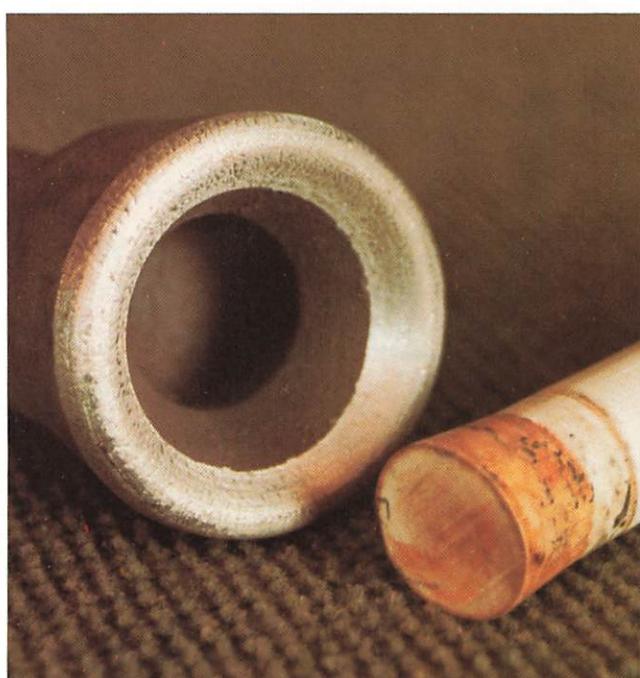
Due to the high cost of United States supplied replacement insulators, the failed antennas were repaired by the Northern Territory Field staff. The ceramic rod insulators were tin/lead potted into the aluminium yoke ends. Both the ceramic and end yoke have tapered cross sections to accommodate this process. Telecom Industries machined replacement yokes from cast aluminium which when tested revealed superior strength to the original type. Various potting procedures were also tested and it was found that 60% lead 40% tin mixture had the greatest resistance to joint failure.

During the raising process all insulators required a thorough cleaning to rid them of the fine aluminium deposits that resulted from the rubbing of conductors during the "bunching" process. Once the array was back in place and the counterweights reconnected to the halyards, tensioning of the entire structure was undertaken. The adjustment of such a large torsional structure is critical of tension and a great deal of care and patience was required to ensure stability and correct shape.

BARRIE MORTON



Jig for holding insulator during encapsulation.



New yoke and insulator with flared end.

### THE BROADCASTING ADMINISTRATIVE OFFICER

There was a time not so long ago that in the various offices of the Broadcasting Division there could be found Clerks, Clerical Assistants, Accounting Machinists, Typists and Secretaries at any one of a number of different classification levels. Not any longer. Now all these species have become part of one breed: Administrative Officer. In the process, it is expected that these individuals will become multiskilled in a number of functions.

Which raises the question often asked by staff in the field: what do all these clerical types do in the office? How many does it take to process a leave application or allowance claim, and monitor the money spent? Why does it take so long to create a Works Authority, pay the bills (especially my T/A). If we were being cheeky we would answer that it only takes one person to do these tasks, and it takes the rest of us to keep the engineers, technical and lines staff happy and doing the right thing!

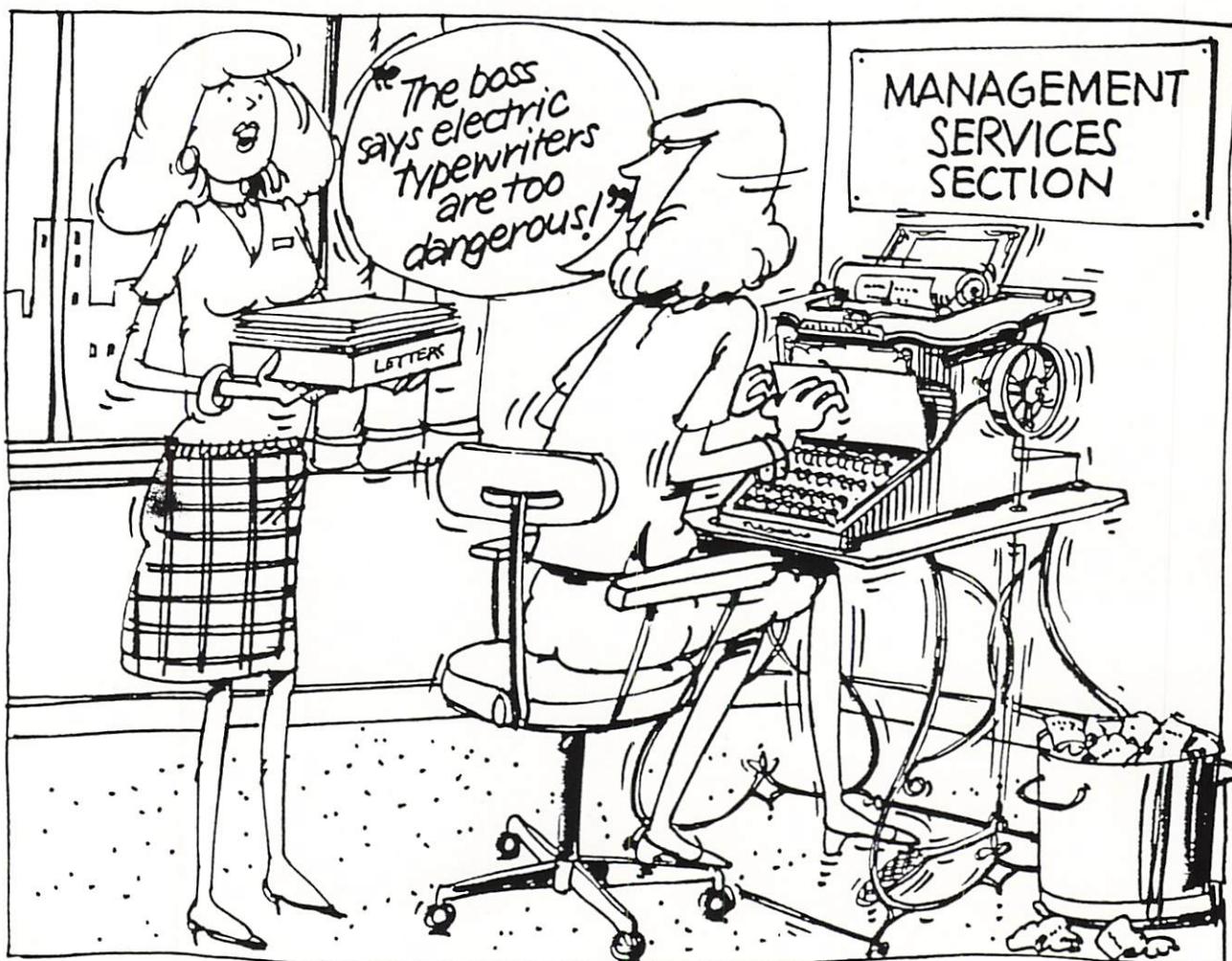
Seriously though, the biggest factor inhibiting a better work flow through the office is that word we hear so much of in Telecom these days: CHANGE. While many procedures have been streamlined in recent years, new computerised systems for human resources and finance are being introduced with many different procedures being learned by the staff concerned (and as with all things changes are still being made). In both the Finance and HR areas, with Telecom's Divisionalisation, responsibilities previously undertaken by Finance and Accounting and Human Resources Departments must now be undertaken at Branch

level, including things like compensation determinations. Just as disruptive in another sense is change in staff: transfers and promotions with the need for more training of new staff.

But let's not make excuses: if we take the finance area functions as an example, the staff have responsibility for such tasks as: preparing, registering and obtaining approvals for work authorities; checking the coding of expenditure vouchers before details are entered into FAMAD; processing the payment of accounts (in excess of 4000 payments each year in SA); ordering material, recording commitments, following up their deliveries and approving payments; entering expenditure and labour details into the FAMAD system; obtaining expenditure reports; monitoring expenditure against particular projects, against areas (organisation units) and preparing local reports for Managers and District OICs; maintaining asset, tool kit and furniture registers; preparing financial plans, budgets and financial reviews just about completes the list.

The aim of administrative staff in a modern day Telecom is not to be difficult and bureaucratic; it is not our role to say this job has not yet got a DOTAC requisition or approved Works Authority estimate, and XYZ will have to be done first, and you will have to get that OK from CO before you can ask me to place the order for that piece of equipment. Rather our role is to facilitate and assist with the minimum red tape. If the job is on the program, is clearly important and action backed by management, then so be it: it is our role to find a way around the obstacles, and we should be saying "leave it with me, I'll fix it". The delegations can be taken care of later.

JEROME VAN DER LINDEN



## LETTERS TO THE EDITOR

Contributors to Letters to the Editor are reminded that full names and addresses must be supplied. Letters should be brief and to the point. Long letters may be edited. The Editor's decision in respect of the suitability of letters for publication in *The Broadcaster* is final and no correspondence on the Editor's decision will be entered into.

Sir,

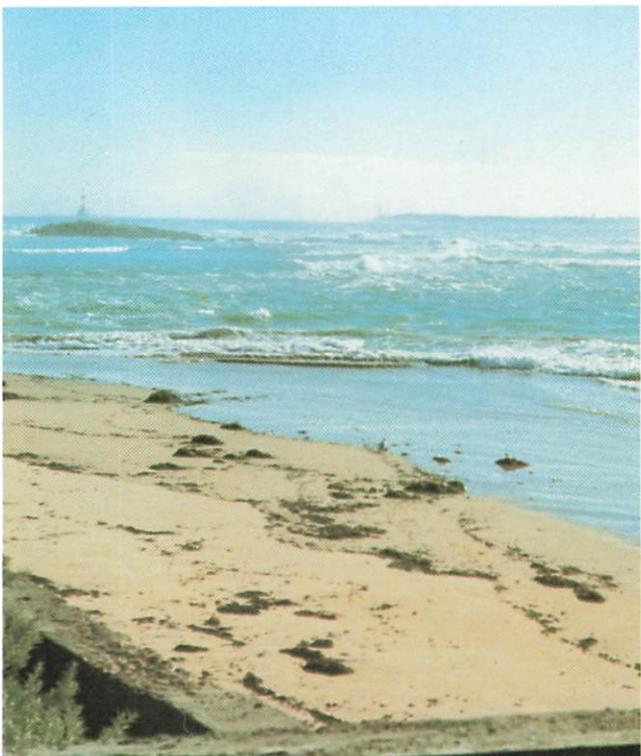
I was interested to read the Letter to the Editor from Terry Golden in the July 1989 issue of *The Broadcaster* concerning the infra-red detector beam which crossed "The Rip" between Point Lonsdale and Point Nepean during the Second World War. Since I spend a good deal of time at my holiday home at Point Lonsdale, I was aware of a concrete "pillbox" at the foot of the cliff near the Point Lonsdale pier which local historians said was associated with a secret ray across "The Rip" during the war.

Having met Terry last October and heard his story, I took some photographs of the "pillbox" showing its proximity to the pier and lighthouse and also shots looking through the slit in the "pillbox" towards Point Nepean. Later I took advantage of the recent opening to the public of the Point Nepean headland section of the Point Nepean National Park, to visit Fort Nepean and view the receiving end of the beam. The so-called "Infra Red Bunker" at Fort Nepean has slipped slightly on its foundation but it is still possible to clamber partly down the short cliff and climb into the concrete bunker and view Point Lonsdale through the slit in the seaward side.

I enclose for your information copies of the photographs taken at Point Lonsdale, and of others taken at Point Nepean, which your readers may find interesting.

Referring to Terry's letter, I understand that the 50 cycle per second pulsating dc current was obtained by placing in front of the light, a disc with 5 equi-spaced holes driven by a synchronous motor running at 600 rpm. Also, readers may be interested to know that the distance apart of the two sites is about 3.6 km.

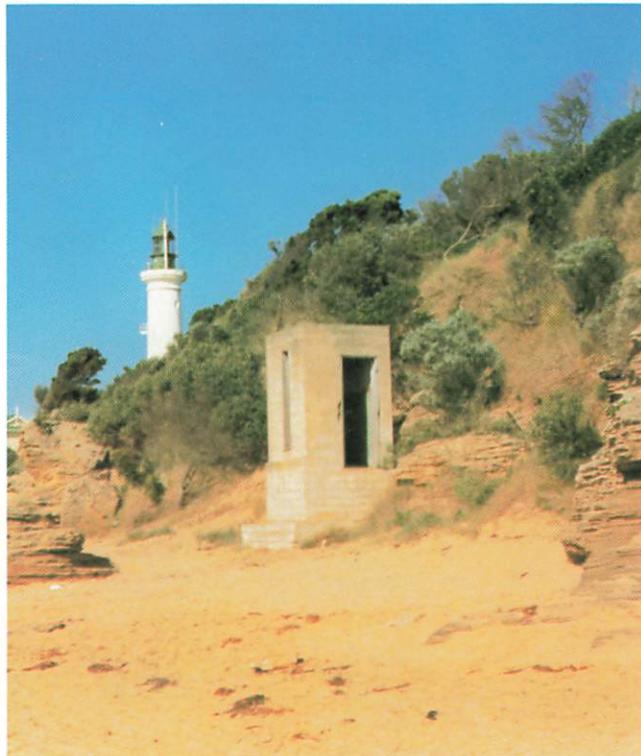
LAURIE VAUX



*View from bunker Fort Nepean looking towards Point Lonsdale. Corsair Rock in foreground*



*Infra-red bunker Fort Nepean.*

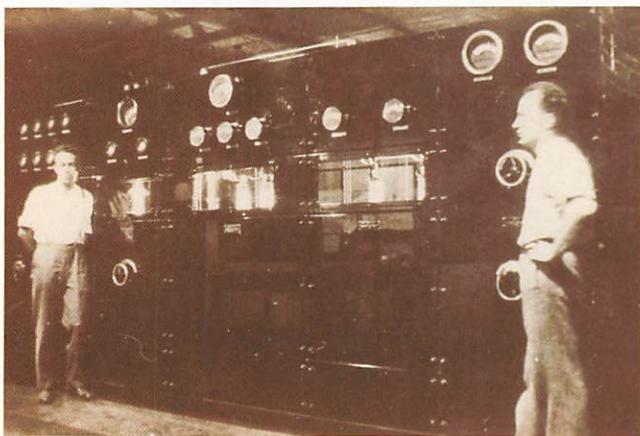


*Infra-red bunker Point Lonsdale and lighthouse.*

### 2CO COROWA

Station 2CO Corowa was the most powerful broadcasting station in Australia when it was commissioned on 16 December 1931. It was identical with 5CK Crystal Brook which went to air three months after 2CO.

It is located in the southern part of New South Wales close to the Murray River about 6 km out from Corowa on the Corowa-Albury road.



Original 2CO transmitter installed 1931.

The transmitter was manufactured by Standard Telephones and Cables and installed by PMG Department staff under the supervision of the company engineers Messrs. McQuillan and Bore. It was rated by the manufacturer at 6.25/7 kW into the antenna with an input power to the final amplifier of 22 kW. The two figures in the power rating indicated that 6.25 kW carrier power could be modu-

lated to 95% but if the carrier power was raised to 7 kW, the modulation depth would be restricted to 90%.

The transmitter was constructed in seven units. These were the AC unit containing line voltmeter regulating resistances, fuses, contactors and main start-stop button; the DC unit containing generator field regulators, smoothing filters, overload relays etc., oscillator-modulator unit housing carrier generation equipment and low level modulator, r.f. amplifier unit which included equipment for amplifying the modulated carrier; rectifier unit housing the three water cooled rectifier tubes forming the EHT rectifier and metering equipment; power amplifier unit where the modulated carrier was further amplified to the rated power level employing two 15 kW water cooled tubes with their associated insulated coils and alarm and metering facilities and finally, the tuning unit which transferred the modulated r.f. signal from the transmitter to the antenna.

The original radiating system consisted of a six wire flat top antenna with wooden spreaders suspended between two self supporting steel towers 55 m high. The flat top had three cage down leads, the centre one being connected to the transmitter and the two outer ones at the ends of the flat top being connected through tuning coils housed in concrete huts. This system known as an Alexanderson antenna is still in use as the main antenna.

The STC transmitter was subsequently replaced and the station now operates with an AWA BTM10 main unit and an AWA 9J/50551 2 kW unit as standby.

Programs normally come from Melbourne via ABC studios in Albury but locally generated programs in the Albury studios form a significant proportion of the 2CO transmission time.

DAVE STEVENS



Station building today.