OTVA NEWSLETTER

Overseas Telecommunications Veterans Association (Australia)
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THE OVERHEADS

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Website
www.otva.com
Photos from this edition should go up on the website so you will be able to see them in glorious technicolour!

Coming Events

Next Sydney Event

When;: **Friday 26 Augusr** at **Noon**

Where: **CTA Club** , Martin Place Sydney

Cost: :$20.00 each R.S.V.P. by **Monday 22nd August** to:
David Richardson, phone.(02)9487 1985 email: <d_s_Richardson@yahoo.com.au>,
Eamon Fitzpatrick: phone:9743 3806

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Other dates for the Diary

The **NSW Christmas function** is at the **Mandarin Club,** Goulburn Street on **THURSDAY**, **24th November** at Noon.

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SA OTVA Xmas "Do" Thursday 24 November 2005, presumably at the old McLarenVale Pub at noon.

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Put the dates in your diary **NOW** and work around them!! Costs for Christmas function to be advised.

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CORRECT ADDRESS?

Please ensure that Will Whyte has your correct address and latest email address.

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The Annual General Meeting (NSW)

Report from el Presidente, Henry Cranfield, to the AGM

Good Afternoon! On behalf of your Committee, I extend to you all, the committee's thanks for your attendance and a

warm welcome to this, our 49th Annual General Meeting. An especial welcome, to Lisa Enright, Telstra's Museum consultant from Melbourne, who will talk to us later on our historical collection's future?. Despite Telstra endeavors to eradicate anything and everything OTC, we, as an association have survived without their support and can go forward, knowing that our Historical collection is now accounted for and in safe hands; whilst OTC's written records are in the National Archives, although some are still stored at Paddington at their request. Our past year has ended most positively. A group of Vets, to whom, goes a sincere vote of thanks, identified, tagged, catalogued and repacked some 350 plus items for inclusion in the "Telstra collection" and these will remain permanently owned by Telstra; and will go on loan to museums all around Australia. This effort took 6 days, was a lot of fun and an enjoyable social outing. The identification of the cable samples took Roland Ayo and Ross Beaumont, an extra 2 days, as some cable had to be cut into short lengths for easier handling plus some research work done, to determine exactly what was what. We would also thank Eamon Fitzpatrick for the use of his power saw; Brian Mullins and Peter Hack from The Telstra Museum at Bankstown for their assistance, whist Lisa Enright provided the expert overall supervision, packing materials and prepared paperwork. We also rechecked a large quantity of Handbooks and papers ex OTC library which will be further processed by Sandra Hinchey, Telstra's Records Manager. Fortunately, Wayne Klausen managed to extract from an old 486 P.C. at La Perouse, all the records compiled some years ago by Ray Hookway. To Ray goes a very big vote of thanks for all his previous work and meticulous records which we hope to use to finalise historical details in our current ones. I personally feel sad that OTC's management did not have the vision to save more historical material; such as a unit from a Siemens Mux, along with some very old equipment from Sydney radio. Some items stored at Broadway and Ashfield, were broken and/or lost and some were damaged in transfer to or from Carlingford telephone exchange. Perhaps even the "Rudey nudeys" from "Playboy" pasted to the inside of the door on the old TV monitoring rack at Paddington ITMC could have been saved? Or aren't I supposed to know about that?? One wonders, after viewing some of the Ex OTC website comments? The items from the lift lobby displays at 231 Elizabeth street, Sydney. have also been located, along with OTC's stamp and art collections, which are now Telstra's property.

Besides the AGM and Xmas functions, We held a function last Autumn and Spring, here at the CTA Club in a smaller room which provided an extra degree of social interaction. But we need continuing support to keep your costs down!

Our Finances. under Bernie White are in good shape, his careful watch on our finances is much appreciated and he will report on these later. I would also like to thank our auditor, Ken Theaker for his efforts which at times are inclined to be overlooked.

Our Newsletter, edited by Bon Lions has been much improved by the addition of photos and an increase in material from members. But! We do need more contributions. Please remember!! it is our history being recorded for posterity! !. A sincere vote of thanks is due to Allan Hennessy and Bernie White for their production efforts and to Bob who will report later. The consistent good quality contributions from a regular group of authors is also noted with much appreciation. Our membership data base is maintained by Allan Hennessey who requests you please give any address changes and email details to him or Will Whyte **asap.** Our thanks to him for his interest and efforts in this area of our activities.

Joe Collister, together with Jeff Hinwood have upgraded our http://www.otva.com/ web-site and to Joe and Jeff, a sincere vote of thanks for their efforts. Will Whyte will read Jeff's report later. I must also mention the co-operation received from Robert Brand and his Ex-OTC site which we now help sponsor as this ensures broader coverage of our activities David Richardson has done a splendid job as Social chairman and we look forward to even

better things in the coming year, especially with our 50th Anniversary coming up.

Our plan for our 50th Anniversary in 2006 is a luncheon, it is proposed at the Mandarin Club, in November 2006. We are also looking at several other suggestions; these include plaques for historical sites such as Applecross W.A and Hobart Radio, plus a brief " History of OTVA" book, this covering all states together with member reminiscences and photos plus a CD/DVD of all our Newsletters to date with index. We are still looking at the plaque for Bondi Beach problem. We need urgently from you, our members some ideas, together with photos and historical reminiscences of your time in OTC, from wherever and whenever, for inclusion in the history Book. We have very little written about the personal history of members, other than in the Newsletters or perhaps Transit? People like Bob Long, Ron Knightley, Bill Jenvey , Ralph Brown, Lionel Curran, Harold White, Randy Payne to mention a few. There are also tales from the "Out stations, those never to be forgotten outposts?" which all add interest and "really are your history." So please!! **Fingers To The Keys, Pens To Paper!**

It was intended, that we present for consideration at today's meeting, a new constitution for our Association. However the NSW Act, reference Associations and their rules have been amended and they (ie. the Department of Fair Trading) has forwarded a set of model rules which is now required and there is no longer a mandatory requirement for Public Liability insurance etc. for registration and incorporation. So we have suggested that the incoming Committee review same and then decide what to do.

Will Whyte, our Secretary, has provided us with an excellent venue for our committee meetings and worked tirelessly over the year. We are all indebted to him for his efforts. Our committee members have all contributed in some manner this past year and I ask for them to now rise, and for you to show your appreciation of their efforts by a round of applause.

It has been my pleasure and privilege to serve as President and I thank you almost sincerely for your support this past year. All I ask please, is that you participate in our association's future activities and remember " Today is tomorrow's history and was yesterdays future!" Henry Cranfield, 17 June.

The President then invited **Lisa Enright:** *(Telstra Historical Collections Adviser)* to address the meeting Lisa enthusiastically thanked those who worked at La Perouse to identify and pack the historical artefacts. She went on to say:

Telstra had ignored its history in the past but now has established a collection. She is pulling together all related museums and their collections under a new project to assess the various collections and what should be done as a result. The current intention is to house the collections in existing museums so to have the collections in the hands of people who know how to preserve and display such items. The OTC items will be stored at Bankstown Museum for the moment until a plan is developed for their preservation. The idea is to partition off this part of the collection and have ex OTC people to be involved to interpret the items. Lisa made mention of the discovery of the microphone used to open the Sydney Harbour Bridge with the engraved signatures of the dignitaries from the day. The microphone is now with the Power House Museum.

The meeting requested Lisa to make the loan of equipment to the Southport School a formal and permanent arrangement. The suggestion was to make the Southport School one of the museums on the previously mentioned list.

Lisa noted that it was important to set all these arrangements up before the sale of Telstra.

At the social session afterwards, Lisa was in great demand, answering lots of questions.

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Report from South Australia.

Meeting on 26th May 2005 at our usual venue, the old McLarenVale Pub at noon.

One apology received from Dave Herbert (ex President) with those in attendance being Max Lang, Dick Inwood, Paddy Wilkinson, John

McGregor, Ernie Barrett, Harry Stone and two semi-permanent visitors, Harro Klause (owner/operator of the old OTC Coastal Radio station VIA, now VK5HK) and Mike Kay (assistant operator of VK5HK).

John McGregor was voted in as President with Harry Stone continuing on as Sec/Treasurer.

John has now moved into a retirement village in McLarenVale and is in good health and spirits. Others are also in fairly good shape for our various ages. Harry has also moved into a new location with his daughter Lyn and son-in-law Norm Draper located in Watervale about 12 kilometres before you reach Clare township itself. It's a terrific place for "Ham radio" & TV reception from Adelaide is also very good, no need for 100 foot TV masts, just whack the TV aerial on one of the five chimneys. There is very little noise level on the "Ham" bands and reminds me very much of those halcyon days in the twenties and thirties before those billions of electric and electronic gadgets flooded the Western world and listening in on your little crystal set or one valve regenerative receiver, the only noise heard was the occasional burst of static.

Returning to the business of our OTVA, our next meeting will be our Xmas "Do" on the last Thursday in November 2005. We, of SA OTVA who haven't yet fallen off our perches extend our fraternal greetings to our interstate mates, friends and colleagues. 73s, 88s, cheers & beers SK. Harry Stone

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Follow-up - A normal day at the office. From Greg Waller;

Re the J Toland and P Day incident at Paddo in 1975, I was on shift that day. Lots of people did many things on that eventful day.

I clearly remember Jim Neylon appearing in the ITMC (on L4 then) looking like he'd been dowsed in talcum powder. He was exceedingly agitated and it took about 2 secs for us to get the message there was a major, major problem downstairs. I called the ambulance and reported the case. A lot of us immediately went down to the main door on L2. There were 2 doors at the entry with about 7 or 8 CO2 bottles caged between these 2 doors. As we opened the first door all we could see was white clouds of CO2. There were already 2 bodies on the ground between these 2 doors. I actually witnesses people saying "I'll get them" running in and within seconds ending up with the others on the floor coughing badly.

I raced up to L4 to get remaining people to help. Someone else had called the ambulance again, but they were still not here (their station, as Paddo people know, is just down the road). I asked a staff member to actually run down there and "don't come back without the ambulance", and I returned to L2. There were even more bodies on the floor, coughing and choking. We started getting these people out onto the footpath. Ron Moore, the plant officer, raced down the stairs in a panic to the room. He exploded when he saw what was going on. He opened the door of a cabinet we had all seen and no-one thought of - and yes right at the first door, called Breathing Apparatus. He put on the oxygen tank plus carried the extension hose and mask, and went in to get the 2 victims out, getting access via the door at the other end of the diesel room. We removed the rest of the bodies from the floor to the footpath. Whilst upstairs, and still with no ambulance present, I called the ambos yet again and told them there are now 7 bodies on the footpath with more on the way. Bingo - I obviously used the right language for attention. Within seconds I could hear the sirens. Finally.

Maybe Percy came to whilst being carried out, but it was only barely. Someone managed to get his teeth back from half way down his throat, as he was actually choking. As for why the ambos were so long in coming, I asked the 'runner' I sent down and he simply said "they wouldn't believe me".

I had recently returned from Carnarvon where I was on shift when some crazy idiot came through the place at 2am causing lots of damage with a large spanner.

Exciting place this OTC!

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THE HISTORY OF AUSTRALIAN INTERNATIONAL TELECOMMUNICATIONS.

This is the second part of Gordon Cupit's history of Australia's International telecommunications.

WIRELESS

During the period when the cables were being improved, Marconi appeared on the scene and in 1894 he conducted his first successful radio transmission. In 1897 he built the first Marine Coast Radio station on the Isle of Wight, which was the forerunner to the present Ship to Shore service.

In 1901 Marconi transmitted signals across the Atlantic and proved that long distance radio was possible. In the same year, Marconi approached the Australian Government with a proposal to connect Australia with New Zealand. This was not agreed.

1905 the Australian Government passed the Wireless Telegraphy Act, which gave the PMG's Dept full control of all radio communications in Australia.

1906 Marconi was granted a license to conduct trials between Victoria and Tasmania.

1909 Radio Stations were built for gathering Naval Intelligence and for Safety of Life at Sea (SOLAS). In 1910 the first Coast Radio station was opened in Sydney at the Australia Hotel by the Australian Wireless Company which was also granted a license to conduct public traffic to and from ships at sea. This station was closed when a new station was opened at Pennant Hills in 1912. The same year the Government passed the Wireless Navigation Act compelling all ships in Australian waters carrying 50 or more passengers to be equipped with radio.

In 1913, a series of disputes between the Australian Wireless Company, Telefunken Company and Marconi Company led to the formation of Amalgamated Wireless A/sia Limited (AWA) with the Federal Government holding 51% of the shares.

From 1913, Sir Ernest Fisk, Managing Director of AWA had been expanding the company's commercial ventures and in 1918 held successful trials between Fisk's home in Wahroonga and London using Long Wave techniques. During one of these trials, Prime Minister Billy Hughes sent a message to his counterpart in the UK.

1914 The Coast Radio Service was taken over by the Navy for wartime operations.

In 1920 the Coast Radio Service was handed back from the Navy to AWA. Shortly after the return of the Coast Service, AWA split it into two arms, the Coastal Radio Service and the Island Radio Service. A new station was opened at La Perouse, which became the hub for the Pacific Area. In 1925 AWA introduced a short wave radio telephone service to ships at sea.

Also in 1920 AWA submitted a plan for a direct wireless link to the UK, which was accepted by the Australian Government in 1922. By this time Marconi was experimenting with short wave technology and in March 1924, two AWA radio pioneers, Eric Burbury and Syd Newman received short wave signals from the UK. Reception was so good that proposals for a short wave service instead of long wave were considered. The same year, Marconi implemented a series of short wave telephone trials with Australia. These proved so successful that Marconi proposed to the Commonwealth Governments that he provide an Empire Wireless Service using direct short wave links. The Governments of South Africa, Canada and Australia immediately agreed, and the Australian Government promptly signed a contract with AWA to manage the construction and operation of stations in Australia for direct links to Great Britain and Canada.

AWA accepted a tender from the Marconi Company to build two transmitting and receiving stations. Extensive tests were conducted resulting in Ballan (Victoria- later being called Fiskville) being selected for the Transmitting station and Rockbank also in Victoria for the Receiving Station. Tests revealed that night hours were the best for reception, so the stations were planned to transmit in both directions around the globe. This was possible by the use of a speciality planned aerial system termed the Franklin Array. The stations were to be controlled by landline from a Central Operating Room in Melbourne. A similar Operating Room was built in Sydney, connected to Melbourne, also by landline. The Melbourne office to control the overseas circuits. The Beam Wireless Telegraph Service opened on the 8th April

1927. Melbourne and Sydney deliveries were made by Company messengers. Country and other state deliveries were carried out by PMG messengers under special agreement with the PMG's Dept on a charge per word basis.

As it was far cheaper to build radio stations than to lay cables, and as the Beam was able to transmit at 400 words per minute, it was able to come into service at a charge of 1/8d per word against the cable companies charge of 3/- per word. Within six months the Beam had captured over 50% of cable traffic

AUSTRALIAN COLONIES.

After the first Line from Melbourne to Williamstown in 1854 the following came .

1858 Sydney - Melbourne - Adelaide were linked.

1859 Mainland to Tasmania submarine cable opened.

1861 Sydney to Brisbane telegraph line.

1872 Darwin and Adelaide linked by overland telegraph line.

1877 Adelaide to Perth telegraph line.

South Australia joined the International Telegraph Union.

1878 First telephone trunk call from Semaphore to Port Augusta a distance of 240 miles.

1901 After Federation, the Post and Telegraphs Act was passed and the Postmaster Generals Dept was formed, giving the Australian Government ownership and control of Posts and Telecommunications within Australia.

1929 Picturegram Service commenced from Melbourne to Sydney.

1933 Teleprinter services commenced.

1939 Melbourne and Tasmania telephone service commenced using submarine cable.

1956 Subscriber direct dialling introduced.

INTERNATIONAL SERVICES.

It is pointed out that with International Telecommunications Service, Australia was only responsible for the operations to and from the country. Each country in the chain owned and was responsible within its own shores. The transmission facilities, whether it be cable or wireless, ownership was shared by agreements etc. Overall standardisation for International service was the responsibility of the International Telegraph Union later termed International Telecommunications Union. All countries were required to be members of the organisation.

Meetings were held regularly, the main subjects being revenue, sharing of costs, traffic routing and technical research and development

A typical example of revenue sharing is the All Red Route. Traffic to London and Europe was passed through the Pacific Cable from Australia through Norfolk Island, Fiji, Fanning Island, Vancouver, Nova Scotia, across the Atlantic to the UK, then to its destination in Europe. All places relaying the traffic obtained a share of the revenue, and in this case Australia and the other six British relay points kept the majority of the share within the British Empire. Traffic from Australia to Japan was passed through Darwin, Java, Singapore, Hong Kong to Japan. In the Fifties on a visit to Japan, Prime Minister Menzies agreed to a direct Beam Wireless link Japan/Australia which upset the revenue to the British Empire. Traffic routing was a major subject at the ITU meetings as all countries wanted as much traffic routed through them to pick up revenue. All Traffic Accounting was finalised in French Gold Francs.

On the technical side, there needed to be standardisation on all systems. It would be useless for one country transmitting high speed morse to countries who only had manual reception facilities. That was only a minor example, one can imagine other technical standardisation problems between major Nations and 3rd World Countries with their limited resources.

1930 AWA opened radio telephone services between Australia and London using Beam Wireless techniques.

1933 CUPIT joined the Beam Wireless Service in the Sydney Operating Room. *(A very important date! Ed.)*

1934 Facsimile Service opened between Australia and the UK also using Beam Techniques.

Beam Wireless was a method of radio transmission which as the name implies sends the radio waves in a beam. This beam is directed on the place of reception and is reflected off the ionosphere. In the case of Aust to the UK it normally consisted of 11 hops from ground to ionosphere to ground etc.

In 1923, The Pacific Cable Board came under the ownership of the Imperial and International Communications Limited which had already acquired the Eastern Extension Cable Company. In 1934 Imperial and International became Cable & Wireless.

World War II caused some problems, with all countries remaining neutral as far as International Communications were concerned, but there still were some problems, all finally sorted out by the ITU.

Wireless communication was not secure and most Armed Service traffic was passed through the cables. This caused delays and as much public traffic as possible was diverted to the wireless service, to relieve congestion on the slower cables..

Not all Allied Countries' communications were under Government control and it took some time to combine all the services into a War mode. At a conference of the Commonwealth Telecommunications Council in 1945, a policy was agreed that the international Telecommunications services of each British Commonwealth country be taken over by the government of that land.

(Watch for Part 3 in the next Newsletter. Ensure you are financial or you may not get it!!)

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The Satellite Systems Operations Guide

(Dennis Grant)

After a brief stint at Ceduna in 1978 I was recalled to HO to work again in Network Arrangements and as an added chore to prepare to travel to Washington in March 1979 to join a world wide group of Operations staff to review the Satellite Operations "Bible" otherwise known as the SSOG (Satellite Systems Operations Guide). As my first official trip for OTC I was somewhat nervous and petrified when at the morning tea break on day one I was approached by two heavies from Intelsat asking if I could chair one of the Working Parties. I now realize that Australia had an excellent reputation in Intelsat and have always been considered "fair" and "neutral" operators. It must have been this that led to the request. I rejected the offer on the grounds of this being my first meeting but they insisted and so I got to do the job. Again very nervous as I was facing a group of world "experts" on the one hand and Intelsat on the other. Our task was to review the overall document and its presentation (admin stuff) and separately the wording and content of all the Multiplex section.

The original documentation had been written quite a few years before and was certainly dated. Also it was issued on American Standard paper size and so was really awkward to copy. I created a significant stir by suggesting that we use a different colour of binder for the new documents (as per the ITU) and that we move to international standard (A4) sheets. Intelsat has just purchased 300 new (same) colour folders and were angry to the extent that they rang OTC and discussed with my bosses back here. We won but a couple of comments were made about "this brash young Australian".

Super cooling and low level signals.

(Dennis Grant)

At the meeting and the out of meeting discussions I got to talk with a couple of people who had been in on the earliest days of satellite communications between Andover (Maine USA), Pleumeur Bodou (France) and Goonhilly Downs (UK). I have always been fascinated by the parametric amplifiers and particularly the cryogenically cooled units. We had at Moree the very first production unit (maybe in the world) of a 500 Mhz bandwidth helium refrigerator cooled unit. It had Serial Number 001. Well I thought these machines we had which cooled the amplifier down to about minus 250 degrees Celsius were pretty good. One of the guys in the group though told of his experience in the early days of Andover when Masers were in use and he had to periodically fill the maser "cold section" with Liquid helium. Allowing this to "boil"

off did the cooling. There was some arrangement for collecting the helium but it still seemed very inefficient to me.

During antenna maintenance one time we were replacing the Mylar window in the feed horn (pecked apart by cockatoos as I recall), obviously the transmitters were shut down but the receive side was all go including the continuous monitor on the spectrum analyzer (specan). The normal setting on the specan gave an indication of noise across the bottom up to about the 10 Db line then carriers would stick out of this noise floor by 15 to 25 Db depending on the size and power requirements of each carrier. I happened to notice at one stage the entire screen of the specan saturated with noise. I talked with the guys on the antenna to learn that they were moving their hands around over the feed horn. I asked for a "hands off" then a "hands on". The heat of one human hand over the feed horn was saturating our receivers. That is some sensitivity.

But we had a guy from Woomera with us Moree, Sam Pfeiffer. He was not at all impressed with the "high" signal levels we had to work with. He had been involved in Moon shots and Mars shots and other exotic NASA projects where the signal strengths were "Low". He said they routinely would point their 85-foot antenna where they expected the appropriate spacecraft to be and then commence a search pattern. What were they looking for? "Non-Random Noise". Since we know that spectral noise is random, when they found a non-random signal, it was their baby out there in the wilds of space.

We had a somewhat similar experience at Moree. Each day at certain times we would see white dots all over the TV monitor which we kept on just in case there happened to be football or something on. The US side would not admit to seeing anything for a few days and certainly we could not see any carriers on the specan. Again our Rod tandemmed up a second specan and lo and behold he found a very narrow band, very, very low level carrier down in the noise of the TV carrier band. And we saw it switch off at one stage.

Armed with this info we again approached the US side who then came clean and admitted that it was a one metre "weather" station in Antarctica transmitting data back to the US. May be true but we got the impression from their "coyness" that there may have been something more than weather data.

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The German Enigma Machine. *(by Erik Bachman)*

(This is a second contribution by Erik and again it is in two parts.)

This paper is based on work I have done as a 'behind the scenes' volunteer at the Powerhouse Museum in Sydney. I thank the Museum Management for giving me permission to publish the paper in the OTVA Newsletter.

Part 1

The Powerhouse Museum has in its collections an early copy of the German military cryptographic machine, known as the Enigma. It is currently on display in the 'Cyberworlds' exhibition on the third floor of the Museum.

Cryptography.

For thousands of years, there has been a need for keeping military messages, so that only the intended recipient could read it. For example, in the Gallic Wars, Julius Caesar used a simple cryptographic substitution, whereby each letter was replaced with the letter that was three places further down in the alphabet, so that an A was replaced with a D, a B was replaced with an E, etc. This is known as a Caesar Shift of three.

The first cryptographic machine was probably the cypher disc, which was invented by the Italian architect Leon Alberti in the 15th century. It consisted of two circular copper discs of different diameters, both with the alphabet inscribed around the edge. He fixed them both on a common axle, so they could be rotated to place the two alphabets in different relative positions. They could therefore be used to encrypt a message with the outer disc representing the plain alphabet and the inner disc representing the cypher alphabet. To send a message with a Caesar Shift of say three places, the discs are simply rotated so that the

outer A is opposite to the inner D. To further improve secrecy, Alberti suggested changing the setting of the discs during the message.

The Enigma Machine.

20th century technology was introduced into cryptography, when the German inventor Arthur Scherbius developed the Enigma machine which was in effect an electrical version of the cypher disc. The first machine consisted of three parts connected by wires:

- a conventional keyboard,
- a scrambling unit with three scrambler rotors,
- a display board.

The machine was packaged in a box of the dimensions 34 X 28 X 15 cm, weighing 12 kg.

A three rotor Enigma Machine

To encrypt a plaintext letter, the operator would first press a letter key on the keyboard. This sent an electrical pulse through the scrambling unit and out the other side where it would light up a lamp with the encyphered letter on the display board. The scrambling unit would encrypt the particular letter by means of the three rotors, which were electrically connected in series, so that each would provide a Caesar shift, as the scrambler rotated one place every time a letter was typed into the keyboard. By means of the rotor settings and the electrical connections, an enormous number of codes could be produced, all immediately changeable by resetting the rotors and by patching the electrical connections between the keyboard and the first rotor. To further improve the secrecy, Scherbius added a reflector, which sent the current back through the scrambler rotors, in effect using these twice.

Operation.

Every month a code book would be sent to all Enigma operators in the system, containing the starting conditions for each day of the month. These were known as the day key, i.e., the patched sequence and the starting positions of the scrambler rotors. The 3-letter word, which was transmitted at the start of each message was also specified in the code book; it was known as the message key.

Each time a message was sent, it would be typed into the Enigma machine, and the encyphered message would be recorded and handed to the radio operator for sending as a Morse message. At the receiving end the radio operator would record the message and hand it over to the Enigma operator, who would type it into his machine which would already be set to the same day key as the transmitter. As a result of the wiring of the reflector, encryption and decryption were mirror processes; the output would therefore be identical to the original message.

It was not until the early 1920s that the German military began to appreciate the value of the Enigma machine to encypher Morse code messages on radio. From 1925 it was mass-produced and over the next 20 years the military would buy more than 30,000 machines. The military Enigma machines were used for operational and tactical communication within individual World War II commands, while messages between the highest authorities in Berlin and the headquarters of the theatre commanders were carried by the more sophisticated Lorenz network.

The Polish Contribution.

In 1931, the Polish Secret Service obtained vital information about the Enigma, which had been leaked by a disgruntled German cypher

specialist to the French Secret Service. The French, however, failed to show much interest. As well as the internal wiring of the scramblers, this information explained in detail the layout of the German codebooks.

The Polish Government set up a team of 20 mathematicians, led by Marian Rejewski, who worked tirelessly to break the Enigma code. Rejewski had managed to obtain an Enigma machine, so he knew the scrambler wiring and the whole make-up of it, which greatly reduced the number of options, he had to test. He also managed to some extent to disentangle the scrambler settings, thus reducing the options to about 100,000, which his team attempted to test.

As WW II came closer, the Poles handed their work and their hardware over to the British, who had at this stage set up a Code and Cypher School at Bletchley Park in Buckinghamshire. The cypher work was of a continuous nature, as the Germans made many changes to the Enigma machine, including expanding it to five rotors.

Alan Turing.

The day after the war broke out, Alan Turing, a brilliant English mathematician joined the Bletchley Park establishment. He was one of the first able mathematicians to join. An original thinker, he had studied a large variety of topics, including philosophy, chemistry, biology and psychology. Before the war he also wrote a paper, in which he devised the theory for building a 'Universal Machine' which would read in a description of a task in a standard form and then execute the task. The paper anticipated many computer concepts, such as memory, algorithm, input, output, compiler. Turing became the key figure in the continuous battle to decode messages from the ever more complex Enigma machine, using an electro-mechanical machine, called the 'Bombe', developed by him.

(Again, Part 2 will be in the next Newsletter)

You will have noted that Erik is a volunteer for the Powerhouse Museum and those interested in helping the Powerhouse mount its OTC exhibits may wish to volunteer to the Powerhouse (I assume there are similar possibilities in other states). Look at this site http://www.powerhousemuseum.com/volunteers/index.asp

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Memories of Fiskville

The Editor received this letter recently from RJS McDonald

The subject of Harold Drake-Richmond has been on my mind for a long time. Some time ago I tried to dig up some information, with little luck.

When I noticed in the latest Newsletter that you had something on Fiskville, I figured that it was now or never as I will be 90 later this year. Most of the following is from memory.

The Marconi Coy had the contract to supply and install the transmitting and receiver stations for the new "Beam Radio" stations, Ballan and Rockbank. Harold Drake-Richmond, a Marconi Engineer was sent out to supervise both installations. He and my father became great friends and a kind of uncle to me. His pride and joy was a blue Bugatti and you could imagine my delight at being given a ride in it between Melbourne and the stations. I was about 10 years at the time ..

As time passed I finished secondary school and in 1934 I joined AWA as a cadet engineer at the factory in Ashfield. In 1938 I was transferred to the Engineering Branch at York St, where I again met up with Drake.

In 1939 I was assistant to Drake on installing remote controlled radio equipment at the RAAF station in Townsville. I had no further contact with him perhaps someone reading this will throw up something more.

Regarding Fiskville may I suggest, if you haven't done so, that you visit http://www.angelfire.com/de/vk3kcm/Fiskville2.html. This is a 12 page printout with a full colour picture of Fiskville and strangely no author. I know that my typing is poor, but it is better than my longhand, I cannot read the latter myself.

Regards to all, Ron

Also included was a Gleaning from the archives (Airspace July 2000 by Roger Meyer) which contained the following little note "In Canberra, Drake-Richmond (an AWA engineers, famous among other things as a

motor racing driver) and Leo (Deleuil) were to install a temporary aeradio and Bellini-Tosi Direction Finding receiver and have it in action URGENTLY."

Thirdly the results of the 1931 Australian Grand Prix at Phillip Island, run on 23 March -- 31 laps x 10.461km (which in the old money was 6 1/2 miles per lap or 201.5 miles in total!) in which third place was awarded Mr Harold Drake-Richmond in a Bugatti T37 (1496cc C) in a time of 3:03:19.

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Wagga Weekend 1972

Keith Vincent, Viv Molineaux and Bernie White in Wagga in 1972

Don't they all look young! I guess we all would have, that long ago.

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"That Bloody Female!"

by Bob Lions

It was cutover time for the new ARM telephone exchange at Paddington. All the tests had been done and all systems appeared to be go to transfer traffic to the new facility. The ARM was larger and able to ultimately handle ISD when the PMG Department allowed it. However, it was first to be turned over to the international operators in the PMG network to show off its paces.

Then disaster struck. The calls were coming in from the national operators but not going anywhere! We could see the digits coming in but the call then just locked until it timed out.

When the call timed out or otherwise failed, a voice announcement was connected saying words like "Your overseas call has failed" to indicate that the call had at least made it to the international exchange but wasn't going any further.

Remember, these were the days of rotary dials and the subscriber was going to have to dial "0011" plus many other digits before they knew whether they were getting anywhere!

Announcements actually came in two flavours, a female voice (FVA) and a male voice (MVA), the first to indicate to those who were troubleshooting whether the call had failed in the Australian gateway exchange (FVA) or had been rejected overseas (MVA).

Since the calls coming in had no Ring Forward, they timed out in the ARM and the FVA was returned.

The national operators were soon exasperated with the failure of all their calling efforts and started to reach screaming point when "That bloody female" told them, once again, of a call that didn't get through.

Fortunately, Dave Reynolds (CD) was on duty and it was he who recognised the failure of the operators to send a Ring Forward at the end of dialling and instructed them to do so. He also provided the analysis of the problem.

It appeared that the old exchange (the TEI/ATE 5005) had been quite happy with a very brief Ring Forward signal which was generated by the bunching of contacts on the operator's Send key when it was restored to Normal, despite the fact that their instructions were that they should push the key through Normal into the Ring Forward position to generate a Ring Forward signal of at least 100ms (about $1/10^{th}$ sec). Over the years they had found it wasn't necessary so the practice was dropped. The new exchange had been designed to comply with the CCITT standards, so timed carefully to ensure the Ring Forward signal was long enough.

Having been instructed to use Ring Forward, the traffic then started to flow. Fortunately, that was the worst aspect of that cutover.

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PAUL MCCANN'S 50TH BIRTHDAY

Be warned, if you go to functions with Kim Hopkins and are not a member of OTVA, he

will twist your arm. Here is what he said after Paul's 50th Birthday party. "I am now holding membership contributions from the following: Ian McMaster , Milton Cale, Bob Emanuel, Brian Calder, Brian Fitzpatrick, Peter Tuckwell and Peter Bull is holding a sub for Chris Bull. I have promised these chaps a year of membership and mailouts of the OTVA newsletter. Not bad for one night, probably softened up by Pauls excellent music and few free drinks.

The mob at Paul's 50th

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VALE

Jim Neylon was born on 31st October 1923 in the front room of a terrace house in Glebe Point, the youngest of six children born almost exactly two years apart.

Jim Neylon

Jim, like most working class people of the era, left school at fourteen and worked first at a dry cleaning establishment, then at Grace Brothers' where he learnt to work the system for free chocolate and was later sacked for writing objectionable words in the toilet. He then became a 'Klicker' at a shoe factory in Redfern.

At the outbreak of the war he joined the army, serving in various areas including Darwin during the Japanese bombing raids.

After the war he trained as a telegraphist and was employed by AWA – becoming a public servant in 1947 when OTC was formed. He then transitioned from radio to cable which was to help his travel lust through to his retirement at the end of the '80s.

He married Verna in 1945 and through the years they lived on Fanning Island twice, Suva, Guam and of course Sydney. They travelled around the world a few times between postings and raised 4 boys in the process.

Jim was one of the 'characters' that made OTC, he was blunt, he was a staunch advocate against management excess, and he had a sense of humour that all remembered vividly.

Jim died on 1st July and is survived by his wife and three sons (a university professor, a renowned rare book expert and a second generation telco type, Scott who kindly provided this tribute).

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Edgar Harcourt Died Sunday 31 July at the age of 92. We will have more details in the next issue

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THE LAST WORD

We need more material!!

At the AGM it was announced that there would be a prize for the best item submitted for publication. We also need material for the 50th Anniversary of the Vets and the 60th Anniversary of OTC. Get your thinking caps on. Stories, photos reminiscences are all welcome. You will note I am using stuff I write myself – surely you guys can do better!!

Also an apology. I had intended to put a lot of photos on the website. However, because of other demands on my time I have not had time to arrange all these photos for loading on the website.

À Bientôt

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