OTN

Old Timers' News

Journal of the ***Radio Amateurs Old Timers Club Australia Inc***

Number 39 **September 2007**

Contents

Radio Amateurs Old Timers Club Australia Inc

Established 1975 Incorporated 2002 Member of the WIA

Correspondence

Please note that all correspondence for the **RAOTC** and for *OTN* magazine is to be addressed to:

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OTN Magazine

OTN magazine is published twice yearly by **RAOTC Australia Inc** and is mailed to all members in March and September of each year. *OTN* is **dependent upon material supplied by members and all contributions are most welcome,** particularly those describing your experiences in your early years of amateur radio communication.

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RAOTC Membership and Fees

With the objective to maintain interest and good fellowship among those who qualify for membership, full membership of the **RAOTC** is available to any person who has held, or has been qualified to hold, an Amateur Licence for a minimum of 25 years. **Associate membership** is available to any person who has held, or has been qualified to hold, an Amateur Licence for a minimum of 10 years. Associate members are entitled to all the privileges of Full Membership except the right to vote or to hold office.

Membership subscriptions, which fall due on 30th April each year, are a joining fee of $5.00 (to cover the cost of a membership certificate, recording membership, and initial postage), and $8.00 as the yearly subscription, or $15.00 for a two year membership, or $100.00 for a life membership.

The **address flysheet** accompanying your mailed copy of *OTN* magazine shows your **RAOTC** membership number and your membership financial situation in a line immediately above your name and address. In addition, if your membership subscription is due, a reminder notice will appear below your name and address.

Application forms for membership of the **RAOTC** are available from the RAOTC, PO Box 107, Mentone VIC 3194 on receipt of a stamped self-addressed envelope, or on receipt of an email request to *raotc@raotc.org.au* or as a download from the RAOTC web page at *raotc.org.au*

Enquiries will be welcomed by Secretary Ian Godsil VK3JS on 03 9772 1534; by President Ron Cook VK3AFW on 03 9579 5600; or by Membership Secretary Bill Roper VK3BR on 03 9584 9512; or by email to *raotc@raotc.org.au*

VK3OTN Broadcasts

VK3OTN, the offical callsign of the RAOTC, transmits news and information sessions for the benefit of members on the first Monday of each month (except January) at the following times and frequencies:

10.00 am	Victorian time (all year)	145.700 MHz FM plus 1.843 MHz AM, and 7.060 and 3.650 MHz LSB	
0100	UTC (all year)	14.150 MHz	USB beaming north from Melbourne
0200	UTC (all year)	14.150 MHz	USB beaming west from Melbourne
8.30 pm	Victorian time (all year)	3.650 MHz	LSB

Call back sessions follow each transmission.

VK6OTN

VK6OTN retransmits the monthly RAOTC news broadcasts over the linked NewsWest FM repeaters at:

10.00 am Western Australian time (all year)

RAOTC web site: *www.raotc.org.au*

A few words from the president . . .

Lost key

On one of the recent RAOTC broadcasts I commented on having visited the Number One pumping station for the Perth – Kalgoorlie water pipeline. I wondered how the design office in Perth communicated with the construction crews. It now seems, from feedback from members in VK6, that the railway not only provided the means to get the steelwork close to the site but its telegraph would have been available. There was mention of a key from the telegraph being seen in a museum but, to date, it has not been tracked down. Any information on this would be gratefully received.

Help save our heritage

I also commented that the communication systems used in the old Zeehan mines seem to have been lost with conservators concentrating on steam machinery and the like.

This led to my relating the story of the partial dump-mastering of some century old electrical measuring instruments. I managed to place about two thirds of the collection, but the remainder is in danger of being destroyed.

Fortunately, most of our members are conservators. We have articles in this issue of *OTN* describing a couple of significant pieces of old gear that have avoided the garbage bin.

I'd like to issue a general call for all members to help save our electrical and communications heritage for the future. If you need help in safely relocating something, please contact me ASAP. Tomorrow might be too late.

Teamwork

We are in the pruning season and, on a recent Saturday, I was pruning the lemon tree and listening to the radio as I often do when gardening. There was an interview of a special consultant who was teaching teamwork to football teams.

This came as something of a surprise to me. When I was in short pants the wise old men used to say that playing sport taught you how to be part of a team and to develop social skills. Even the start of management and leadership skills were supposed to be instilled from playing team sports. The idea of sportsmen having to be formally taught how to co-operate as team members, and how to behave on and off the field, seemed very strange.

OK, what has this to do with amateur radio? We all have different interests and many of us prefer to work alone.

We all share the same hobby, we just have different interests in different facets. We all benefit from the continuance and growth of amateur radio. Therefore, we should each do what we can do to support the hobby. We really are part of a team. So what can we do?

We can join the WIA for a start. We can join our local radio club and we can join the Radio Amateurs Old Timers Club. All excellent ideas, but then we need to participate.

We can give a talk at the Club on some of our past activities, we can write articles for the magazines, we can take part in on-air activities, but there is something an old timer can do especially well.

What we have, that others in the team may not have, is considerable historical knowledge, a huge amount of experience, and not a small amount of common sense.

We have a crop of new foundation licensees, all of whom have had a small flame of enthusiasm ignited. You can help fan that flame by encouraging them to experiment, to try portable operation, to build antennas, or to try CW. Whatever took your interest when you were younger will interest many of these newcomers too.

We have had floods in the East and emergency communications were put to the test. There may be more floods to come. And, of course, the new growth that is appearing will provide fuel for bush fires late this summer, or in summers to come. WICEN will continue to be required to provide a valued service. It will also need new operators. They are likely to have started as "F-calls"

"F-calls" represent much of the future of amateur radio. You and they are important parts of the amateur radio team. Please do encourage these newcomers.

A new contest

The Old Rigs contest is coming up in November, so take some time now to check out and, if necessary, repair or service your old rigs. I have to decide which of two rigs to repair and I know if I don't make a decision soon it will be too late. The rules are on page 4 in this issue of *OTN*. I hope you will participate and that it will be an enjoyable outing for many old sets and their operators.

The AGM

The RAOTC AGM will be held on 27th September. If you would like to join the committee please use the nomination form in this issue (see page 40). We need some help with general committee activities and with producing the monthly broadcasts and *OTN* magazine. We also need occasional help with relaying the monthly broadcast, mainly on HF; however, you don't need to join the committee to help with this. I'd be delighted to hear from any member.

73

Ron VK3AFW

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Front Cover Photo
The main display hall at the Royal Australian Army Corp of Signals Museum located at Simpson Barracks, Melbourne. (see article on page 36)
Photo by Bill RoperVK3BR

From the editor . . .

When was the last time you sent in an article, letter, or note for publication in *OTN* magazine? A number of members did send in contributions for this issue of your magazine, and they make quite interesting reading. Thank you to those RAOTC members.

However, have a look at the number of articles that have been contributed in recent issues by both Ron Cook VK3AFW and myself. One of Ron's duties for the RAOTC is to present a monthly news broadcast. Strictly speaking, his role is simply to edit contributions from members, and present them. But, as those who listen to the monthly broadcasts will know, much of the material is being written by Ron, otherwise the broadcasts would be very short, indeed.

Fortunately for *OTN*, many of Ron's broadcast items can be turned into interesting articles for *OTN*.

Similarly, my role as editor of *OTN* should be to simply sub-edit material from members and publish it in a presentable format. But, like Ron and the broadcasts, *OTN* would be rather thin if it relied only upon contributions from members.

I firmly believe that the story of amateur radio should be told through the eyes of those who participated in it, particularly during earlier days. As I look at the Silent Key listings in each issue, I worry about just how much interesting radio history is disappearing for ever.

If you haven't already done so, now is the time for you 'old timers' to put pen to paper and tell your story, be it ever so short a piece of interesting history.

Do it NOW and send it to your magazine, *OTN*. ar

RAOTC Perth Luncheons

The Perth RAOTC monthly lunches for members and friends take place at 12 noon on the second Tuesday of each month (except January) at the Bayswater Hotel, Railway Parade, Bayswater.

RAOTC 'Old Rigs' Contest rules

Ian Godsil VK3JS
RAOTC member No 1220

This new contest is a great excuse to dig out your old equipment, fire it up and have some fun.

Objective
To encourage RAOTC members and other licensed operators to participate in a contest using older radios. However, the contest is open to all licensed amateur radio operators using any equipment.

Date
Saturday, 3rd November 2007.

Time
0600 - 0800 UTC (1600 - 1800 AEST).

Equipment used
Equipment of any age may be used, however the emphasis is on the use of transceivers or transmitter-receiver combinations manufactured prior to 1983. Homebrew equipment is eligible, provided that the original construction was prior to 1983.

Categories
General: Open to all operators using equipment less than 25 years old.
Old Timer - 25 years old: Equipment to be in the age range 25 - 49 years old.
Very Old Timer - 50 years old: Equipment to 50 years old or more.

Modes
CW, AM, SSB, FM simplex. Please submit separate logs for individual modes.

Call
On CW "CQ OR"; on phone "CQ Old Rigs Contest".

Frequencies
MF CW 1800 - 1830; AM 1843; SSB 1845 - 1860 kHz
HF CW 3.510 - 3.530, 7.010 - 7.030, 14.040 - 14.060 MHz
AM around 3.540, 7.055, 14.130 MHz; SSB 3.550 - 3.580, 7.060 - 7.090, 14.150 - 14.180 MHz
VHF SSB 50.150 – 50.200, 144.150 – 144.200 MHz; FM around 52.525, 146.500 MHz; AM around 52.530, 146.550 MHz.

Exchange
RST; plus serial number starting at 001 and incrementing by one; plus RAOTC Membership Number. Non-members to send "N" in lieu of Membership Number.

Score
One point per contact. For equipment (transceiver OR transmitter/receiver combination) over 25 years old, double the final score. For equipment over 50 years old, triple the final score.

Stations may be worked once on each band on CW and once on each band on Phone. (SSB, AM or FM are all taken to be Phone for the purpose of this rule, so if a contact is made on SSB and another on AM, points can only be scored for one of these.)

Logs
The log must show date, time, mode and band, call worked, exchange, member number (or N for non-member) for each contact for which points are claimed. A cover sheet is required showing the name, callsign and address of operator, description of equipment used with year of manufacture, if known, and a declaration that the operator has complied with the spirit and requirements of these Rules.
A summary of the points claimed shall be included on the cover sheet.

Send Logs
Logs can be sent by post to PO Box 104, Mentone VIC 3194, or by email to *Ian_G@mail2ian.com* by Friday, 16th November 2007.

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From our members . . .

Amateur Radio Publications Committee

I have very little to do with radio these days. On a bad day I stay in bed; on a good day I'll watch a bit of TV, or perhaps come and chase the spiders out of the computer. In short, I am virtually house bound. I still, however, enjoy reading *OTN* magazine.

This last March 2007 issue has a couple of items of special interest, starting with page 31 regarding working DX. It is now nearly 10 years since I worked any DX, apart from a couple of contacts about five years ago with 9V1RH. These days I rely on the internet. I still have the tri-band beam, but it is in need of some repair work which I am no longer able to undertake.

As recently as November, David 9V1RH informed me that in the last year he had worked 75 countries on 75/80, plus several on 160. His antenna is a long wire up 75 feet, and he uses it on all the HF bands.

On page 34 Ron Cook mentions old magazines and lists the publications committee members in January 1962. I do not know where he got the information, but I have been omitted.

I first became involved with the *Amateur Radio* Publications Committee in 1947, when my interest was limited to SWL. I lived very close to Ron Higginbotham, and he persuaded me to join the WIA. For several years I helped Ron with the proof reading of *AR* and also the Call Book when it was being produced by the WIA for the Radio branch. I was the main contact with Wally Vains at the branch and paid him a visit several times a year updating not only our records, but also those of the Department. It was surprising the number of amateurs who changed QTH and never informed the Department.

Back in those days the committee meetings were held at the home of the late Jim Marsland. This was before the acquisition of the Victoria Parade premises.

If I remember correctly, I recruited Ron Fisher VK3OM to the committee and he, in turn, recruited George Baty. It was about the same time that I persuaded Bill Roper VK3BR (VK3ARZ at the time) to join the Divisional Council.

As far as I know, Ron Fisher and myself are the only survivors of that group.

I did at one time have a list of all members of the committee, past and present, with the dates they joined and left the committee. I probably still have this particular record somewhere, but have no idea where it is.

Regarding Ron Cook's article on the BBC World Service, I had the good fortune to visit the BBC installation in Singapore in 1998(?) and have about ten minutes of video tape of the installation. At the time there was some mention of changing the location to Malaysia, but I have no idea if this proposal was carried out. At the time of my visit, the BBC was the biggest customer of the local electricity producer.

Speaking strictly from memory, each of the eleven transmitters ran 10 megawatts and the final was driven by a bank of five 813s, They did NOT run all transmitters at the same time.

If the RAOTC committee is interested I could make a copy for you. At the same time I have a tape of various activities of the Moorabbin Radio Club, many of whose members would have been part of the RAOTC. I could include the BBC on the same tape. It may be of some historical interest and will only be thrown out once I join the SKs.

Ken Pincott VK3AFJ
RAOTC member No 152

(Ron VK3AFW did not accidentally omit Ken VK3AFJ from the listing of the members of the AR *Publications Committee published in the January 1962 issue of* Amateur Radio *magazine; Ken was not listed in that particular issue of* AR. *Ron VK3AFW now has the video tape which Ken so kindly offered. Ed)*

Sounder

Thank you for your article in the March 2007 issue of *OTN* describing and explaining the Morse sounder.

I remember Dennis Norden on the never-to-be-forgotten BBC panel game 'My Word' relating how he was sent to Iceland by the RAF to train as a radio operator. Apparently they were using Morse sounders because he described the Morse sounds as 'iddi and umpty' ; 'iddi' being the dot and 'umpti' the dash. My father, who worked all his life on the WA Government Railways, also spoke of Morse as 'iddi umpty'.

Incidentally, it also works if you are practising your Morse verbally 'sending' street signs or car number plates. Umpti-iddi-umpti is just as good as dar-di-dar.

Bruce VK6OO
RAOTC member No 1413

AR-88D

On a recent visit to VK3KS Mavis Stafford (RAOTC member No 62), she kindly gave me copies of your magazine, *OTN*, and suggested I join the RAOTC.

I found *OTN* very interesting indeed, especially page 19 of the March 2006 issue. I acquired an AR-88D receiver from England for $50, from disposals, in the 1950s. I had many hours pulling in all sorts of stations - school of the air - some pilot lost between here and Broken Hill - ship down in Botany Bay. Not being a ham at that time I could not answer these people but read about them in a newspaper weeks later.

A ZL collector then pressed me to buy the receiver. My antenna, then, was a very long wire through the gums around a huge dam. I knew nothing about antennas then.

I took my eldest son into lectures in town when he was about 15 years old. I sat in on the lectures so decided to have a go myself. Old exam papers were very useful. As I was an operator in the ASWG (Australian Special Wireless Group), CW was no problem, hence my radio ham licence. I then obtained a Swan 700, using valves, which I still have today.

In some old papers of mine I have the permission from the Governor General of the time, 1913, for my father – C T Hazard - to experiment with radio.

Freda Leaver VK2SU
RAOTC member No 1419

Secret Wireless War

Readers of *OTN* may be interested in a book I acquired recently, *The Secret Wireless War* by Geoffrey Pidgeon. It is published by UPSO Ltd,

(continued on page 16)

(continued on page 4)

Buzza Morse keys

Herman Willemsen VK2IXV
RAOTC member No 1384

I read with interest Bill Roper VK3BR's article about "The mechanical sounder" on page 15 of the March 2007 edition of *OTN* magazine, and the exchange of a Buzza 'bug' key for two J-38 Morse keys and that particular sounder.

I own a few Buzza keys and I would like to share the maker's interesting history with you.

You may have noticed that Buzza bug keys are now worth their weight in gold as they are extremely scarce. You pay big 'bikkies' for them, if (and that is a big IF) there happens to be one for auction on eBay. American radio amateurs and collectors love them, especially the Buzza double-lever 'bug', and snap them up.

In my Morse key collection I have three keys made by Buzza, namely the double-lever type 100 bug, the J-38 style hand key and a Morse practice set.

As far as I know, a fellow collector with the biggest collection of Buzza keys is RAOTC member No 1148, Ric Havyatt VK2PH. Ric has written many articles on Buzza and other telegraph related subjects.

But who was this company, or Morse key manufacturer, called Buzza?

It all started when German engineer August A Kraus migrated to Australia in the 1930s. After working for someone else, he started his own business making Morse sets at a location near Clarence Street, Sydney, using the company name Buzza, a word derived from the word buzzer.

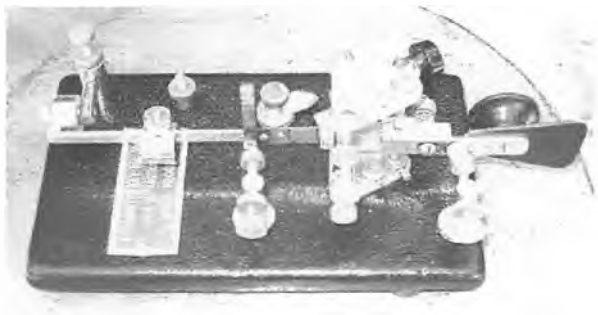
During WW2 thousands of naturalised and Australian-born persons of enemy alien descent were interned in 'camps' around Australia. That is why August Kraus ended up in Sydney's Long Bay Gaol. Luckily, his mechanical skills were recognised, and he was released to design and oversee the manufacture of Morse keys for the Australian Armed Services and the US Forces in Australia.

Buzza keys were not particularly well made in comparison to identical looking keys made in the USA. Buzza's single-lever bug key was simply a clone of the Vibroplex Lightning bug. He called it 'model 100'.

Buzza's double-lever bug, so called because the dot and dash levers are entirely separate and independent, was also called the 'model 100'.

Buzza's military bug, the J-36, made for the US Forces, carried a name plate which read: "J-36 Automatic Key, US Signal Corps USA, Made in Australia".

One of the hand keys made by Buzza was clearly a clone of the oval shaped Bunnell 'Triumph' type key, or the popular American Signal Corps' J-38. It had "Buzza Products Sydney" stamped on the lever. When made under contract for the US Navy, it became their type 26001-B and the key's cardboard box carried the label



A Buzza double-lever bug called the 'Model 100.

"Hand Telegraph Key U.S. Navy Type 26001-B M.R.S.N. 1168. Made by Buzza Products Sydney".

Another Buzza hand key was his brass-wooden key, an inferior copy of the well known, 1920s era, PMG brass-wooden key. It had a crude wooden base and a brass lever painted gold. There was a somewhat similar key, but with a steel lever and steel fittings, which was painted silver. Both keys were rather roughly made and certainly not for professional use.

Buzza also made many variations of Morse practice sets. My Buzza Morse practice set came in kit form in a cardboard box and consisted of a springy strip of copper for a sort of key, a small one-coil buzzer, a 4.8 volt/0.5 amp light bulb, four felt feet, screws, nuts, wires and a cheap Masonite red coloured base. On the base were glued a paper Buzza decal and a paper chart with the Morse code alphabet and numerals. When put together it looked more like a child's toy and was, in my opinion, not at all suitable for amateurs or professional operators.

Mind you, nowadays it is a collector's item.

After the war Buzza kept on making Morse keys, but at a reduced capacity as he now made mainly the more popular Morse practice sets for the many budding radio amateurs and for Scout groups.

In 1957 'Buzza Products Sydney' moved into new premises at 80 Hotham Parade, Artarmon NSW. Here the production was mainly the relatively cheap toy Morse trainers (learners' sets), but also toy xylophones, toy Meccano sets, pipe cleaners and spinning wheels for potters.

The company ceased to exist in 1977, two years after the death of August Kraus.

Buzza's copy of the Bunnell 'Triumph' type key (or copy of a J-38 key).

Buzza Morse practice set No 0.

How BBC man scooped invasion news

Laurie Margolis G3UML
BBC News

Clive VK6CSW, RAOTC member No 1289, who supplied the following article, points out that this experience by Laurie Margolis is by no means the first time that amateur radio has been the initial link to the outside world. Darwin's cyclone Tracy, and the Cessna 210 crash in the Barrington Tops in August 1981 (the aircraft and five persons aboard have still not been found), come to mind, to say nothing of hurricane Katrina. As Clive wrote, maybe we're not just a bunch of old has-beens living in a time warp after all! Full acknowledgement is given to the BBC and their web page at http://news.bbc.co.uk/ for this story. *Ed.*

Walk down London's Portland Place, heading south from Regent's Park towards Regent Street, and you come to a kink in the wide road. Immediately ahead of you is the plush Langham Hotel, very expensive and also one of the most haunted buildings in London. To your left is BBC Radio's headquarters at Broadcasting House. This busy location, on the northern edge of London's West End, was the focus of the way the story of the Falklands invasion unfolded exactly 25 years ago.

Laurie Margolis G3UML

Back in 1982 I was a BBC journalist and also an amateur radio operator - I still am. That means I have a call-sign - G3UML - and some expertise in long-distance short-wave communications.

At the very end of March 1982, I was working on the Golan Heights, hearing on the BBC World Service a bizarre story about Argentine scrap metal merchants taking over the British dependency of South Georgia.

Invasion claim

I returned to London on the morning of 2nd April, and went into Broadcasting House to work on a documentary. I was met by scenes of near panic in the radio newsroom. The Argentines were claiming to have invaded and taken over the Falkland Islands, the 2,000-strong British colony off the south-eastern tip of South America.

The newsroom had Argentine claims, but nothing else apart from a laconic message from the Cable and Wireless station on the Falklands - "we have a lot of new friends". At that time the Langham Hotel was a dreary BBC office block and, in a dusty, junk-filled attic room - number 701 - the BBC's own amateur radio club had a shortwave transceiver. With a big aerial on the roof, it worked pretty well.

Argentine soldiers took control after a few hours resistance.

Map of the Falkland Islands in the south of the Atlantic Ocean.

My senior editors wondered if there was any way I could contact the Falklands through amateur radio. Nothing else was working. It seemed a possibility. The remote nature of the islands meant that radio was important, and for the small population there were a lot of radio amateurs down there.

'A true scoop'

So, I took up a vigil in room 701, listening carefully across the 14, 21 and 28 MHz bands for anything from VP8 - the international call-sign prefix for the islands. And about six hours later, I struck gold.

On 21.205 MHz at 1600 London time, there was that rather distinctive accent, a bit West Country - a Falkland Islander. And what a story he had to tell - a true scoop, an exclusive of the greatest magnitude.

The resulting conflict cost hundreds of lives.

The voice was that of Bob McLeod, and he lived in the settlement of Goose Green on East Falkland. His call-sign, I realised, was VP8LP but he was anxious that it shouldn't be used. I have much of what he said that day recorded on an old-fashioned audio cassette.

"We have now been taken over. The British government still denies it but they have no contact, I believe, with the Falklands, and this is probably why they are still denying it.

"But we have been taken over. There is an aircraft

carrier and I believe four other boats - I don't have the details on them - but they do have heavy armoured vehicles in Stanley, details I don't know, and quite a number of personnel.

"They landed approximately 0930 GMT this morning in landing craft and stormed the capital Port Stanley and have taken over the government office; they landed with heavy armoured vehicles.

"We're now under their control. They are broadcasting that all local people will be treated as normal. Fairly peaceful in Stanley at present time."

Foreign Office call

The Argentines had still to reach Goose Green and so Bob was able to transmit his bombshell. He was getting information from local radio, which broadcast a commentary as the invasion developed early that morning, and then carried on, under Argentine control, transmitting messages of reassurance. The island's VHF radio network was also buzzing with the story as it developed.

By then my dusty attic was busy with BBC TV crews and newspaper people who'd been told it might be a good place to be.

I went onto the Radio 4 PM programme at 1700 London time with an account of what I'd been told. A few minutes later I was rung by the Foreign Office, who understood I'd been in touch with the Falklands and wondered what they were saying. I gave them a bit more of Bob.

"Damage we don't know, shooting around a very rough guess approximately two hours. Three deaths of Argentineans [sic] in the Falklands, one believed to be very senior.

"The English marines and local defence forces - we have no information. Took over Government House, and then taken over all of Port Stanley. And I believe they shot up the Cable and Wireless transmitting station.

"Helicopters flying around Stanley. 500 personnel in Stanley, and aircraft carrier believed to be carrying 1,500. Flying Hercules aircraft, one has come in."

It clearly made an impression. Within an hour the Foreign Secretary, Lord Carrington, was on his feet in the House of Lords confirming a massive British humiliation.

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PEACESAT satellite trials

Neil Trainor VK3IJ
RAOTC member No 982

In the early 1980s I was working in the Audio Visual Department at Footscray Institute of Technology (FIT), now part of the Melbourne University. One of the most interesting and frustrating jobs which came my way was concerned with an ageing American geo-stationery satellite. The photo below shows a model of this satellite which was made from photos of the original vehicle.

This particular satellite had been superseded by later and better versions, and some of its functions no longer worked. One of those which did was a repeater, functioning, if my memory serves me right, at about 200 MHz.

Under the auspices of Dr Steve Seumaru at Latrobe University and people in New Zealand, Hawaii, Fiji and America, plus a few others, a plan was developed to allow students and staff to communicate with each other around our part of the world.

The plans for our equipment acquisition had all been finalised before I was brought into the project. Eventually, a transceiver costing $10,000 arrived from one firm, and special helical beam antennas costing an unknown sum arrived from another firm. I helped during three Saturdays to set up the antennas and install the coaxial feed lines.

The results from the setup were not very satisfactory. We checked that the antennas were pointing in the right direction and that the transmitter was producing output. The others in the network could hear us fairly well but we could not read them easily because the signal was weak and noisy. Of course the antenna people blamed the transceiver people, and vice versa.

After putting up with mucking about for some time, I built up my own receiving antenna. It was a Yagi with a wooden boom, and had seven copper and aluminium elements. Total cost was about $10.

When this antenna was tried on receive it had to be rotated until the signal was maximum. Now, however, the signals came in loud and clear. At first my report was not believed so, to make sure the point got home, I recorded the original antenna and my 'cheapie' alternately on audio tape and played it back to the powers-that-be. The commercial unit was actually producing a considerable loss compared to my 'cheapie'.

A model of the PEACESAT satellite.

Some time later a new receiving antenna was supplied. This was after I had left the Institute. Not very long after that was fixed, the satellite ran out of the gas used for holding it in its position relative to the Earth, and it drifted off into a 'trough' near America and out of range of Australia.

I later mentioned to one of the instigators that it would have been better if we had followed the example of Steve Seumaru. He bought a commercial amateur radio transceiver which could tune to the required frequency and built his own antennas at a total cost of about $2000. I was told to keep quiet about that.

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VK1RB on Macquarie Island

Trevior Boyd VK4ARB
RAOTC member No 1044

After my 'demob' from the Navy in 1946 I eventually ended up joining the Meteorological Service in 1948. One of my early postings was at the Adelaide Weather Bureau when it was on West Terrace.

I loved my work and everything involved in the profession. However, it was a short posting and I still had 'itchy feet' from my three years in the military, even though I had married a lass in the United Kingdom before coming back home.

One day I met a colleague who had just come back from 12 months on Macquarie Island. After chatting with him, the 'adventure' of going to the Antarctic appeared to be somewhat appealing.

I then happened to notice in the Commonwealth Gazette that they were looking for volunteers to go to either Macquarie or Heard Island, so I approached the Deputy Director who said that he would recommend my secondment.

Of course, when I went home and discussed with my wife the possibility of going to either station for 12 months, the response was a deafening silence. After 48 hours of deliberation, my lady came back to me and presented me with a proposal that she sail back to the UK to see her parents and family for the period of my absence. I agreed and so the plans were laid, and back to Melbourne we went!

After, training, etc, I eventually sailed from Melbourne on 3rd April 1950 on an LST (Landing Ship Tank) 3501, *HMAS Labuan* with the meteorological team and 13 other specialists. The skipper of *HMAS Labuan* was my Gunnery Officer on one of my ships during the war. This time, I was in the Ward Room with him and not just a sailor!

We called into Hobart on 5th April to pick up the boys from the University who were to be our Cosmic Ray Physicists; brilliant people who built all their own equipment.

We sailed for Macquarie Island on 6th April after loading all the gear on board.

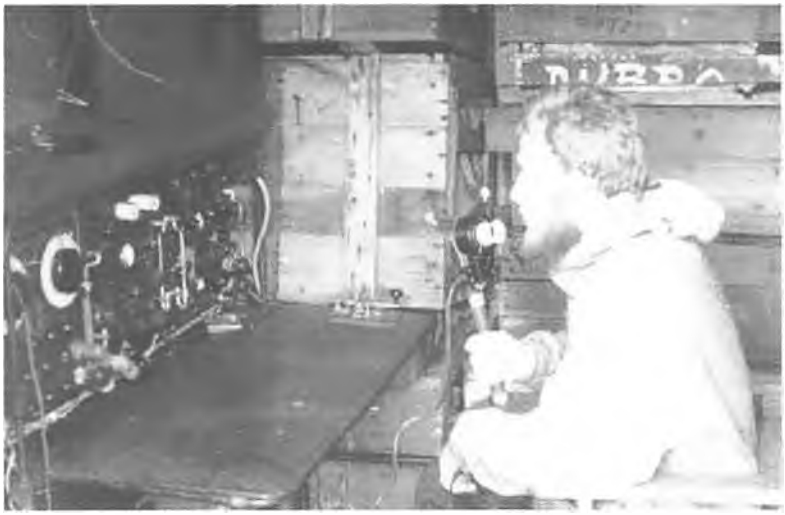
We arrived at Macquarie Island on 10th April after going through horrendous seas in a ship with a flat tank door in the bow which took a helluva battering. No wonder she only lasted one trip before falling apart!

The base at Macquarie Island.

Prior to sailing, another colleague and I obtained our amateur radio licences from the PMG (Post Master General's) Department. My call was VK1RB and my mate, Reg Frost, was allocated VK1RF. Sadly, Reg is now a Silent Key. As a matter of fact, I am the last survivor of the four man meteorological team.

You will notice the VK1 prefix to the Antarctic callsigns. VK1 was issued to Antarctica in the early days as the ACT was still VK2. Now, as readers will be aware, the Antarctic callsign prefix is VK0.

We took the AT5/AR8 transmitter/receiver combination down to Macquarie Island as our Emergency Communications rig. Of course, we realised that the mercury vapour tubes in the power supply would keep us a little warmer.



Trevior VK1RB using the Emergency Radio Equipment, the AT5/AR8 combination, in the Emergency Hut.

Trevior VK1RB in the main radio shack. The two Kingsley AR7 receivers are in the background, and the ex-Navy transmitters are to the left.

Trevior VK1RB, son Colin and wife Beryl at embarkation on HMAS Labuan.

We only operated AM, with 25 watts out, but it did a sterling job. The base at Macquarie Island is only on a very narrow and small isthmus between the plateau and Wireless Hill. Wireless Hill was where Sir Douglas Mawson had his station between the continent and Australia. The remains of the station - mast, generator, flying fox, etc - were still there!

Our antenna systems consisted of an inverted 'V' dipole directed on to VIS (Sydney Coastal Radio Station), and two 75 foot Kelly and Lewis Masts with dipoles between them for 20, 40 and 80 m. The masts had air holes through them, and the blizzards and the continual 'roaring 40s' sure let us know they were still intact.

In the pictures you will see myself using the old carbon mike, Morse key and the antenna coupler (which we did not use). During a blizzard everything was covered in snow, including the rig and the operator, as the shed was only built out of our old packing cases in which we brought the gear down.

Another picture is of our main transmitter. Note the wonderful old Kingsley AR7s (wish I had one today!) The transmitters were ex-Navy, running 750W.

We also had the bane of our lives installed, an Ionospheric Recorder . . .we shall not discuss that machine!

Whilst down at Macquarie Island we lost one of the meteorological team, John Windsor. Unfortunately, our doctor could not do anything for him. The French Expedition ship *Commandant Charcot*, on its way down to Adelie Land on the continent, called in, but to no avail.

We used the AT5 as a beacon for an RAAF bomber which left Sale in Victoria with a 'storepedo' containing medical supplies which they dropped for us. It landed on a seal's back, dead smack in the middle of the isthmus with ZERO visibility. The old AT5 was great, and it was great navigation by the aircrew who flew non-stop back to Sale, past the point of no return!

Our ship, the LST 3501, *HMAS Labuan*, did not survive the return trip on its relief to Heard Island. It almost broke in half, so we were stranded down at Macquarie Island without a relief vessel!

We did not know what was going on in Australia but, eventually, we were advised that the Government had secured one of the old ANL ships, *SS River Fitzroy*, as a temporary vessel. However, the Seamen's Union demanded 'Danger Money' pay for the crew, and special clothing.

An original VK1RB QSL card.

They were given this, but the trip back was directly up the longitude grid to reduce their time down south and, of course, to save money!

The *SS River Fitzroy* arrived at Macquarie Island on 4th May 1951 and the changeover took until Sunday, 13th May. They sure didn't waste time, so we said goodbye to all and headed back to Australia.

We still did not know where we would be landing, but knew it would either be Port Kembla or Sydney. Of course our families didn't know either, and so we landed at Port Kembla with only Customs to meet us!

We then transported to Mascot Airport, Sydney to fly to our destinations. My destination was Essendon Airport and my family was there to meet me.

While we were on Macquarie Island we were isolated in many respects from our loved ones. We were allowed to send 14 five letter groups (encrypted) per month via VIS, but these were extremely unsatisfactory.

Apart from this, and amateur radio, our only other means of communication with the outside world was via the Radio Australia programme every Friday night, 'Calling Antarctica'. By arrangement with Melbourne Technical College (now RMIT University), the wives and family members would meet there and endeavour to talk to us via amateur radio.

Of course we had other radio amateurs throughout Australia who would try and contact us with our next-of-kin. Even when my wife was in the UK, I managed to contact her, but with very poor radio conditions.

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Joseph Henry (1797 - 1878)

Ron Cook VK3AFW
RAOTC member No 824

In August 1893, an International Congress of Electricians met in Chicago during the World's Columbian Exposition. Scientists and engineers at the congress adopted names and agreed on definitions for eight units of electrical measure: the ohm, the ampere, the volt, the coulomb, the farad, the joule, the watt, and the henry. The motion to adopt the henry, the only unit named after an American, came from the leader of the French delegation, physicist Éleuthère Élie Nicolas Mascart. The henry was defined as "the induction in a circuit when the electro-motive force induced in this circuit is one international volt, while the inducing current varies at the rate of one ampère per second."

Today, we all know that the unit of inductance is the henry and that it was named after someone of that name. But what do we know of Henry, the man? Using information obtained from the internet, here is a brief 'fleshing out'of the man behind the unit of inductance.

Joseph Henry (1797-1878), the leading American scientist after Benjamin Franklin until Willard Gibbs, was a professor at Princeton from 1832 to 1846. His chief scientific contributions were in the field of electromagnetism, where he discovered the phenomenon of self-inductance. The unit of inductance, called 'the henry', immortalises his name. Henry is also remembered as the first Secretary of the Smithsonian Institution, where he made extraordinary contributions to the organization and development of American science.

Of Scottish descent, Henry was the son of a day-labourer in Albany, NY. As a small boy he was sent to live with his grandmother in a village about 40 miles from Albany. There he worked in a general store after school hours and, at the age of thirteen, was apprenticed to a watchmaker. As a young man he became interested in the theatre and was offered employment as a professional actor. However, in 1819 several well-positioned Albany friends persuaded him instead to attend the Albany Academy, where free tuition was provided. His interest in science had already been aroused by a chance encounter at age 16 with a popular book of lectures on scientific topics entitled *Popular Lectures on Experimental Philosophy.*

By 1823 his education was so far advanced that he was assisting in the teaching of science courses. By 1826, after a stint as a district schoolteacher and as a private tutor, he was appointed Professor of Mathematics and Natural Philosophy at the Academy. Here, in spite of a teaching schedule that occupied him seven hours a day, he did his most important scientific experiments.

Henry had become interested in terrestrial magnetism, which was then, as today, an important scientific topic. This led him to experiment with electromagnetism. His apprenticeship as a watchmaker stood him in good stead in the construction of batteries and other apparatus. Oersted and others had observed magnetic effects from electric currents, but Henry was the first to wind insulated wires around an iron core to obtain powerful electromagnets.

Before he left Albany, he built one for Yale that would lift 2,300 pounds (1,043 kg), the largest in the world at that time. In experimenting with such magnets, Henry observed the large spark that was generated when the circuit was broken, and he deduced the property known as self-inductance, the inertial characteristic of an electric circuit.

A portait of Joseph Henry, completed after his death in 1878.

The self-inductance of a circuit tends to prevent the current from changing; if a current is flowing, self-inductance tends to keep it flowing, or if an electromotive force is applied self-inductance tends to keep it from building up. Henry found that the self-inductance is greatly affected by the configuration of the circuit, especially the coiling of the wire. He also discovered how to make non-inductive windings by folding the wire back on itself.

While Henry was doing these experiments, Michael Faraday did similar work in England. Henry was always slow in publishing his results and he was unaware of Faraday's work. Today Faraday is recognized as the discoverer of mutual inductance (the basis of transformers), while Henry is credited with the discovery of self-inductance.

In 1832, when Henry was 35 years old, Yale's distinguished geologist Benjamin Silliman was consulted regarding the possible appointment of Henry

to Princeton. Silliman replied, "As a physical philosopher he has no superior in our country; certainly not among the young men". Henry, always modest, had responded to tentative inquiries, "Are you aware of the fact that I am not a graduate of any college and that I am principally self-educated?".

Henry's initial salary at Princeton was $1,000 per annum plus a house. The Trustees also provided $100 "for the purchase of a new electrical machine, etc". At that point the College was near bankruptcy and Maclean was trying to institute reforms and build up the faculty. Henry was a notable acquisition, and he found the lighter teaching schedule and the intellectual companionship at Princeton congenial, especially when his brother-in-law Stephen Alexander joined the faculty to teach astronomy.

Henry worked with Alexander in the observation of sunspots and continued his own work on magnets, building for Princeton an even larger magnet than he had built for Yale, one that would lift 3,500 pounds (1,588 kg). He also rigged two long wires, one in front of Nassau Hall and one behind, so that he was able to send a signal by induction through the building. Another wire from his laboratory in Philosophical Hall to his home on the campus was used to send signals to his wife. This signal system used a remote electromagnet to close a switch for a stronger local circuit and constituted, in effect, the invention of the magnetic relay.

A similar arrangement was used by S F B Morse in the invention of the telegraph. Morse had consulted Henry and had used one of his scientific papers. Later, Henry was called to testify in a patent suit involving the telegraph, *Morse* vs. *O'Reilly*. Although Henry had encouraged and helped Morse in his project, his testimony that the principle of the telegraph had been known to himself and to Professor Wheatstone in England undermined Morse's claim to originality. This led to much unpleasantness and controversy, but Henry's reputation emerged unscathed.

As noted in the last, March 2007, issue of *OTN* magazine the degree of originality in Morse's telegraph code system has previously been questioned.

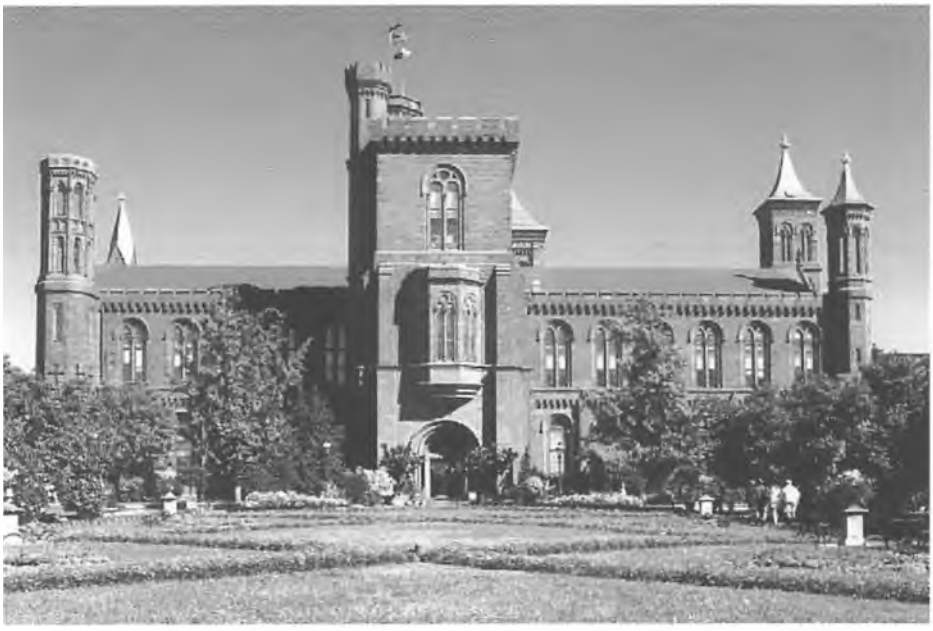
Henry used his knowledge of magnets in 1831 to create one of the first machines to use electro-magnetism for motion. This was the earliest ancestor of the modern DC motor. It did not make use of rotating motion, but was merely an electromagnet perched on a pole, rocking back and forth. The rocking motion was caused by one of the two leads on both ends of the magnet rocker touching one of the two battery cells, causing a polarity change, and rocking in the opposite direction until the other two leads hit the other battery.

In addition to natural philosophy (physics), Henry taught chemistry, geology, mineralogy, astronomy, and architecture. In the words of Frederick Seitz, Ph D, 1934, former president of the National Academy of Sciences, he was "a very large economy package".

A rather reserved and quiet man, Henry was nevertheless a popular teacher. The College gave Henry an opportunity, then unusual, to travel abroad on leave at full salary. In 1837 he met Faraday, Wheatstone, and other British scientists, to whom he explained his idea of "quantity"' and "intensity"' circuits (low and high impedance, in modern terms). He returned to Princeton with a variety of scientific equipment purchased abroad.

During his remaining years in Princeton, Henry continued his electrical investigations, but also branched out into the study of phosphorescence, sound, capillary action, and ballistics. In 1844 he was a member of a committee to investigate the explosion of a gun during a demonstration on the new USS *Princeton* which caused the deaths of the Secretaries of State and Navy, as well as several congressmen and other spectators. His experiments on gun castings on this committee led him into the subject of the molecular cohesion of matter.

In 1846, having received from an Englishman, James Smithson, a large bequest for the founding of an institution "for the increase and diffusion of knowledge among men", the US Congress established the Smithsonian Institution. A distinguished board was appointed, with instructions to find the best possible man to head the new Institution as secretary, and the invitation was soon extended to Henry.



The Smithsonian's first building, popularly known as the Castle.

Photograph by Bill Roper VK3BR

He was reluctant to leave Princeton and the opportunity to do his own scientific investigations. "If I go", he said to a friend, "I shall probably exchange permanent fame for transient reputation". But he finally accepted, and threw his enormous energy, knowledge and experience into the development of the Smithsonian, which became the first great driving force in the organisation and direction of American science.

Henry was one of the original members of the National Academy of Sciences and served as its second president. He was also a trustee of

Princeton, and president of the American Association for the Advancement of Science. When he died in 1878, his funeral was attended by the president of the United States with his cabinet, the chief justice and associate justices of the Supreme Court, by many members of both houses of Congress, and by many scientists and other illustrious personages.

In 1872, John C Green, founder of the School of Science at Princeton, endowed a chair of physics in Henry's honour (held since then by C F Brackett, W F Magie, E P Adams, H D Smyth, and J A Wheeler). Almost a century later, when the main physics building, Jadwin Hall, was dedicated in 1970, the Physics Department manifested its continuing esteem for Henry by declaring that all of the laboratory facilities housed in Jadwin and Palmer Halls, and the Elementary Particles Laboratory, should be collectively known as the Joseph Henry Laboratories.

Some of Henry's laboratory equipment is on display in the lobby of Jadwin Hall. His campus home, built to his design, is called the Joseph Henry House. In Washington his statue stands before the old Smithsonian Building.

Another field of activity was aeronautics. Professor Henry was introduced to Professor Thaddeus Lowe, a balloonist from New Hampshire who had taken interest in the phenomena of lighter-than-air gases, and meteorology, as well as, in particular, the high winds which we call the 'jet stream' today. It was Lowe's intent to make a transatlantic crossing via an enormous gas-inflated aerostat. Henry took a great interest in Lowe's endeavours so much as to support and promote him among some of the more prominent scientists and institutions of the day.

In June of 1860, Lowe had made a successful test flight with his gigantic balloon, first named the City of New York, subsequently renamed The Great Western, flying from Philadelphia to Medford, New York. Lowe would not be able to attempt a transatlantic flight until late Spring of the next year. Henry convinced Lowe to take his balloon to a point more westerly and to fly the balloon back to the eastern seaboard, an exercise that would keep his investors interested.

Lowe took several smaller balloons to Cincinnati in March 1861. On 19th April conditions were perfect enough for him to take off on a fateful flight that landed him in Confederate South Carolina. With the Southern States seceding from the Union, and the onset of civil war, Lowe abandoned further attempts at a transatlantic crossing.

With Henry's endorsement, Lowe went to Washington to offer his services with the use of balloons. Joseph Henry submitted a letter to the Secretary of War, Simon Cameron showing his endorsement. On Henry's recommendation, Lowe went on to form the Union Army Balloon Corps and served two years with the Army of the Potomac as a Civil War Aeronaut.

So, in summary, of items we are familiar with today, Henry devised practical electromagnets, relays, a telegraph system, and early electrical bells and electric motors.

Henry was a modest man who believed in the sharing of knowledge rather than patenting and controlling it. He may not have been very rich when he died but he was one of the most respected men of his time.

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An unusual use for Short Wave Broadcast wireless in WWII

Col Harvey VK1AU
RAOTC member No 303

It is generally thought that prisoners of war in Changi's gaol during WWII had secret access to only one radio. Russell Braddon, a prisoner of war for four years, sets the record straight in his chilling auto-biographical book "The Naked Island".

It seems the many Singapore detainees had an insatiable appetite for up-to-the-minute, reliable news.

This demand was not met by the British Camp Administration so a group of three POWs in Changi, one an Australian and headed by a Canadian, created a working "pirate" wireless using materials stolen from Japanese vehicles, etc.

When the Administration's wireless died, their previously banned "pirate" radio became the only source of reliable news.

There were other POW camps on Singapore Island (at Selarang and Sime Road, for example) whose POWs, upon transfer to Changi, brought with them their own wirelesses.

All these flourished while they could, regardless of whether they were "official" or otherwise.

Listening to the BBC or Radio Delhi Radio was supposed to attract a death sentence. Never- the-less, all attempts at censorship or suppression of news failed.

Braddon says that, "there was no section of people in the world so thoroughly, regularly and accurately informed upon the daily events in all theatres of the global war of 1944, as the 7,000 soldiers confined at Changi". A POW there, who could not give an accurate account of current world affairs, was "simply not worth his salt".

Source: The Australian war classic book "Naked Island".

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Steam radio

Rob Penno VK6PO
RAOTC member No 1111

Most of us, at some time or another, would have used the term "Steam Radio" when referring to the 'good old days' of radio. Well, I had the great experience of attending Echuca's "Steam Fest" last year and there, amongst all sorts of exhibits, was this steam turbine used by the Australian Commando 'Z Force' during WW II to power portable communication radios in the field behind enemy lines.

At that time there were no solar panels to charge batteries. Also, one suspects that petrol powered engines may have presented problems in sourcing adequate supplies of fuel whereas a boiler can be fed almost anything combustible to obtain steam. I also suspect that LPG gas was not part of the kit in those days!

Maybe some of our readers will recognise this exhibit and provide further information about its use and popularity.

Above is the poster giving details of the steam powered battery charger as displayed at the Echuca "Steam Fest". According to the 'blurb', the unit is a steam powered battery charger using the Stuart Sirius Engine. These chargers were parachuted behind enemy lines in WWII by MI5 in Europe, and by Australian Z Forces in Borneo. The operators were directed to destroy the units at the completion of the mission.

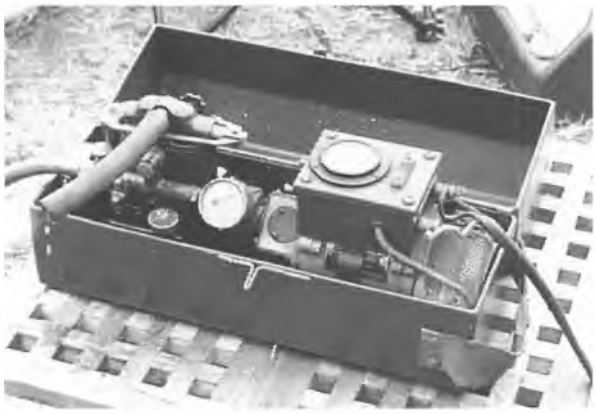
The charger unit is anchored firmly in the metal box inserted inside the boiler (the lid lifts off) and re-inserted in the furnace. Total packed size is 14 inches by 18 inches (35.56 cm by 45.72 cm) and the total weight is 90 lbs (40.82 kg).

It seems that water and fuel, together with "stolen" batteries, were accessible behind enemy lines making the unit operational in the field and/or a country kitchen.

The boiler holds 2.5 gallons (11.37 litres) for an operating time of 2.5 hours at 30 lbs psi pressure (206.84 kilopascals).

The unit was operational at a maximum of 6 volts, 4 amps, when charging a battery that provided the power for messages to be sent "home" by radio.

The furnace legs fold in and the total unit was designed to fit in the standard cargo parachute for dropping behind enemy lines during WWII.



The steam powered battery charger.

The steam powered battery charger in operation at the Echuca "Steam Fest", powered by LPG.

Intrigued by this, previously unknown to me, device, I did a little research on the web. It seems that Stuart Turner is an English company which has been making model steam engines since the 1890s. They made two steam engines for use with self contained generating sets during WWII, the Stuart Turner Sun engine, and the Stuart Turner Sirius engine which was a twin cylinder superheated steam engine. Apparently the Sirius-engined generating set was designed specifically for the 'Suitcase Radio', the Type 3 Mark II set.

Stuart Turner, of Henley, Oxforshire, UK still make model steam engines and plans can be purchased from them to enable model makers to construct a copy of the Sun and Sirius engined generating sets.

Can any of our readers supply more information on these intriguing generating sets?

Bill Roper VK3BR Ed

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Aerials

Jim Griffiths VK2BGG
RAOTC member No 1271

I like experimenting with aerials, not only amateur bands, but also broadcast and TV. Before we had FM radio here, and relied on the medium waveband (nowadays referred to as AM), putting up a resonant system had its problems.

A half-wave to receive 2FC on 610 kHz would have been over 700 ft long; or half of that, 350 ft for a ¼ wave vertical. Balloons come to mind, also kites and extensive earthing systems. Oh, boy! And in a town location you are surrounded by power lines which play up with the broadcast band centred on 1 MHz. All those little transmitters arcing away under the high tension wires. You can sometimes see a blue glow surrounding the insulators and actually hear the fizz, as well as the buzz in the wireless, of course.

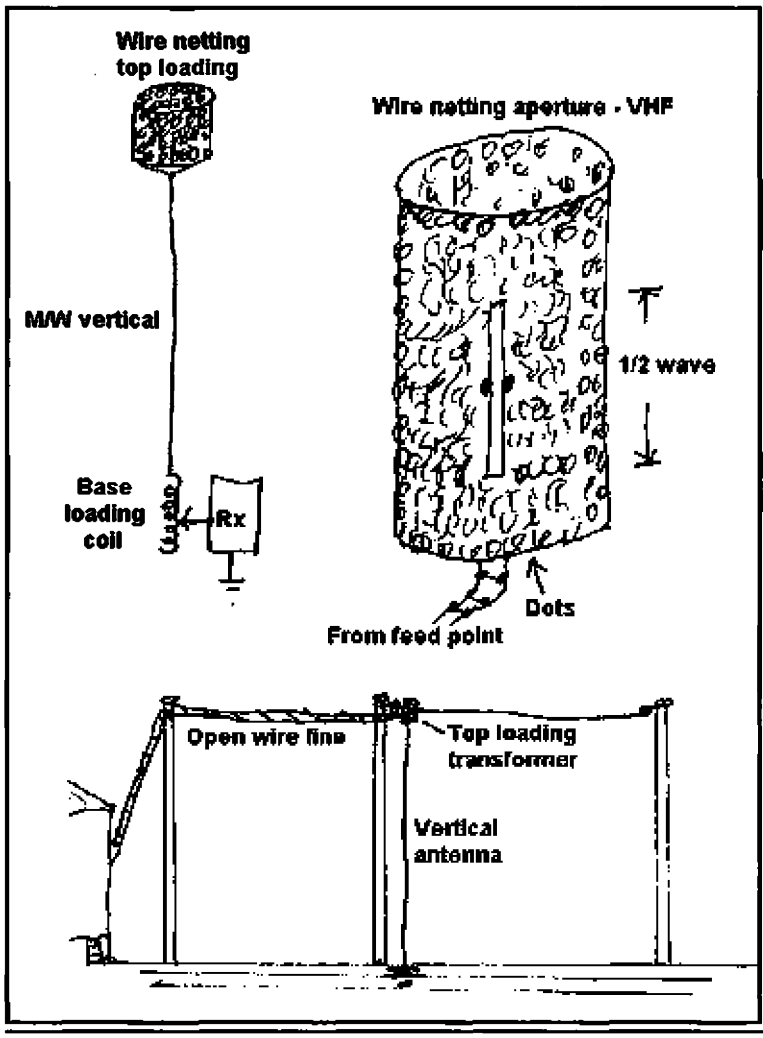
I had some success with top loaded verticals, tuned at the base. We used to follow Clive Robinson on the 2BL breakfast program with one, but there was another approach. It was based on the idea that, if you could erect the aerial as far as possible from sources of interference as possible and then use a balanced feeder (itself immune to pickup of anything), you can, hopefully, conduct a clean signal into the lounge room.

But there was a secret. I made a coil of a hundred or so turns on the standard 1¼ inch former which would be placed at one end of a 'flat top' of whatever length was possible, and perhaps 30 ft high, with the other end of the coil going straight down to the best earthing system I could manufacture. Now, can you see a centre loaded vertical with the top section above the coil bent over horizontally? With capacitive loading to earth it is a broadly tuned vertical matching the polarisation used by the transmitters.

Now to get the stuff into the lounge room. A capacitive shield was wrapped around the coil, well insulated, but not quite a complete, or shorted, turn. Over the top of this I wound the low impedance balanced secondary which went, via the balanced line, to a similar transformer to feed the wireless. Yes, the coil has come up in the world. It now steps up our signal to match the input impedance of the receiver.

You can see that the compass direction of the flat top is unimportant, except that it should not be run parallel to any power tines, and normally was run at right angles to them. A corner block called for some testing to be done, though.

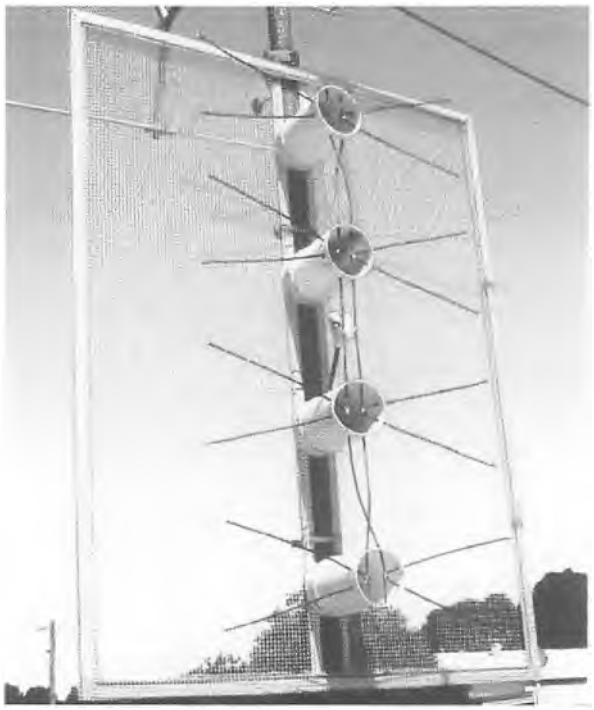
These worked, having anti-fading properties as well, and some installations were done using three 30 ft poles, the third one keeping the feeder up and away from trouble, before dropping down to the building.



But what about UHF, in particular 540 to 610 MHz, Channels 30 to 39 Digital TV? They are available to us from 70 miles away up near Dorrigo, horizontally polarised. I will need enough signal to run down 50 ft of coax, and split into two rooms. I would rather not use an amplifier, and decided to mount the thing on a pipe above the roof under a VHF Yagi with a reasonably clear takeoff to the north.

I decided to give an array of four skeleton 'bow-ties' a chance to prove itself, using a flat screen reflector spaced at a quarter wavelength behind them with about ¼ wave 'spare' all round.

Searching around, an aluminium framed fly screen was found which measured an ideal 33" x 42" (84 mm x 107 mm. I left the fibreglass mesh on it, thinking it might help to preserve its shape until the wire mesh was in place. I then removed the fly-screen and fitted two bits of aluminium frame from another fly-screen, straight up the middle, and about 2 inches (5 mm) apart. These would form the base for the four elements to be held in place by four pieces of 2.5 inch (90 mm) down pipe. Also, a couple of hose clamps would serve to hold the assembly to the pipe mast.

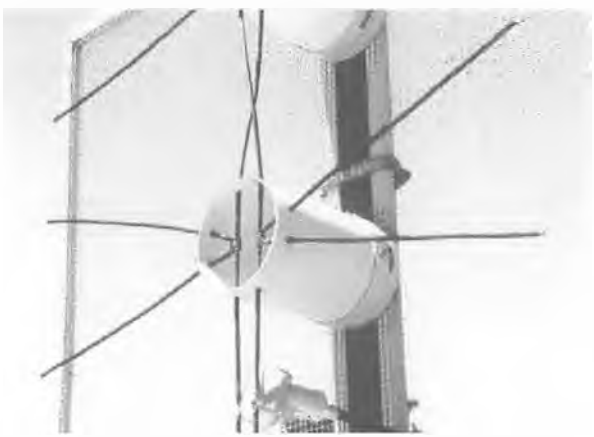


The UHF digital TV antenna using four skeleton 'bow-ties' and a flat screen reflector.

The mesh is something special discovered at one of the larger hardware shops (or stores, is it now?). It is a weld-mesh, hot dip galvanised, and with squares of merely ¼ inch (6.4 mm)! They call it 'mouse and snake', and a roll cost just over $30. Lots of other aerial projects spring to mind now that rust has claimed some of the older projects.

Let's see. Corner reflector versus trough, aperture or slot? I remember one, years ago, made of wire netting about 3 feet (91 cm) high and rolled into a cylinder shape about 1 foot (30 cm) across which received Ch 10 from Coff's Harbour. I fed it down an open wire line and reception was 'snow' free. That was a half-wave vertical slot for the horizontal signal, fed across the centre of the slot which was an inch or two (2.5 or 5 cm) wide.

Now the 2.5 inch (90 mm) pipe needs to be drilled about ½ inch (1.27 mm) from the end with a series of eight holes evenly spaced for a snug fit of the chosen wire. I used an end cap as a template to draw a circle around the circumference. The other end will be mounted by end cap through the mesh into the aluminium frame pieces up the middle by two nuts and bolts. A couple of small self-tappers will hold the pipes to the end caps. Remember, if you make one, carefully cut the pipes to bring the elements to be ¼ wave from the mesh.



A closer look at one of the skeleton 'bow ties' on the UHF antenna.

I cut the elements to a full wavelength, balanced them one at a time as a seesaw across a bolt held horizontally in the vice, then carefully bent them in the middle into a 'V' shape with an angle of about 40 degrees. It was then a simple matter of pushing the legs of the 'V' through two adjacent holes near the pipe end and the same on the opposite side.

I made four of them, assembled them on the framework, and then poked the phasing lines down through the remaining four holes. I bound the lines to the V's apex's and, using a good old ¼ lb (113 gm) iron on a blow lamp, soldered everything into place. All that remained was to connect the coax via a balun and test (keeping the heat away from the plastic pipe!).

Well, I had purchased some new cable, 100 ft (or, if you like, 30 metres), and sure enough it went well. I had the chance to insert another 30 m in series, making 60 m altogether. There was no difference. All channels were at 99 %, as high as you can go on the 'Set Top Box'.

Incidentally, I hung it up about 6 feet (1.8 m) above a 'flat' roof, which makes it about 15 feet (4.5 m) above ground. The elements were each 20 inches (51 cm), spacing to screen was 5 inches (12.7 cm), and the spacing vertically was 10 inches (25 cm).

As you can see, I prefer to work in Imperial measurements. However, metric equivalents are included as well for those readers who prefer them.

That's a plug type balun, wrapped in tape, connected to the feed point in the centre of the phasing lines, but I may change it for an outdoor type later. I did try some coax baluns. They all worked but were not as broad band in response. To test all this I made an attenuator (well, you can hardly use an SWR meter), but by cutting the signal down until some channel started to drop out, a response pattern would emerge.

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(continued from page 5)

5 Stirling Road, Castleham Business Park, St Leonards-on-Sea, E Sussex TN389NW, UK.

By way of background, I have for years made a study of cryptography, especially in relation to WW2. I have, indeed, published a couple of minor papers in the scientific press.

It is not too hard these days to get information about the European war, but discussion of the Pacific war comes almost entirely from American authors and, of course, they won it unaided. The Australian contribution was, in fact, substantial, and in 1941 our intelligence was, in some areas, ahead of 'Uncle Sam'.

Smart code breakers cannot work without traffic, and Australia did very well in gathering this too.

I had vaguely in mind a talk on the subject, but needed badly some more information on the technical wireless side of things, and came across this book. It should give hams a warm feeling. Apart from the contribution of the 1500+ voluntary interceptors (all hams), and so on, the book is full of pictures of gear constructed for agents, numerous mentions of HRO and AR88 (of blessed memory!), aerial problems, and personal experiences that read like something written by Ian Fleming.

Deane Blackman VK3TX
RAOTC member No 1378

ar

A gem out of the ceiling

Ralph Parton VK2IRP
RAOTC member No 1301

This is a story that would not have been told, except for sheer good luck. I wonder how many other historic radios are languishing in good condition in roof spaces and attics?

A very good friend of mind had a holiday cottage at Umina on the Central Coast of NSW. He let it out as required and, to make sure all was well, would pay a visit from time to time to see if anything was required.

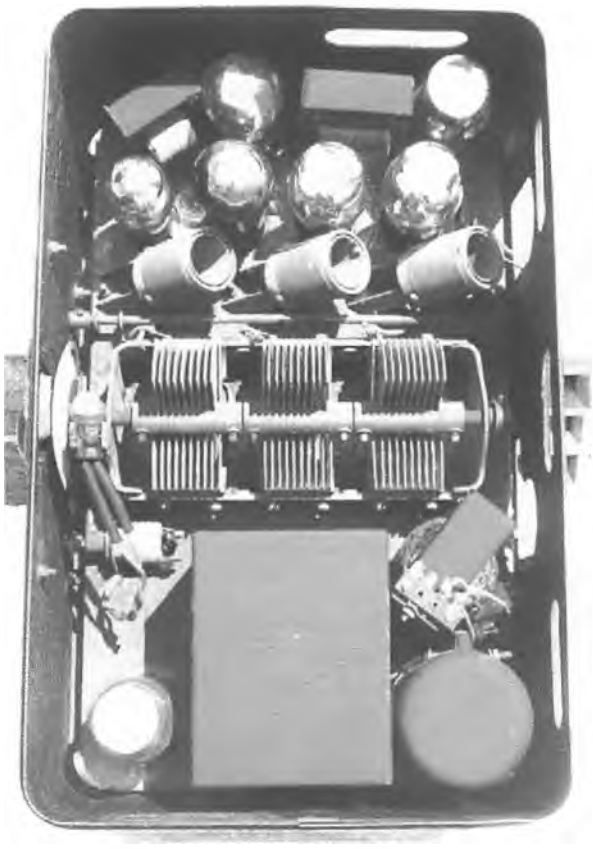
On one visit, to his surprise, the tenant was on a step ladder and just taking out of the ceiling a black box.

"What's this all about?"my friend asked, rather abruptly! "Well, I heard a noise in the roof and thought I had better check it out, and this box with knobs on it was up there. I think it is an old radio, as there is a trumpet horn thing still up there," came the answer.

"Well, please bring it down also, and I will check this all out," my friend replied.

What a surprise. It was a radio alright, a Crosley Gembox seven valve TRF radio with an Amplion horn speaker, and in rather good condition for its age.

My friend brought it back to Sydney and gave it to me to check it out. He didn't want to plug it in to try it out until it was checked over.



A look inside the Crosley Gembox radio clearly showing the seven valves, three gang tuning capacitor, and other components.

The Crosley Gembox TRF receiver with the Audion loud speaker.

With the rectifier valve pulled out, but with all the other valves still in place, I switched the power on. All the filaments lit up and the power transformer ran cool with no sign of shorts in the windings.

With the rectifier back in and power on, the HT volts checked out OK, and hey presto, sweet music emanated from the horn speaker.

The date on the can style electrolytic capacitors was 1928, which would be close to the year the radio was built, making it one of the earliest of the Crosley radios to operate from AC and not batteries.

The metal case has a black crackle finish, and the brass dial escutcheon plate has raised letters, CROSLEY GEMBOX, with a lightning flash through the centre of Crosley.

The valve line up consists of four 26 triodes, one UX226 triode, one 27 triode, and one 80 rectifier.

The end to this story is that my friend gave the radio to me to keep, as I have a collection of vintage radios, of which this radio would be the oldest. The previous owner must have stored it in the roof for safe keeping, and forgotten all about it when the property was sold.

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Wireless Set WS-108

Bill Roper VK3BR
RAOTC member No 978

My interest in the Wirless Set WS-108 was raised when I visited the radio museum of the Moorabbin and District Radio Club to take some photos of the interesting, historical equipment held there with a view to publishing them from time to time in *OTN* magazine. The details about this radio were gathered from the internet. Perhaps some readers can supply more information.

The Wireless Set 108 was designed and produced by Radio Corporation (Astor, Melbourne) during WW II. The set was designed for backpack use by the AIF and was based on the existing British No 18 set.

The set evolved over time, with three different variants being produced, known as the 108 Mk1, 108 Mk2 and 108 Mk3. The variants must have produced some problems for the army as they were not always able to communicate with each other, owing to differing frequency ranges. The 108 Mk 1 covered from 8.5 to 8.9 Mc/s (MHz); the 108 Mk 2 from 6.0 to 9.0 Mc/s; and the 108 Mk 3, produced in 1943, covered from 2.5 to 3.5 Mc/s only.

The 108s were used by a number of radio amateurs after the war, mainly for portable operation. However, they were very low powered and had some frequency stability problems.

Photo by Bill Roper VK3BR

The somewhat worn front panel of the WS-108 Mk 2 in the M&DARC museum.

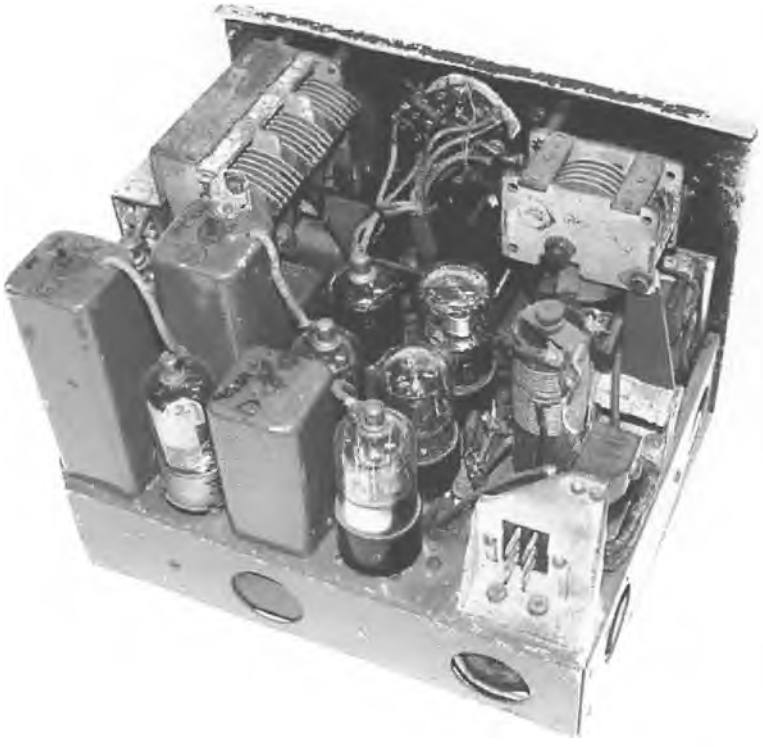

Photo by Bill Roper VK3BR

A rear view of the WS-108 out of its case, clearly showing the capacitors, IF cans and valves of the era. The power connection to the battery pack can be seen in the bottom, right hand corner.

The 108 Mk 1 is very rare, as only a small number were made. It was discontinued owing to the very restricted frequency range. The Mk2 addressed the lack of frequency coverage, but it would not perform in the tropics as the frequency was too high and therefore absorbed by the jungle. The Mk 3, strangely enough, had the same frequency range as the 208 set!

The sets were all battery operated and featured a 1.5 V LT battery and two 45 V batteries connected in series for the HT.

The unmodulated power output of the sets was between 0.4 and 0.45 watts depending on the frequency and the length of the aerial. The sets weighed in at just above 26 lbs.

A netting switch was provided to adjust the transmitter and receiver to a common frequency. There was also a four channel pre-selector system, which enabled four pre-determined frequencies to be quickly selected. There were circuit differences between the various models, but the valves used were the 1N5, 1P5, 1A7, 1D8 and 1Q5. Some models had the meter upside down.

The WS-108 in the Moorabbin and District Radio Club museum is a Mk 2, covering from 6 to 9 Mc/s, and has an IF of 1600 kc/s (kHz).

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VK6DW's Viking Pacemaker

Don Hawksworth VK6DW
RAOTC member No 929

The photos below were taken in March 2007 at my Kalgan River temporary QTH, Albany, and show me with the 110 volt AC, working, vintage Viking Pacemaker 90 watt transmitter by E F Johnson. This transmitter is of the phasing type, with VFO capability, and operates on AM, CW and SSB over the 80, 40, 20, 15 and 10 m amateur radio frequency bands.

This Viking transmitter was imported into Western Australia from the United States of America in the mid 1950s by Jim Rumble VK6RU (now, sadly, an SK) who was for many years the WIA QSL Card Manager for VK6. It was understood to have been one of the first amateur band commercial SSB transmitters in use in this State. It is not known which model receiver Jim used with the Viking transmitter, but maybe one of Jim's QSL Cards of the time will show it.

In the early 1960s, when Jim VK6RU acquired Collins equipment, he sold the Viking Pacemaker, along with the manuals, to his friend Ron Hugo VK6KW (also, sadly, now an SK) who used it for a few years after that. It is not known which model receiver Ron was using with it either, but very likely it was one of the WW2 disposal types.

The history of this Viking Pacemaker 90 watt transmitter was told to me by Ron Hugo VK6KW when I bought it from him in 1970. With it was a 110 Volt AC antenna change-over relay that plugged into sockets on the rear of the unit. I have noted the history inside the cover of one of the Pacemaker manuals, along with a copy of this article.

On the back cover of the Johnson Viking manuals is shown a photo of other Johnson Viking transmitters and antenna equipment. It appears that the new Viking Pacemaker 90 watt model was in between the 75 watt Ranger model and the 180 watt Viking 2 model, along with the Viking Kilowatt Power Amplifier. Inside one of the manuals are the technical details of the 90 watt Pacemaker model. The 1950's price was listed as US $495.00 dollars.

In 1970 the Viking Pacemaker was acquired by myself. That was a time when my son Derek, who was a Perth Morley City Scout, wanted me to participate in the radio Jamboree-of-the-Air. I already had an RCA

Don VK6DW with his Johnson Pacemaker transmitter.

The vintage Viking Pacemaker 90 watt transmitter.

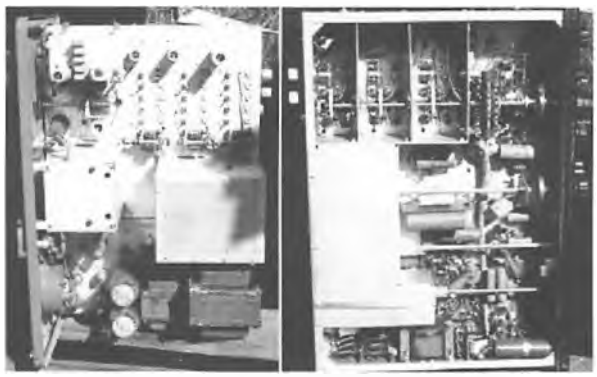
AR88 receiver, that was previously owned by Bill Barber VK6DX (ex VK5) in Kalgoorlie, according to the receiver AR88 Manual that had his name and address inside the cover.

On Jamboree weekends, for a few years, the heavy AR88 and the Viking Transmitter were carted to the Morley Scout Hall where the young scouts were busy erecting the wire antennas with poles and wire provided by one of the Scout Leaders. Contacts were made around the Australian States, and overseas at night, and the young Scouts and Guides had great fun talking to others.

The microphone used with the Viking transmitter was an Astatic D-104. There were no mobile telephones in those days!

In the winter of 1975 I bought a new Yaesu FT-101B transceiver for use on a trip, with a 1972 Model SWB Land Rover and Sunwagon caravan, through central and northern Australia with a friend. He needed to take some long service leave, or lose it, so I also took leave and we went together over a three month period.

I still have the Yaesu FT-101B which has never had a fault. Although not used much these days, it still goes OK.



Top and bottom views of the Viking Pacemaker with the case removed.

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RAOTC members list

Legend: L = Life Member A = Associate Member B = Associate Life Member
* = Licensed 50 years or more + = Aged 90 years or more

Name	Call	No
ACT		
L Ted Peppercorn	VK1AEP	1314 *
Col Harvey	VK1AU	303 *
L Ernie Hocking	VK1LK	1260
L Paul Edwards	VK1ZAS	1324 *
New South Wales		
L Tony Mulcahy	VK2ACV	1163
Don Hunt	VK2ADY	1141
Alex McMurray	VK2AEV	586 *
L Gerry Sabin	VK2AGS	395 *
George Paterson	VK2AHJ	1333 *
Ben Mills	VK2AJE	832 *
L Jim Patrick	VK2AKJ	1003
Bill Davey	VK2ALY	988
Max Mondolo	VK2AML	1227
Bruce Thomas	VK2AMT	1415
Peter Page	VK2APP	1054 *
L Pierce Healy	VK2APQ	783+
Ted Druitt	VK2AXD	392
Keith Alder	VK2AXN	1002 *
L Tony Mullen	VK2BAM	882
L John Trenning	VK2BAR	1226 *
David Thompson	VK2BDT	1169
Jim Griffiths	VK2BGG	1271
George Archibald	VK2BGU	1360
L Brendan Connolly	VK2BJC	1213
John Marland	VK2BJU	1399
L Jim Andrews	VK2BO	134 *
Phil Orchard	VK2BTT	1285
Dave Rothwell	VK2BZR	1414
John Clark	VK2CF	903 *
L Nick Perrott	VK2CNP	1327
L Ray Turner	VK2COX	1348
Alan Whitmore	VK2DAN	1381
Dot Bishop	VK2DB	1403
John Saunders	VK2DEJ	1223
Fred Reid	VK2DLW	1357
Al MacAskill	VK2DM	1277 *
Cliff Fredrickson	VK2EE	1337
John Boyd	VK2EZC	992
L Glen Millen	VK2FC	1180
Ted Dean	VK2FUP	1201
George Pile	VK2GP	1098
L Allan Mason	VK2GR	1221
L Karl Trankle	VK2GSN	1043+
L Peter Ritchie	VK2HC	1326
Ralph Parton	VK2IRP	1301
Roy Pearce	VK2IV	819 *
Herman Willemsen	VK2IXV	1384
John Jones	VK2JJ	1173 *
L Allen Fairhall	VK2KB	1132+
Graeme Scott	VK2KE	789
Greg Hilder	VK2KGH	1375
John Blackman	VK2KJB	1319
L Ken Nisbet	VK2KP	989
Barry Wood	VK2LA	848
Ian Paterson	VK2MW	810
L William Spedding	VK2NLS	1394
L George Hodson	VK2OH	544
L Mike Rautenberg	VK2OT	1335
L Peter Mair	VK2PF	1318
Ric Havyatt	VK2PH	1148 *
Stephen Pall	VK2PS	758 *
L Roger Conway	VK2RO	1255
L John Bennett	VK2SIG	939 *
Freda Leaver	VK2SU	1419
Trevor Thatcher	VK2TT	1080
Ray Wells	VK2TV	1076
L Herb Unger	VK2UJ	656+
L Eric De Weyer	VK2VE	1253
Geoff Partridge	VK2VU	955 *
L Bill Cross	VK2WJC	1210
L Keith Sherlock	VK2WQ	1138+
Tom Sanders	VK2XAU	1393
Ben Furby	VK2XNZ	1187
L Ken Scott	VK2XS	737
L Bill Hall	VK2XT	812+
Ron Cameron	VK2XXG	1410
L Noel May	VK2YXM	1345
Dean Davidson	VK2ZID	1423
Gary Ryan	VK2ZKT	1267
John Bishop	VK2ZOI	1404
L Steve Grimsley	VK2ZP	465 *
Ros Gilbert	VK2ZRE	1312
L Kevin Powell	VK2ZSP	771 *
B Sam Faber	VK2ZZ	1359
Victoria		
Phil Came	VK3AAM	1079
Gordon Yorke	VK3ABI	1056 *
Gerry Lane	VK3ABS	750
Jim Barber	VK3ABT	843
John Adcock	VK3ACA	114 *
L Graham Rutter	VK3ACK	1322
L Noel Lawrence	VK3ACU	1249 *
L David Wardlaw	VK3ADW	408 *
Wal Ferres	VK3AEV	1057
L Ken Pincott	VK3AFJ	152 *
L Ron Cook	VK3AFW	824
Woody Woodburn	VK3AGD	231 *
Geoff Forrest	VK3AGF	996 *
Tom Page	VK3AGH	441 *
Graeme Sutherland	VK3AGS	782 *
Wally Henson	VK3AHZ	1033
Bob Duckworth	VK3AIC	1245
Rob McNabb	VK3AIM	829 *
L John Ireland	VK3AJI	486 *
Jack Spark	VK3AJK	534 *
Kev Trevarthen	VK3AKT	1115
Ken Young	VK3AKY	1103 *
L Ted Wraight	VK3ALT	1059 *
David Waring	VK3ANP	1037
Mac McKenna	VK3AOY	1006
Bill Babb	VK3AQB	904
L Bob Fryer	VK3AQF	440 *
Ross Croucher	VK3ARC	1027
Kevin Connelly	VK3ARD	1035
Roy Badrock	VK3ARY	1211
Leo Weightman	VK3ARW	1032 *
Don Smith	VK3ASD	1351
David Stuart	VK3ASE	1346
Alan Maclean	VK3ASL	1088
L David Murray	VK3ASP	268
Max Meallin	VK3ATK	184 *
Ray Naughton	VK3ATN	232 *
L Hal Tribe	VK3AVH	1157+
Laurie Middleton	VK3AW	1152
Bill Zimmer	VK3AWZ	325 *
John Mitchell	VK3AXE	957
Rod Green	VK3AYQ	1380
John Lundy	VK3AZ	1234
L Jim Payne	VK3AZT	993
Roy Thorpe	VK3BAM	1323
L Brian Tideman	VK3BCZ	1184
L Digger Smith	VK3BFF	1424
Peter Cossins	VK3BFG	1257
Bert Horan	VK3BH	250 *
L Arnold Lawrence	VK3BHI	956+
Noel Jeffery	VK3BMU	1021
Len Heames	VK3BMY	1188 *
Alex Edmonds	VK3BQN	1341
L Bill Roper	VK3BR	978
Stan Roberts	VK3BSR	1272 *
L Clem Allan	VK3BVI	1073
Bob Whalley	VK3BWZ	1237
John Machin	VK3CCC	1421
B Mick Ampt	VK3CH	1365
L John Brown	VK3CJB	983
Bill Clarke	VK3CLN	1019
L Craig Cook	VK3CMC	931
A Geoff Tresise	VK3CNX	1240
L Dick Webb	VK3CP	972
Rod Flanagan	VK3CR	1004
L Des Clarke	VK3CY	1306
Arch Burton	VK3DBA	1062
Don Jackson	VK3DBB	1290
David Dunn	VK3DBD	1252
L Mike Pain	VK3DCP	1204
L Joe Martin	VK3DEK	1268
Doug Twigg	VK3DIJ	679 *
Glyn Gibbings-Johns	VK3DJV	1420
L Russell Ward	VK3DRW	1376
George Lance	VK3DS	389 *
Bill Fanning	VK3DWF	1038
David Scott	VK3DY	380 *
L Sarjiet Singh	VK3EAM	1052
Dallas James	VK3EB	1238
L Stewart Day	VK3ESD	905
L Rob Whitmore	VK3ESE	1352
Frank Walker	VK3EV	503 *
Rey Reyvellier	VK3EXL	1232
A Murray Lewis	VK3EZM	1371
Ellis Pottage	VK3FG	1087 *
Dave Bell	VK3FGE	1339
Noel Ferguson	VK3FI	1416
A Blayne Bayliss	VK3FIS	1412
L Arthur Edgerton	VK3FJ-ex	52+
Ernie Walls	VK3FM	1401

	Name	Call	No
	Stew Dines	VK3FNS	1426
L	Ray Taylor	VK3FQ	1216
	Reg Jones	VK3GC	1392
L	Lee Moyle	VK3GK	1363
A	Max Morris	VK3GMM	1265
	Bob Bourchier	VK3GQ	321 *
A	John Piovesan	VK3GU	1235
A	Phil Maskrey	VK3HBR	1387
A	John Kirk	VK3HCT	1427
	Steve Bushell	VK3HK	1001
L	George Francis	VK3HV	620
L	Bill Jamieson	VK3HX	1117
L	Gavin Brain	VK3HY	1304
	Ian McFarlane	VK3IDM	1332
	Neil Trainor	VK3IJ	982
L	Tim Hunt	VK3IM	504
	Graham Thornton	VK3IY	912
	Barry Gauntlett	VK3JB	267 *
L	Graeme Mann	VK3JGM	1274
A	Anthony Rogers	VK3JIA	1287
L	John Brown	VK3JJB	1407
	Dave Wilson	VK3JKY	1278
	Fred Storey	VK3JM	1010
	Ian Sturman	VK3JNC	1218
	John Walters	VK3JO	1288
L	Ian McLean	VK3JQ	1215
	Frank Nowlan	VK3JR	1286
L	Ian Godsil	VK3JS	1220
L	Bill Magnusson	VK3JT	1342
	Rolphe Fox	VK3JWL	1292
L	Steve Phillips	VK3JY	1266
L	Jim Baxter	VK3KE	1354
L	Jim Hinton	VK3KJH	1366
	Reg Lloyd	VK3KK	506 *
	Maurie O'Keefe	VK3KO	1336
L	Brian Stares	VK3KQB	397 *
A	Roscoe Hamment	VK3KRH	1276
	Mavis Stafford	VK3KS	62 *
A	Victor Self	VK3KSF	1254
	Brenda Edmonds	VK3KT	797
L	Mike Ide	VK3KTO	1194 *
L	Alan Heath	VK3KZ	1151
L	Alf Chandler	VK3LC	47+
L	Jack Williams	VK3LG	565 *
	Colin Middleton	VK3LO	1153
	Len Pearson	VK3LP	1114
	Warren Moulton	VK3LX	976
	Duncan Baxter	VK3LZ	1251
A	David Davies	VK3MHV	1293
	Peter Young	VK3MV	1400
	Lionel Curling	VK3NM	1136
	Stewart Backhouse	VK3NV	269 *
	Neville White	VK3NZ	1343
	John O'Connor	VK3OD-ex	1175 *
L	Ron Fisher	VK3OM	103 *
	Rick Hill	VK3RC	808
L	Darrell Edwards	VK3RE	1185
A	Ron Sutcliffe	VK3RS	1425
	Damien Vale	VK3RX	1239
L	Bob Slutzkin	VK3SK	94 *
L	Allen Crewther	VK3SM	311 *
	Ken Matchett	VK3TL	856
	Deane Blackman	VK3TX	1378
	Colin Durrell	VK3UDC	1244
	Rodney Champness	VK3UG	1086
	Len Mostert	VK3UH	1350

	Name	Call	No
A	Reg Goddard	VK3UK	1294
L	Bruce Bathols	VK3UV	1090
L	Trevor Pitman	VK3VG	1246
	Vic Punch	VK3VGP	1250
	David Harms	VK3VL	1383
L	Arthur Evans	VK3VQ	179 *
	Greg Williams	VK3VT	1402
L	Jack Wallace	VK3VV	564 *
L	Wal Dempsey	VK3WD	242 *
L	Mike O'Burtill	VK3WW	1123
B	Brian Norgate	VK3WYN	1338
L	Don Hope	VK3XA	778 *
	Chas Hyatt	VK3XH	835
	Ian Simpson	VK3XIS	1071
	Ted Egan	VK3XT	721
	Drew Diamond	VK3XU	1140
	Gordon Bracewell	VK3XX	1122 *
	Derek McNiel	VK3XY	1370
L	Bruce Wallace	VK3YBW	1126
	Ian Hermann	VK3YDY	1368
	Eric Day	VK3YHN	1398
	Bob Neal	VK3ZAN	1030 *
	Ken Benson	VK3ZGX	1377
	Don Seedsman	VK3ZIE	1068
L	Jim Gordon	VK3ZKK	1262
L	Bob Richardson	VK3ZP	118 *
	Ray Rutledge	VK3ZQ	566
	Russ Hardidge	VK3ZRH	1367
L	Peter Simons	VK3ZVY	1408
	Bill Adams	VK3ZWO	1356
	Queensland		
	Alan Simpson	VK4AAE	727
L	Tom Ivins	VK4ABA	1382
	Ian Saunders	VK4ACU	1390
	Bob Linsket	VK4ALI	677
	Tom Sawers	VK4AOG	1349 *
	Rossco Anderson	VK4AQ	1353
	Trev Boyd	VK4ARB	1044 *
	Roy Stephens	VK4ARS	286 *
	Kel Garland	VK4AZ	1231
	Walter Easterling	VK4BBL	886 *
	Ken Finney	VK4BKJ	1176 *
	Arne Jansson	VK4BRN	1325
L	Bob Tomkins	VK4BT	1295
	Graeme Dowse	VK4CAG	1417
	Col King	VK4CK	449 *
L	Les McDonald	VK4CLF	961
L	Norm Phillips	VK4CNP	1015
L	Jon Walton	VK4CY	842
L	Ian Browne	VK4DB	1283
A	John Buckland	VK4DBJ	1422
L	Merv Deakin	VK4DV	1230
	Peter Bobileff	VK4EB	1179 *
L	Lance Willoughby	VK4EW	1258+
L	Geoff Bonney	VK4GI	969
	Graham Coat	VK4GLC	1391
	Warren Heaton	VK4GT	672 *
	Kevin Dickson	VK4IW	1158
L	Ian Tinney	VK4KAD	1282
	Gordon Loveday	VK4KAL	707 *
	Ken Ayers	VK4KD	426 *
	Diane Main	VK4KYL	1396
	Bill Hempel	VK4LC	619 *
	John Horrocks	VK4LJ	1362
L	Rex Newsome	VK4LR	1259 *
L	Theo Marks	VK4MU	193 *

	Name	Call	No
L	Norm Wilson	VK4NP	878
	Dick Pietrala	VK4OP	1075
	Ian McCosker	VK4PF	1162
	Peter Brown	VK4PJ	828
A	Mike Charteris	VK4QS	1329
	Ron Grandison	VK4RG	668
L	Al Shawsmith	VK4SS	189+
L	Tom Barber	VK4TB	827
L	Alex McDonald	VK4TE	1411
L	John Roberts	VK4TL	1005 *
L	Mick McDermott	VK4TMD	1317
L	Norman Fiori	VK4TVE	1296
	Bill Lochridge	VK4WL	1379 *
	Bill Gibbings	VK4WO	1372
	Stan West	VK4WY	680
	Les Brennan	VK4XJ	1364 *
	Bill Flannery	VK4XO	1137
	Nick Watling	VK4YT	1263 *
L	Mick Pettiford	VK4ZAA	481
	Frank Adamson	VK4ZAK	1406
	Bill Main	VK4ZD	1395
	Kevin Dibble	VK4ZR	1060
	Bill Wilcock	VK4ZWJ	1373
	South Australia		
	Jack Peatfield	VK5AF	822
	Ken Perry	VK5AFF	900 *
A	Eric Leach	VK5AFN	1241
	Jack Crawford	VK5AHI	1397
	John Harris	VK5ASN	1142 *
	Mal Haskard	VK5BA	1107
	Mark Bradley	VK5BJ	1113 *
	Dick Turpin	VK5BRT	1347
L	Trev Howard	VK5BWF	852
L	Colin Taylor	VK5CE	519
	Col Ferguson	VK5CJ	305 *
L	Brian Condon	VK5CO	291 *
	John Drew	VK5DJ	951
	Eric Barnden	VK5EG	909 *
	Jack Martin	VK5EJ	1127 *
B	Paul Spinks	VK5GX	1214
	Harro Krause	VK5HK	1275
	John Casey	VK5IJ	859 *
L	Ian Sutcliffe	VK5IS	1355
	John Sheard	VK5JA	1281 *
A	Ted MacKenzie	VK5KBM	1389
A	Gordon Welsh	VK5KGS	1264
	Frank Holsten	VK5LK	716 *
	Bob Tester	VK5MV	1166
	Jim McLachlan	VK5NB	1149
	Trevor Niven	VK5NC	946
	Phil Williams	VK5NN	984 *
	Bryan Scott	VK5NOS	1202
L	John Butler	VK5NX	1120
	Allen O'Halloran	VK5OH	918
	Jim Bywaters	VK5OM	1369
L	Ivan Huser	VK5QV	477 *
	Bob Gebhardt	VK5RI	1174
L	Darcy Hancock	VK5RJ	584+
	Ray Deane	VK5RK	127 *
	Ron Coat	VK5RV	1000
	Colwyn Low	VK5UE	1361
	Bill Thomas	VK5VE	1321
	Ron Holmes	VK5VH	1299
L	Ian Werfel	VK5VJ	968
	Bill Coates	VK5WCC	1199
L	Austin Condon	VK5WO	631 *

	Name	Call	No
	Colin Luke	VK5XY	1168
L	Denise Robertson	VK5YL	1099
	John Scougall	VK5YY	1095
	John Badcock	VK5ZAP	1388
	Peter Temby	VK5ZJ	1229
	Murray Burford	VK5ZQ	979
L	John Barker	VK5ZZ	1009
	Western Australia		
	Barrie Burns	VK6ADI	1273
	Barrie Butler	VK6AF	1091
	John Farnan	VK6AFA	1409
A	Mark Bussanich	VK6AR	1334
	Peter Stickland	VK6AST	1078
	Geoff Woad	VK6AX	1092 *
	Barrie Field	VK6BR	377
	Dick Roddy	VK6BV	1146
	Bob Crowe	VK6CG	1405
	Clive Wallis	VK6CSW	1289
	Clem Patchett	VK6CW	742
	Arthur Eder	VK6CY	1303
	Doug Jackson	VK6DG	1243
L	Don Hawksworth	VK6DW	929 *
	Ted Foley	VK6EF	522
	Max Faulkner	VK6FN	1064
L	Mick Paget	VK6FP	645
	Gerry Wild	VK6GW	1112 *
	Mike Bazley	VK6HD	451 *
	Don Graham	VK6HK	1313 *
L	Glen Hufner	VK6IQ	1072
A	John Bearsby	VK6JB	1320
L	John Farnell	VK6JGF	1297
L	Jim Hughes	VK6JH	560
	Frank Taylor	VK6JK	328 *
	Jim Preston	VK6JP	1121
B	Dennis Muldownie	VK6KAD	1307
	Keith Hobley	VK6KH	1028
L	Bob Lockley	VK6KW	1172
L	Glenn Ogg	VK6KY	1358
	Lionel Allen	VK6LA	1183
	Cliff Bastin	VK6LZ	1310
	Allan Austin	VK6MA	1269 *
	Syd O'Neill	VK6MK	1124
	John Cox	VK6NJ	1309
	Cliff Waterman	VK6NK	736
	Cyril Roberts	VK6OE	1209
	Bruce Hedland-Thomas	VK6OO	1413
L	Alan Gibbs	VK6PG	815 *
	Con Murphy	VK6PM	599
	Rob Penno	VK6PO	1111
	Ray Peterson	VK6PW	346 *
L	Phil Zeid	VK6PZ	752 *
	Ronald Coghlan	VK6RC	735 *
	Ron Fisher	VK6RF	1047 *
L	Graham Rogers	VK6RO	1302
	Anthony Mapson	VK6RQ	1161
A	Phillip Bussanich	VK6SO	1247
	Bob Thyer	VK6TW	622
L	Jack Morris	VK6TX	339 *
	Don Truscott	VK6UT	1212
	Vic Kitney	VK6VK	1110 *
	Les McGeoch	VK6WL	340 *
	David Couch	VK6WT	341 *
	Ray Jaeschke	VK6WU	373 *
L	Geoff Green	VK6XB	1261
L	Roy Watkins	VK6XV	1181
	Poppy Bradshaw	VK6YF	1191
	Sam Wright	VK6YN	1374
	Tom Berg	VK6ZAF	1133 *
A	Joe Page	VK6ZDP	1340
A	Christine Bastin	VK6ZLZ	1311
	Robert Randall	VK6ZRT	1225
	Tasmania		
	Bill Carter	VK7AK	461 *
	Allen Burke	VK7AN	1270
	Brian Hall	VK7BH	494
	Bill Morrison	VK7BM	938
	Brian Proudlock	VK7BP	644 *
	Charles Miller	VK7CM	998 *
	Doug Charlton	VK7DK	1050 *
	Winston Nickols	VK7EM	899
L	Joe Gelston	VK7JG	1101
L	Bob Jordan	VK7JR	875
L	Chas Spiegel	VK7KS	660
	Bob Geeves	VK7KZ	907
	Les Cooper	VK7LS	1012
L	Rex Moncur	VK7MO	1298
	William Maxwell	VK7MX	1418
L	Jim Davis	VK7OW	1206+
L	Richard Rogers	VK7RO	908
	Trevor Briggs	VK7TB	1316
	Robert Milne	VK7ZAL	1386
	Northern Territory		
	Jeff Farmer	VK8GF	851
	Jim Roddy	VK8JF	1125
	Overseas		
	Vic Stagpoole	ZL2ACF	1279
	Martyn Seay	ZL3CK	1159
	Jock Perrett	ZS1ZI	1074
L	Paul Gerbracht	W3QPP	421 *
L	Ira Lipton	WA2OAX	1344
	Christine Haycock	WB2YBA	987
	Reece Duncombe	YJ8DE	868

Membership Statistics

147	Life members
293	Full members
5	Associate Life members
23	Associate members
468	**Total membership**
including	
120	Licensed 50 years or more
14	Aged 90 years or more

ar

Obituary

Eddie Maxfield VK6AEM

RAOTC member No 769

Many VK amateurs mourn the silent key of Eddie Maxfield VK6AEM who passed away in late December 2006.

Eddie was born on 14th December 1932 in North Fremantle during the Great Depression, but grew up in Kalamunda.

He left school at age 14, delivered groceries by bicycle and earned enough money to buy his first pair of shoes.

Chuck Farkas VK6CF, an electrician, nurtured Eddie's interest in this field. Eddie was called up for National Service in the Air Force on 10th March 1952 which, incidentally, was his wife-to-be, Margaret's, birthday.

After National Service he joined the PMG as a Radio Technician and later took up a position of Communications Officer with the EEC, Hydro Electric Commission of Tasmania.

Upon his return to WA in 1965, Eddie was again employed with the PMG. His duties took him to the Northwest where he installed and maintained communications systems. Working, he traversed the bush long before there were sealed roads, and even fewer maps to guide him and the crews. In his career he worked his way up way through several communication departments, taking charge of some and finally retired as a Senior Technical Officer Communications Grade 2 at his beloved 720 kHz 6WF, Hamersley.

During his retirement he circumnavigated Australia, visiting Wolfe Creek Meteor Crater, Uluru, Mt Augustus, and a return trip to Marble Bar where he once installed communications equipment.

In his last few years he enjoyed attending the Old Timers Luncheons and spending time "tinkering" with anything that required intellect and perseverance.

Eddie is survived by his XYL Margaret, children George, Sue, Stephen, Ken, Christopher, Ben, and Colleen, eight grandchildren and six great grandchildren.

Rest in peace, Eddie.

Margaret Maxfield,
who gratefully acknowledges the love and support given to her by VK6UZ and his family.

ar

Obituary

John Edmonds VK3AFU/VK3ATG

RAOTC member No 796

John's enthusiasm for amateur radio was activated by the development of radio communications in the Rural Fire Brigade's firefighting activities.

In the Wimmera, the RFB was a major community activity, and the changes that came with radio were significant. John for several years acted as base station for the local RFB Group This included a lot of servicing and maintenance of the mobiles attached to the group. These were mostly ex disposals – 122s and such. They always broke down after a fire emergency, never during it.

He had been a Navigator in the Air Force during the war, so had experience (and Morse code). He completed a correspondence course with the Marconi School of Wireless, and gained the callsign VK3AFU in 1960. With his encouragement, I also got my licence, which made it much more interesting when the WIA disposals group allocated us two of the first car-phones on VHF.

In 1967 the family moved to Frankston where he took up a position with the then Vermin and Noxious Weeds department (now Department of Sustainability and Environment). He was a founding member of the Frankston and Mornington Peninsula ARC, and for several years taught club candidates for AOCP or Novice level .

He was for some years the WIA Historian, doing a lot towards organising the masses of Historical data which went with the job.

Over recent years, ill health caused him to curtail his radio activities, and he let his licence lapse. However, he was greatly pleased when his four grandchildren gained their Foundation licences.

Vale John VK3AFU. You got me into this radio game.

Brenda M Edmonds VK3KT
RAOTC member No 797

ar

Obituary

Cosmo James (Ron) Petrich II MBE, VK4ACZ

RAOTC member No 292

7th September 1922 – 23rd April 2007

Ron was born and raised in Gundagai where, in his high school days, he developed a life long interest in both radio and aviation. I first met Ron Petrich when we joined the RAAF in the same batch and eventually passed out from Signal School, Point Cook as W/T operators (air) after our flying training in November 1941. We were posted to Port Moresby where there was a Catalina Squadron, arriving there about a week before the Japanese attacked Pearl Harbour. After the war Ron became VK2CZ and kept up the brass pounding by flying with BEA and Qantas on the UK and Pacific routes in the late 1940s and early 1950s.

In 1953 Ron was transferred to senior administrative duties with Qantas. It was during his time as an operations officer at Kallang Airport in Singapore that he was awarded the MBE for conspicuous bravery following the crash of a BOAC Constellation on 14th March 1954. Part of the citation presented to him at Buckingham Palace in 1955 stated "while the rescue party attempted to extricate people from the fuselage the petrol tanks exploded and the nose of the burning aircraft crashed and fell. Mr Petrich stayed where he was underneath the nose, and holding the weight of the collapsing section on his back he succeeded in getting out the hostess, who unfortunately died later." The Commissioner for the later Enquiry, Justice Knight, in his summing up said "I find difficulty in expressing in suitable terms the personal courage and complete disregard for his own safety shown by Mr Petrich during this incident."

Ron Petrich reached senior executive level with Qantas and represented Australia for some time on the two international aviation bodies ICAO and IATA. In 1977 at the age of 55 he retired, moved to a large block on the Atherton Tableland, and proceeded to build his own home using prefab modules. Soon after he became VK4ACZ and up went the antenna farm of his dreams.

At one stage he missed a few scheds and I called him to ask why. "Well", he said, " I was moving the tractor and ran into a guy wire. This pulled down the mast. After that it was like the domino effect, the antenna pulled over the other mast, and before you could say Marconi, the whole bloody thing was on the ground!"

Until his passing at the age of 84, Ron Petrich was involved in community affairs at Mount Molloy including 23 years as President of the RSL there. He is survived by his wife Winsome, son Jim, daughters Lesley and Jenny.

I quote from Ron's eulogy, delivered at his funeral service by son Jim ... "while his performance on that horrible day in March 1954 was recognised far and wide, his private papers shine as a great light on his considerable skill on an international level including (1) bringing the NZ troops back from Japan in 1951, (2) his work in Egypt and Persia during the Suez crisis in 1956, and (3) his leadership in introducing the first Boeing 707 VH-EBA 'City of Canberra' in 1961. He was delighted earlier this year when Qantas found the 'old girl', purchased it, and restored it back to the original V Jet livery and 1960's interior." As I write this she has been successfully flown to Longreach where she will 'retire' in the Qantas museum complex there.

Steve Grimsley VK2ZP
RAOTC member No 465

ar

William (Bill) Mitton Rice VK3ABP

RAOTC member No 830
18th May 1927 - 29th May 2007

Bill Rice commenced as a radio amateur at Murray Bridge in 1947 with the call sign VK5BP. Bill operated on 40 metres with a transmitter consisting of a Franklin VFO using 6AC7 valves, a 6L6 driver, and push pull 807s in the final amplifier, modulated by a further push pull 807 pair.

In 1948, Bill moved his equipment to Adelaide where he attended university. From the suburb of Prospect, Bill could be regularly heard on 40 metres when he possibly should have been studying for those many examinations!

Following graduation, Bill moved to Melbourne in 1953 and since 1956 he operated from his home in Altona with the call sign VK3ABP. Bill was wont to say that "ABP" stood for "always being pedantic" but less polite people claimed it really meant "always bloody pedantic".

In his earlier days, Bill was very enthusiastic about the engineering design and the subsequent building of his own communications receivers. He was also well known for his VK3ABP 2 m converter, published in *Amateur Radio* magazine in 1962, which is arguably the most popular piece of equipment ever published in the magazine. He followed with an article on the 6 m version of the VK3ABP converter several years later. Unlike today, the amateur operators of those earlier years built almost all their own equipment and Bill was no exception.

In his early years in Melbourne, Bill was also very busy repairing early TV receivers, but his day job was with the Aeronautical Research and Development Unit (ARDU), part of the RAAF, based in Laverton. ARDU tested and evaluated RAAF aircraft and weapons. Bill supported the flight trial work and applied his knowledge of radio when the trials used radio telemetry to acquire data.

When the ARDU moved to South Australia in 1977, Bill transferred to the Aeronautical Research Laboratories (ARL) in Lorimer Street Fishermans Bend, which was then in the Department of Supply. ARL instrumented the RAAF aircraft and equipment, designed and installed the signal conditioning and recording equipment, and analysed the data. Bill worked in the Materials Division supporting the applied research for the RAAF and stayed there until his retirement.

Bill said very little to family and friends about his work with ARDU and ARL, and the leading edge technology involved.

Bill was a keen sailor and his expeditions to the rarely filled Lake Eyre in 1974, 1975 and 1976, when the lake uncharacteristically held water, are well known. He was the first radio amateur to operate "marine mobile" from Lake Eyre and circumnavigated the lake on his beloved trailer catamaran, the "Red Baron". One wonders if that feat will ever be achieved again.

Bill also sailed the "Red Baron" numerous times in the Marley Point races in the Gippsland Lakes. He seemed to take pride in always being the last to finish.

In 1972 Bill joined the *Amateur Radio* magazine Publications Committee as the technical editor, became editor in July 1984, and continued in that position until December 1999 to become the longest serving editor

ever of *AR*. As *AR* editor, he also served on the WIA Federal Executive for many years.

In 2001 Bill was awarded honorary life membership of the WIA for his long and meritorious service, which he accepted with characteristic humility.

Bill was the perfect recycler and re-user. Much to his family's concern at times, he never threw anything out. For instance, he had tobacco tins full of the leads that he cut off resistors, capacitors and other components. He even flicked the excess solder from his soldering iron into a tobacco tin and eventually melted it down to make a counter weight for his home brew wind generator.

Bill kept meticulous notes and recorded everything that he did in a form of lab book. When most hams were buying synthesised 2 m rigs, Bill designed one using a VFO and the crystals he had in his collection. The rig had lots of switching and mixing and he spent weeks working out all the mixing products, spurii, and possible birdies, etc, as well as the switching, to get the frequency coverage that he wanted. His aim was to build the transceiver using the crystals he had in his "junk box" without having to get any extra crystals.

I had the privilege of knowing Bill, both personally and as an active radio amateur, for over 45 years. He was a quietly spoken, deliberate but personable man. with a brilliant, always enquiring mind. He was truly one of nature's gentlemen with never an unkind word for anyone. He was one of the most knowledgeable and practical people I have ever met.

Bill's command of language was exceptional, if slightly pedantic at times. His contribution to *Amateur Radio* magazine as a contributor, technical editor and editor over 27 years will be long remembered.

The celebration of life service held for Bill at St Eanswythe's Anglican Church was packed to overflowing and a major feature of the service was the loving and humorous eulogies delivered by Bill's five children, and by Ron Fisher VK3OM representing Bill's radio amateur friends.

My thanks to VK5BR, VK3ZKK and VK3OM for supplying information for this obituary.

Our sympathies go to Bill's wife Margaret, his five children Jenni, Kathy, Janet, Diana and Peter, and his grandchildren.

Bill Roper VK3BR
RAOTC member No 978

ar

Alf Webb OAM VK2UC

RAOTC member No 981
10th September 1905 to 17th July 2007

Alfred Thomas Webb OAM – Alf – husband, father, grandfather, great grandfather and friend, became a silent key in the small hours of Tuesday, 17th July 2007. His funeral was held at St Andrew's Anglican Church, Lismore, on Thursday, 19th July, 2007.

When Alf was born, Australia still only had its second Prime Minister, the first Model T Ford had yet to roll off the production line and Alexander Graham Bell's first telephone was barely 30 years old.

Alf was born in London on 10th September 1905. He migrated to Australia with his mother, Mary Ann, and younger brother Bill in 1911. His father Alfred Thomas preceded them to find work and accommodation.

They settled in the Dunoon area and never left. Alf's younger brother Wal was born in Australia in 1915.

Alf married Muriel at Byron Bay in 1928 and had a son Ron. Muriel passed away soon after Ron's birth. Alf married Meg in 1932 and they had four children, Lenore, Margaret, Fae and Warren. Meg passed away in 1998 and Ron in 1995.

The sum total of Alf's current off-spring is 14 grandchildren, one sadly deceased, and 24 great grandchildren.

Alf had a successful and varied working life. In his younger days he worked in the dairy with his father at Dunoon. He was apprenticed to the local tin-smith but left that job to cut lantana. He worked for Casino Council before becoming the manager of the North Lismore quarry.

Alf had a distinguished army career, serving with the 15th Light-horse regiment from 1924 – 1931, and the Army Volunteer Defence Corps in 1940, before enlisting in the Army in 1943 in Signals. Whilst in the VDC, his Section passed heliograph traffic from Mt Warning to Coffs Harbour, a distance of 133 miles.

Alf's willingness to enlist faced some difficulty due to his working in a reserved occupation. Most of his deployment was in the New Guinea area. Alf was discharged in June 1946.

On Alf's return to civilian life, he started work at the PMG as an Exempt Technician. He remained there in various roles until his retirement in 1969. Alf headed a telecommunications Empire, with 15 members of his family having worked in the various versions of the company amounting to over 300 years service.

Alf never really retired and community service was his passion. His community and RSL work have been highly recognised with an Order of Australia medal being awarded in 1990 for Services to the RSL; a Meritorious Medal which is the highest medal in the RSL; a 50 year Service Award to the RSL; and a Life Membership of the Lismore RSL. In his capacity as Pensions Officer of the RSL he represented many veterans to ensure they gained their entitlements. Alf organised many Anzac Day ceremonies and Dawn Services.

Alf held many positions within Lismore RSL Club. He was also associated with Ballina Ex Serviceman's home, being on the Board of Directors and also a life member of the home. For many years Alf visited the RSL members in the hospitals on a weekly basis and provided Christmas cheer by delivering gifts on Christmas day.

Alf devoted a lot of time to Legacy activities including managing the City Country exchange program for country kids. He was a tireless raiser of funds for Legacy.

For countless years, Alf was a Steward in the Fine Arts Pavilion of the Lismore Show Society. He also fund raised for the Sheltered Work shops in Lismore.

Always the technologist, Alf was more than handy with electronics, building many of his ham radios. He was introduced to amateur radio by his cousin and gained his licence in 1947. His first contact, which was made from Lismore, was with Leith VK2EA, whose QTH at that time was Kangaroo Valley. Leith's log shows that this contact was made at 2015 (local time) on 14th June 1947. It was a CW contact made on 7.100 MHz and Leith's report to him was RST 746 (incidentally, this was Leigh's first contact also).

Alf not only contacted his local amateur radio mates at 8 am every morning, but also those around the world. Alf enjoyed relaying the story of how, in the 1954 floods, he provided the only communication for Lismore Police, Telegraphs and Councils.

Alf was a foundation member of Summerland Amateur Radio Club which was formed in 1969. He served as President of SARC in 1984 and was later made a life member of the club. He was arguably Australia's oldest active amateur, being active on air every day on Morse and voice until a few months before his death.

To keep with the cutting edge, Alf bought himself a computer and entered the World Wide Web via broadband on his 99th birthday. Alf was recognised by Telstra as Australia's oldest broadband user on his 100th birthday

In his early days Alf was a keen bicycle rider and played football. In his later years he played extensive indoor bowls throughout the district and occasionally moved to the outside greens.

A keen musician, Alf played the piano at dances and silent movies, and also played saxophone.

Alf held a driver's licence until he was 101, when he decided to hand it in! At his last compulsory test he cheekily asked could he have a five years licence!

Vale Alf VK2UC.

Bill Cross VK2WJC
RAOTC member No 1210

A kick up the Khyber? Or a medal?

Col Harvey VK1AU
RAOTC member No 303

In days gone by, when I was VS1AU, I served for two and a bit years with the RAF's Far East Air Force HQ at Changi, and lived in the RAF Married Quarters across the street from the infamous gaol. There is a story about that infamous prison which intrigues me. I acknowledge with gratitude Russell Braddon's Book "The Naked Island", pages 250-251, as the primary source for this anecdote.

A highly ranked prisoner of war at Changi, "Black Jack X", called a parade during which he referred to his assembled troops as "the greatest mob of rogues, thieves, malingerers and vagabonds I ever set eyes upon"

Our POWs took no offence because they were in good company with the Malay, Chinese and Vietnamese communities living near the POW camps, all thieving and bargaining to survive.

Central to this story is POW 'Paddy' Mathews. He was a slight, dark-haired Australian youth aged about 21. Quiet and pleasant, and with a front tooth missing, Paddy stole truck parts which he then sold to the Chinese. With the proceeds he bought food for, or gave money for food to, POWs in the prison hospital.

POW Hugh Moore had a reliable friend in POW Russell Braddon. They had been together at Sydney University and had shared the digging of, and occupying of, foxholes during the savage fighting at Muar. Together they suffered other traumatic experiences, including capture, in Malaya. It was while POW Hugh Moore was in "hospital" that he noticed Paddy making anonymous contributions and found an opportunity to ask about this.

Unexpectedly, Paddy also described a daring raid outside Changi gaol. Hugh passed this information to his friend Russell from where it passed into history via Russell's post-war autobiography "The Naked Island". Apparently, neither Hugh nor Russell doubted Paddy's story.

There was an incident at Changi where a "pirate" wireless news receiver, hidden under the boilers of the cook house, went out of service when perspiration from the operator's body dripped on to the set's hot valves and caused the glass envelopes to shatter,

Somehow, Paddy Mathews became aware of the existence of a room in an abandoned British hospital in Changi, now used as Japanese barracks, in which Japanese wireless equipment was stored.

Without telling anyone his intentions, Paddy obtained a wheat sack and one night made his way, armed only with a screwdriver, from inside Changi gaol towards a hoped-for wireless treasure trove.

Failure could have meant death, and severe retribution against his fellow prisoners.

Success meant that "pirate" wirelesses would probably have maintenance support for the duration of WW2.

Paddy told Hugh that he had crawled into a drain which ran under the minor perimeter road (between my future QTH and the gaol) emerging at the corner of the gaol where a grill was missing.

Evading guards and patrols he made his way through scrub to the nearby aerodrome.

Hugging the shadow of a wall cut out of the hill, he walked down the strip until he reached the Japanese barracks. He slipped inside and, passing two rows of sleeping Nips, padded quietly to the door of the room with the Japanese wireless equipment, only to find it locked.

At that point most men would have abandoned the project. Not Paddy! He unscrewed the hinges and lifted the door out of place. Then he stepped into the store room and filled his sack systematically and slowly, fearful of making a noise.

A sentry on patrol approached before Paddy had time to screw the door back on its hinges, so he merely stood it upright in its place and then climbed a staircase to wait on a landing.

The sentry came down the corridor slowly, thumping each door with his rifle butt, flashing his torch.

He reached the wireless store room, thumped on its door, flashed his torch, then wandered on humming quietly to himself.

As soon as the guard turned the corner, Paddy sped down the stairs and screwed the door back on its hinges. With his sack of precious wireless bits and pieces on his shoulder he crept swiftly down between the sleeping Nips and out onto the airstrip.

An hour later he was back in the gaol and Changi's wirelesses, whatever the mishaps, were never again short of spares.

Conclusion

Anyone who has hung a door can find fault with the story. It is difficult enough in daylight, generally needing two pairs of hands to help mate the first screw with its screw hole. Tropical moonlight would not help, as shown by the sentry needing a torch.

Attempting this process single-handed in the dark without making significant noise would be impossible.

The preferred method would be to drive the pivot pins part way out, but again, this could not be done noise free.

Then there is the problem of how Paddy knew what equipment to look for and find in a darkened room. There is no evidence that Paddy had a wireless background essential to the success of his mission.

And then there is the problem of how to hide a sack-full of wireless junk back in Changi gaol.

Much as I would like to believe young Paddy's story, I have to admit that, even with the best will in the world, I cannot believe the episode ever took place.

History does not say whether or not Paddy got his backside kicked, but he certainly never received a medal for this supposed escapade.

So far as I know, the existence of wireless spares at Changi has never been revealed.

If anyone, after all these years, knows anything about that, I would appreciate a call, please.

Paddling to deeper water; or 'Inspired by a Bug'

David Dunn VK3DBD/G3SCD
RAOTC member No 1252

I got into paddles late in life, possibly because I acquired an original and 'intriguing to look at' Eddystone Bug key. I was subsequently told by my learned friends, who knew about such things, that it was not a good one to use. They were right. However, I did manage to send code with it after persevering, but it was not easy.

Other paddles came my way shortly afterwards. A Vibroplex Bug (much better) and then a Kent paddle, which set me on the road to electronic keyers. I concentrated on the paddle as opposed to the bug, regrettably using the same hand, my right. In retrospect, I ought to have trained the left hand to use the ordinary paddle, thus keeping the Bug key hand operational. Now I would find it hard to use a Bug.

I tried out a friend's Vibroplex paddle, the only key I had seen with magnets to provide tension, and liked it a lot. This set me off thinking about how I could build something similar (DIY always being the first line of approach as I was brought up with the automatic thought train that if you need something, make it).

Turning off the threads of a brass stand-off as used in computers boards.

Collecting a few bits together, mostly from the junk box, I constructed a similar key and found this worked quite well. With a policy of continuous improvement (!) others followed, using mostly scrap-yard metal. Apart from one key, on which I actually paid good money for a 4" x 4" x ½" (101.6 mm x 101.6 mm x 12.7 mm) chunk of solid brass, I have not had to buy much, only the magnets, which are difficult to find but inexpensive. They are made of 'Neodymium iron boron' and have a very powerful pull.

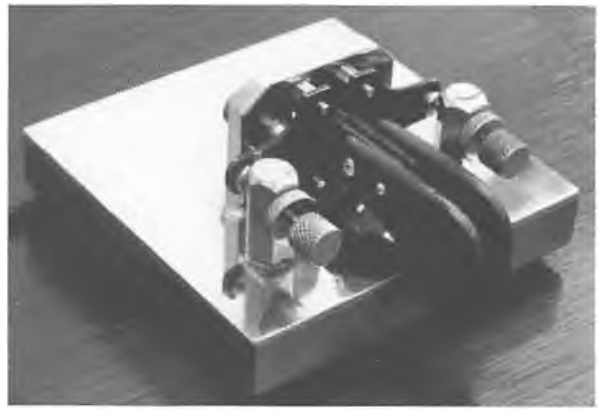
Key pivots turned up on the lathe and ready for use.

My original 'brass base' key.

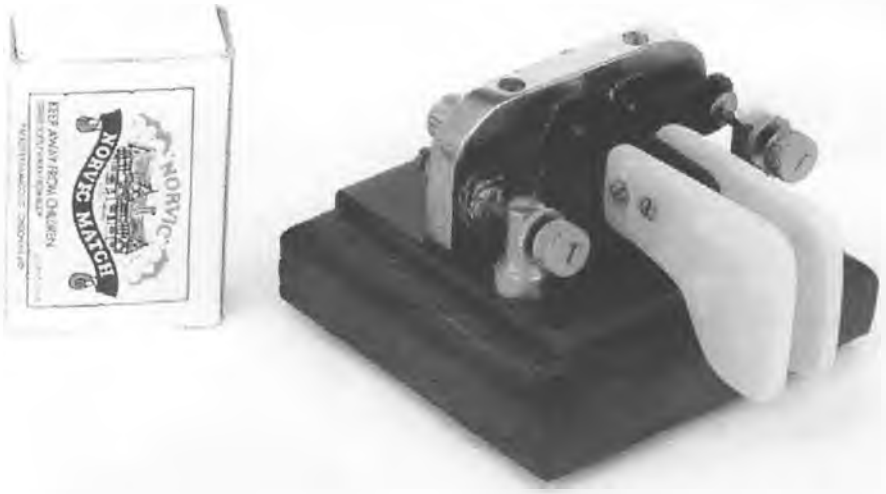
By far the most boring and laborious part of the building process is filing out the paddles arms from sheet metal. This just cannot be mechanised. Finding something suitable to provide a pivot for the arms proved quite difficult.

My first attempt was to use a tiny pop rivet, the mandrel soldered into the brass and the actual rivet reversed to act as fulcrum.

It worked fine, but later I found a near ideal solution. By turning off the threads of a brass stand-off as used in computers boards, a neat and effective pivot could then be mounted using a short screw thread. In my 17" capacity lathe, this is near the limit of miniaturisation and requires a magnifying lens during the process!



The 'brass base' key with modifications which I built for VK3CGB.



A smaller and lighter key designed for travel, but still using the magnet principle. It needs holding down in use, but weight is only a few ounces instead of the several pounds of the other keys.

Critical variations were found to be the relative lengths of the paddle arm each side of the bend. Longer finger-pieces give a different leverage, and thus 'feel', to the key, especially at higher speeds. Of course, personal preference is a factor here.

The actual tension, which is easily adjusted, does not seem so critical. Initially, the magnet holders were made of friction damped sliding tubes, similar to the ones used by Vibroplex. This seemed crude, to my thinking, and later the magnets were fitted in solid brass threaded rod to give easy screw adjustment. Much better!

Obtaining my preferred brass BA thread screws is now nearly impossible and I have been forced to go metric. However, even these in brass are very scarce and there is little or no choice of head types. Stainless screws are an acceptable alternative, but still scarce and still have little choice of head type.

The pictured keys include my original 'brass base'. With later modifications, I loaned this to Chris VK3CGB for a few weeks while I was away and he took a liking to it. So I built him a similar one with a few changes.

This uses a brass sheet laminated onto a steel base. The scrap yard had some convenient hefty steel offcuts, roughly guillotined and rusty, measuring about 4" x 4" x 3/4" (101.6 mm x 101.6 mm x 19 mm). After a test with one of these, I soon transformed all six sides to precision flats in the lathe and then used some brass plate about 2 mm thick (actually a kick plate recovered off an old door found in a skip). This finished key is equally pleasing to use. I keep a similar key to this one in the UK for use when I visit there.

Weight restrictions on flights inspired me to build a travel key, a deliberately smaller and lighter version for air travel, still using the magnet principle. This one has a Perspex and hardwood base. It needs holding down in use, but weight is only a few ounces instead of the several pounds of the others.

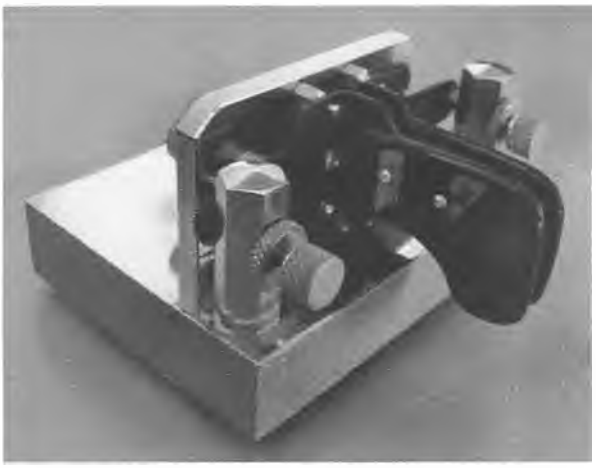
Another slightly different key evolved when I found a brass pipe flange while wandering around our user-friendly scrap-yard in Albury. From this evolved a round base key, aesthetically pleasing and nice to use. Approximately 3" (76.2 mm) in diameter, it is still heavy enough not to walk about the desk.

The latest key I built specifically for G3ZRJ after several QSOs and discussions on keys brought forth some definite ideas about the subtleties of the paddle and the operation of same. The resulting key, having been in use for a few weeks now, has brought glowing reports from him as an ex professional CW op.

The round base key, aesthetically pleasing and nice to use.

No, this is not an advertisement, and I am not going into production! The man-hours involved are many but I guess I will continue to experiment, try new ideas, and enjoy my little bit of engineering.

After all, one has to keep these 'old timers' off the streets, eh?



The latest key I built specifically for G3ZRJ.

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The Type 3 Mk II 'Suitcase Radio'

Bill Roper VK3BR
RAOTC member No 978

Roughly one Allied Forces agent in three inserted behind enemy lines in the European theatre during World War II was a radio operator, the remainder being specialists in other forms of clandestine warfare.

SOE (Special Operations Executive) wireless operators took with them a short-wave Morse transceiver that could send and receive messages. This was, in most cases, a radio set designed by John Brown for the SOE in early 1942 known as the Type 3 Mk II, or 'Suitcase Radio'. It weighed around 13.5 kg and fitted into a two foot long, innocuous looking, pressed-fibre suitcase.

Even though it was rather heavy and bulky, particularly by today's standards, the Type 3 Mk II was one of the most successful clandestine sets of World War II. It was reliable and reasonably high powered. It seems hard to realise now that, at the time, the Type 3 Mk II was the smallest clandestine radio of its type.

A major problem for the operator was that the transceiver needed sixty feet of aerial to function properly.

It was estimated that in towns it would take the Germans around 30 minutes to discover where the transceiver was being used. Where possible, operators worked in isolated areas. They were also under strict instructions to transmit briefly, at irregular intervals, at various wavelengths and from various places.

Each wireless operator was instructed to always spell certain words incorrectly. The reason for this was that if the Germans captured the operator and code books, and tried to use the transceiver to trap other agents, the SOE in London would be able to discover what had happened and would warn all its agents in the field.

The life expectancy of SOE wireless operators in France at the peak of the war was only six weeks.

The 1942 Type 3 Mk II set was followed by the Type 3 Mk II B2 which was the main set in use from 1943 to 1945 and beyond.

This radio was one of the leading edge technologies of the day and consisted of three major parts, plus spares. The power supply was the most important component and was designed to be adaptable to any of the voltages likely to be encountered in the field. It could operate from AC mains from 97 to 140 volts, and from 190 to 250 volts, ranging from 40 to 60 c/s, as well as from a 6 volt accumulator. Key down transmit current from the accumulator was 9.5 amps, and on receive-only was 4.5 amps.

The transmitter is crystal controlled with an EL32 oscillator-doubler driving a 6L6 to about 20 watts output. Four plug-in tank coils are used to cover from 3.0 to 16 Mc/sec (MHz).

The receiver is a four valve, seven stage superheterodyne using two 7Q7 and two 7R7 Loctal tubes. It covers from 3.1 to 15.5 Mc/sec in three switched bands and uses a 50-1 slow motion vernier dial for tuning.

Each radio set suitcase contained the following: transmitter, receiver, power supply, instruction manual, 60 ft of aerial wire, 10 ft of earth wire, a Morse key, a telephone headset, 12 fuses, four spare valves, a screwdriver, two brass pins to convert the mains plug to the Continental fitting, a couple of adaptors and the four tank coils.

Although normally carried in a suitcase, it

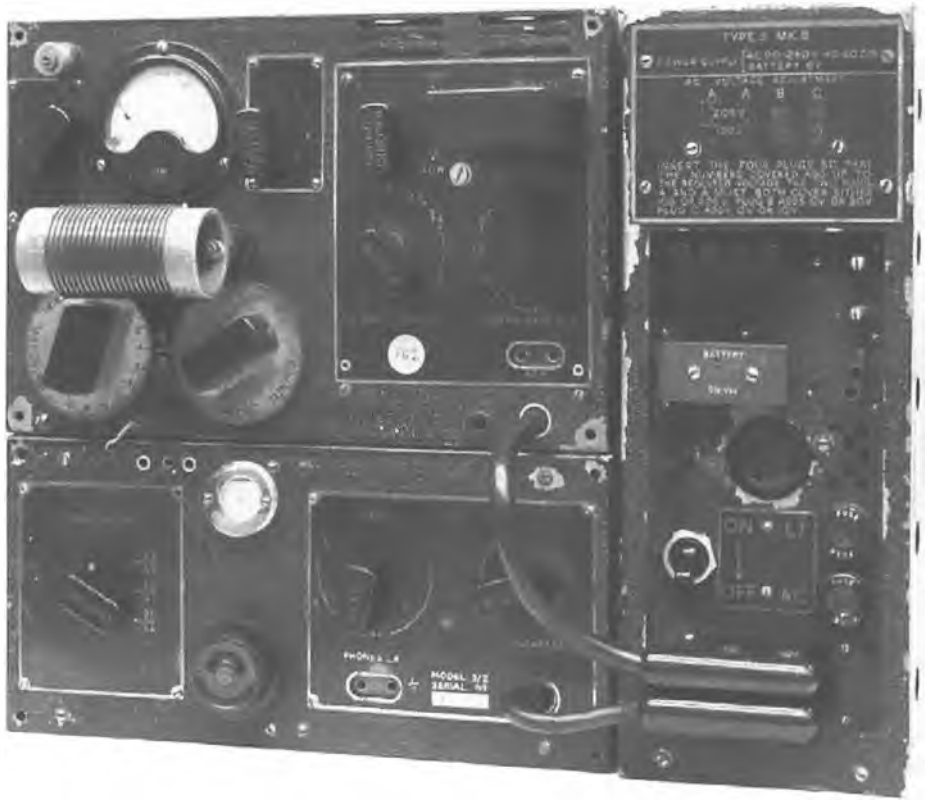
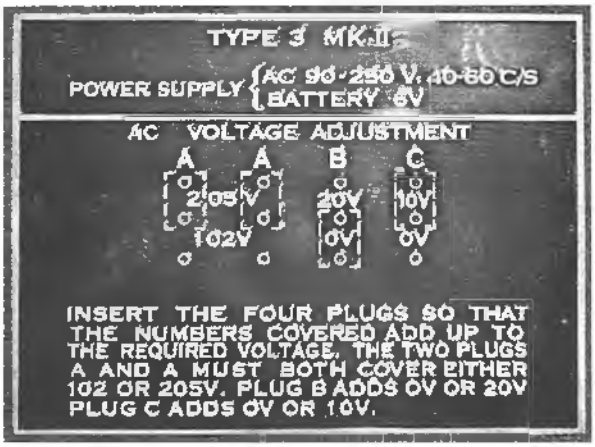


Photo by Bill Roper VK3BR

The well worn Type 3 Mk II in the Royal Australian Corps of Signals Museum at Simpson Barracks in Melbourne was donated to the museum by Allan Doble VK3AMD (SK).

This rare Type 3 Mk II, complete with key, headphones and spares, and an original fibre suitcase, is in an overseas collection.

was later found that a watertight container packaging was more suitable, especially when used by resistance groups operating in the field.



The plaque and plug sockets on the most important part of the Type 3 Mk II, the power supply, giving instructions on how to set the jumper plugs for the various input voltages.

A number of the Type 3 Mk II radio sets survived after the war and many Australian radio amateurs used them on the amateur bands. Although there are still a number of the radio sets in existence, most in museums, it is very rare, anywhere in the world, to see a complete unit in the original fibre suitcase.

The unit I photographed in the Royal Australian Corps of Signals Museum at Simpson Barracks in Melbourne was donated to the museum shortly before his death by Allan Doble VK3AMD.

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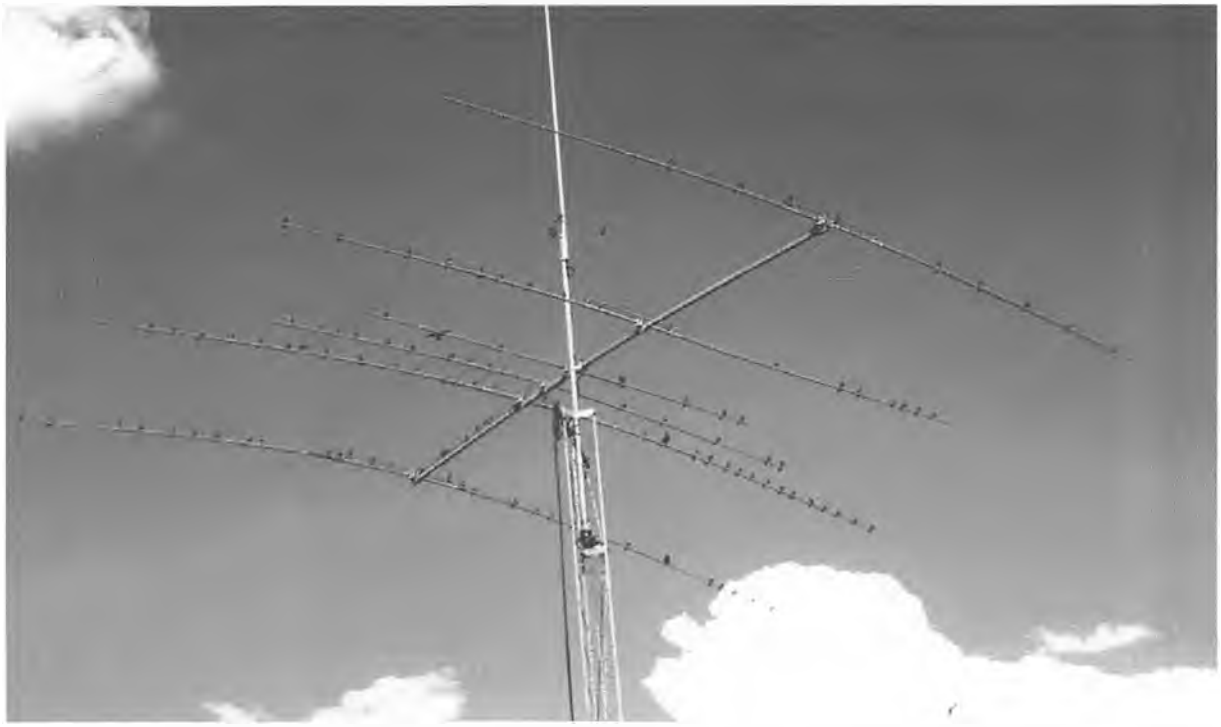
A 'rotary bird perch'

Bruce Bathols VK3UV
RAOTC member No 1090



A great photo of Bruce VK3UV's tri-band extended HB35C beam antenna performing as the classical radio amateur's 'rotary bird perch'. Sadly, the birds just don't roost on Bruce's antenna, they also feed (or sharpen their beaks, or whatever) on the coax cables. ar

Struggles with the 813 valve at the English Electric Valve Company

Enver H Chaudri G3DCS

This article has been republished, with permission, from the Spring 2007, No 81 edition of *OTNews*, the quarterly journal of the UK Radio Amateur Old Timer's Association. The article was extracted from the author's book *Four Jobs* and the copyright rests with the author. I am sure that many RAOTC members have fond memories of, and first hand experience with, 813 transmitting valves, and will find the article as interesting as I did. *Bill Roper VK3BR Editor.*

Some of the transmitting valves made in our department used thoriated-tungsten filamentary-cathodes. These had to undergo a process known as carburising, which slowed down the rate of evaporation of the emissive substance (thorium). This process involved flashing the filament in an atmosphere which contained hydrogen and some xylene. Hydrogen forms a mixture which can be explosive when it exceeds 5% in air. Walter Mayes, the Head of the Small Transmitting Valve Department, decided that it was time that I learnt this process, as he wished me to run the 813 and 833A tube projects which used this type of filament. He asked Norman Davies, his other assistant engineer, to show me the ropes.

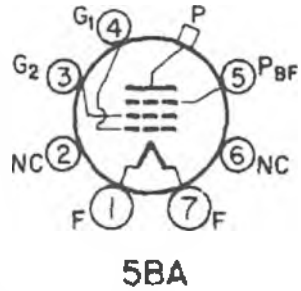
An 813 but, regrettably, not one produced by the English Electric Valve Company.

We both repaired to the furnace room where the carburising-bell-jar was situated. Don Samuels, the carburising operator, set up the system, while Norman explained to me what was what. He was standing immediately behind Samuels, while I was peering over Norman's shoulder. Eventually it was all set up and Norman gave the order to flash the filament. The place rocked to a loud explosion and I became aware that, in the resultant melee, Norman and I had changed places and he was now peering over my shoulder. I do not recollect seeing him change places. Fortunately, no one was injured.

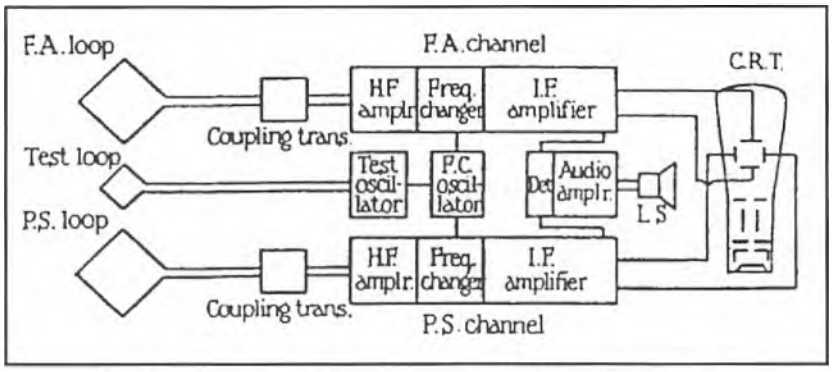
An 833A valve.

I must say that this event made me a little scared of carburising, and we were later to experience even louder bangs when Dr Lenz designed a plant intended to cure this possibility of explosion. Dr Lenz was a German scientist who had been brought to this country after the war to work for the British. He was an expert on X-ray tubes and high voltage rectifiers. His carburising-plant was installed in our production-shop for the more massive 833A valve and was a much larger unit which, of course, held more hydrogen. Evidently it was still possible for air to enter the system and, if it was not purged properly, it produced a bang comparable with that of a 16 inch naval gun. Little did I realise that later in my career I was to be even more involved with hydrogen gas and the possibility of bigger and better bangs!

The 833A valve was apt to go bang after it was completed. I had been working late at the factory one night and left at about ten pm. The place was empty except for me. As I walked along the outside of the building I heard a loud bang from inside, but upon my return I



Connections to the 813.



Block diagram of the Marconi FH4 HF/DF receiver.

Interestingly, the shore-based Huff-Duff stations also served as counter-information to cover up the existence of project Ultra. Since the Allies did not want the Germans to discover that they had cracked the Enigma code with project Ultra, fake HF/DF data was used to hide the real source of their information concerning U-boat positions, etc.

The earliest radio direction finder was the radio goniometer, invented by Bellini and Tosi in 1907, which became known as the Bellini-Tosi or the so-called B-T goniometer. After about 1915, when the sensitivity of receivers became more adequate, B-T became very popular and has been widely used since. In the Bellini-Tosi radio goniometer, two loop aerials (one positioned north-south and the other east-west, or fore-aft and port-starboard on a boat) were each wired to a field coil (which were mounted at right angles to each other). A rotating 'search coil' (which was attached to the receiver) was then placed between the two field coils.

A loop aerial resonates best when the radio wave approaches it from the side, and so the degree to which an electric current is induced in the aerial circuit diminishes as the wave's angle of approach increases. Each field coil will then produce a magnetic field proportional to the current induced in the aerial. The search coil receives a proportion of the magnetic flux from each field coil depending on the direction it faces.

The search coil achieves maximum magnetic flux when it favours the coil with the greater magnetic field, and it is at this position that the search coil points in the direction of the radio transmission. For example, if a radio wave approached the radio goniometer from the northeast, both the NS and the EW aerial would resonate at the same level. This would induce equal magnetic fields in the field coils, and the search coil would pick up the most magnetic flux when facing directly between the two, pointing at a 45° angle (which is northeast).

Unfortunately, when a search coil points northeast it is also pointing southwest (ie the search coil will receive another maximum magnetic flux when it is rotated 180°). During WWII, true direction was found either by incorporating a 'sense antenna' into the Huff-Duff unit, or by using data from a second Huff-Duff antenna at a separate location. Either way, with a radio direction ascertained from a second Huff-Duff station, the location of the radio transmitter can be determined through simple triangulation. Indeed, if direction lines were drawn from each station, the transmitter would be located at their intersection. During WWII, data from at least three stations were typically used to correct for errors.

In WWII, ship-based Huff-Duff was implemented with a number of changes to the original Bellini and Tosi radio goniometer design, but the general concept remained the same. The Adcock antenna used on land, however, functioned in a different manner. A dipole antenna pair and a combiner box were mounted at the top of a rotating pole (which carried the wires to the receiver). Inside the combiner box, wires from each dipole were looped together into a single field coil. This assembly functions just like a normal antenna and receiver unit, except no signal is read when the dipoles face the direction of the transmitted radio wave (equal currents induced in the dipoles produce opposite magnetic fields in the field coil, which cancel each other out). The distance between the dipoles had to be less than half the wavelength of the highest frequency of interest.

A commonly used ship-board receiver was the Marconi FH4 HF/DF receiver. This was a 1 to 24 MHz HF/DF receiver which had a cathode ray oscilloscope for direct visual bearing indication and was superior to its predecessor (the FH3) due to the ability of being able to distinguish between the sky wave and the ground wave. Its 'scope was as big as a pie plate, and was surrounded by a compass rose. Accuracy was limited from 2 to 10 degrees and the unit was powered by a 230 Vac 50 Hz mains source. The FH4 was connected to a Bellini-Tosi antenna array.

The initial sets were designed with five RF and IF coils that had to be changed for different frequency ranges. In 1945, the set was improved by the addition of a band changing switch.

As one WWII 'Sparks' summed it up, "Changing frequency bands was a bitch with the early model, particularly since the set had to be recalibrated every time you did it. Your chances of getting a bearing on a U-boat 'B-bar' message of as little as seven letters were abysmal."

Another view of the HF/DF shipboard office with the FH4 receiver at the bottom and the FH4 power supply on the shelf. The four fat cables egressing from the deckhead are the coaxial cables for the forward/aft (F/A) and port/starboard (P/S) antenna loops. The large box with the eight cable connections is a junction box which interconnects the four coaxial cables from the FH4 to the loop antenna cables. AR

Safety of life at sea 100 years ago

Ron Cook VK3AFW
RAOTC Member No 824

The sinking of the Titanic in 1912 in the North Atlantic caused the authorities to seriously rethink the question of the safety of life at sea, and to determine the role that the newfangled "wireless" would and should play.

An article entitled "Safety of Life at Sea – Compulsory Wireless Telegraphy", published in the Volume 1, No 12, March 1914 issue of *Wireless World*, described the main clauses of the agreed text of the International Conference on Safety of Life at Sea which was held in London and concluded on 20th January 1914. The magazine was supplied by the late Allan Doble, VK3AMD.

Chapter V dealt with radiotelegraphy, and here are the relevant clauses. They make for interesting reading nearly 100 years later.

ARTICLE 31. All merchant ships belonging to any of the Contracting States, whether they are propelled by machinery or by sails, and whether they carry passengers or not, shall, when engaged on the voyages specified in Article 2, be fitted with a radiotelegraph installation if they have on board fifty or more persons in all.

ARTICLE 32. This stated that ships picking up shipwrecked persons, and thereby exceeding 50 passengers, were exempt.

Moreover, the Governments of each of the Contracting States, if they consider that the route and the conditions of the voyage are such as to render a radiotelegraph installation unreasonable or unnecessary, may exempt from the above requirement the following ships:-

(1) Ships which in the course of their voyage do not go more than 150 sea miles from the nearest coast.

(2) Ships on which the number of persons on board is exceptionally or temporarily increased to or beyond fifty by the carriage of cargo hands for a part of the voyage provided that the said ships are not going from one continent to another, and that during that part of their voyage, they remain within the limits of latitude 30° N and 30° S.

(3) Sailing vessels of primitive build, such as dhows, junks, etc if it is practically impossible to install a radio-telegraph apparatus.

ARTICLE 33 defined first, second and third class ships and the requirements for radio in each class. First Class Ships were defined as ships having a continuous service.

A radiotelegraph installation shall be placed in First Class ships which are intended to carry twenty-five or more passengers :-

(1) If they have an average speed in service of fifteen knots or more:

(2) If they have average speed in service of more than thirteen knots, but only subject to the two-fold condition that they have on board two hundred persons or more (passengers and crew), and that, in the course of their voyage, they go a distance of more than five hundred sea miles between any two consecutive ports. Nevertheless these ships may be placed in the Second class on condition that they have a continuous watch.

First class ships and second class ships travelling more than 500 nautical miles between ports of any ship on the Atlantic trade route, or travelling more than 1,000 nautical miles from the nearest coast, were required to maintain a continuous watch.

Ships placed in the Second Class were required to maintain a continuous watch for at least seven hours a day, and a watch of ten minutes at the beginning of every other hour.

Watches were to be kept by persons with approved certificates.

The regulations go on to say: Nevertheless, if an efficient automatic calling apparatus is invented, the continuous watch may be maintained by this means by agreement between the Governments of the High Contracting Parties.

ARTICLE 35 stated: The radiotelegraph installations required by Article 31 above shall be capable of transmitting clearly perceptible signals from ship to ship over a range of at least 100 sea miles by day under normal conditions and circumstances.

It also called for the installation of an emergency installation, "every part of which is to be placed in a position of the greatest possible safety, to be determined by the Government of the country to which the ship belongs".

In all cases the emergency installation must be placed, in its entirety, in the upper part of the ship, as high as practically possible.

The emergency installation includes "an independent source of energy capable of being put into operation rapidly and of working for at least six hours with a minimum range of eighty sea miles for ships in the First Class, and fifty sea miles for ships in the two other Classes. If the normal installation, which, in accordance with this Article has a range of at least one hundred sea miles, satisfies all the conditions prescribed above, an emergency installation is not required".

ARTICLE 37. Every master of a ship who receives a call for assistance from a vessel in distress is bound to proceed to the assistance of the persons in distress. Every master of a vessel in distress has the right to requisition from among the ships which answer his call for assistance the ship or ships which he considers best able to render him assistance, but he must exercise this right only after consultation, so far as may be possible, with the masters of those ships. Such ships are then bound to comply immediately with the requisition by proceeding with all speed to the assistance of the persons in distress."

That completes the extract. The genesis of these regulations was, of course, the sinking of the Titanic in 1912 in the North Atlantic. The Authorities did learn lessons from that disaster and the 1914 regulations show that clearly. Regrettably, today we still follow the tradition of waiting for a disaster to occur before acting.

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Royal Australian Corps of Signals Museum

Bill Roper VK3BR
RAOTC member No 978

As part of my increasing interest in historical communication radios, a few weeks ago I was an eager visitor to the newly re-opened Royal Australian Corps of Signals Museum located at Simpson Barracks, McLeod, Melbourne, where I was shown around by the museum manager, Major Jim Gordon VK3ZKK, a member of the RAOTC management committee. This museum is a "must see" for all members interested in historical radio equipment. I hope what follows will whet your appetite to visit this fascinating museum.

The Signals museum collects, preserves and exhibits the history of the Royal Australian Signals Corps. It began its life shortly after WWII when members of the staff of the School of Signals at Balcombe collected equipment that was going out of service and set up displays for the students. It enabled the trainees to learn about the history of their Corps and to study the evolution of their equipment and the changes in technology.

Even though some of the early equipment looks basic and sometimes crude, it was the latest military technology of its day. Military equipment in the WWII years was far more advanced than domestic equipment and appliances. It was not until many years later that sophisticated and reliable domestic equipment and appliances became available. The development of solid state electronics and mass production has resulted in an explosion of inexpensive but highly complex products.

The Signals museum moved to Watsonia in 1970 when the School of Signals moved there. It was in a building close to the Greensborough Road barracks entrance.

For many years a small group of volunteers worked at the museum and various Signals Unit Associations set up displays dedicated to their former Units and in memory of key members of their Units.

Eleven years ago the museum moved to its current location, building 147, which was a satellite terminal, built in the Cold War days. The 18 metre diameter bright white satellite dish attracted a lot of attention as it could be seen from the surrounding suburbs. The facility was closed in 1991 and the dish was moved to Western Australia.

The satellite terminal building was purpose built to house the associated equipment and plant and to provide office accommodation for the staff. It did not have disabled access or toilets for the disabled that complied with Building Code for buildings for public access. The building was closed to the general public for almost two years but was recently refurbished and has been reopened.

Photo by Bill Roper VK3BR

The Vietnam War era room at the Army Signal Corps museum.

Photo by Bill Roper VK3BR

A WWII AR8, AT5 and ACU combination on display at the Signals Museum.

An entrance ramp and toilet for the disabled were built together with new offices, a conference room and the entire display area had air conditioning installed. A new entrance foyer has replaced the old narrow entrance passage way.

Displays have been set up again and will be progressively developed further. They will be changed regularly so that visitors who return will find new things to look at.

The museum has a good reference library and an excellent collection of operator and maintenance manuals for a very large range of military and test equipment.

The museum is always looking for military Signals related items for its collection, such as equipment or bits of equipment, books, photographs and documents. If in doubt, it is better for the museum to throw it out rather than risk having rare or historic items thrown out or destroyed. No item is too new; today's equipment is tomorrow's history.

The museum also welcomes new volunteers.

The museum is currently open to visitors on Tuesdays between 10 am and 3.30 pm.

The museum is located in Simpson Barracks (formerly called Watsonia Army Camp). Melway map 20 G7.

Entrance is from Greensborough Road, just south of Yallambie Road. Photo identification, such as a driver's licence, will be required to enter the barracks.

The museum is located approximately 1.2 km from the barracks entrance gate.

The closest railway stations are: Watsonia, which is 1.2 km from the barracks entrance (but it's downhill); and Macleod, which is 1.6 km from the barracks (uphill).

The Glenroy to Eltham bus, route 513, stops outside the barracks.

For further information contact the Museum Manager, Major Jim Gordon on 0407 264 961, or by e-mail at *jim.gordon@vicsig.net*

There are many other Army museums around the country, details of which can be found at the web site *www.defence.gov.au/army/AHU* which takes you to the Army History Unit where you click on "Museums".

Silent Keys

It is with regret that we record the passing of :

Alf Webb OAM	**VK2UC**
Bill Rice	**VK3ABP**
Bill Currie	**VK3AWC**
Ron Petrich	**VK4ACZ**
Barry Clarke	**VK5BS**
Eddie Maxfield	**VK6AEM**

A Square Kilometre Antenna

Ron Cook VK3AFW
RAOTC member No 824

The topic for the Melbourne March 2007 RAOTC luncheon talk was the Square Kilometre Array Radio Telescope (SKA). The speaker was Richard Donelson, a CSIRO research engineer. Richard briefly described the SKA as follows.

Why one square kilometre?

Increasing a telescope's collecting area increases its sensitivity. Thanks to higher sensitivity, weaker signals emitted by more distant or fainter celestial objects can be received. One of the aims of the SKA is to receive signals from the early Universe (the most distant objects that can be observed). These signals are very faint and hence require a very sensitive telescope so that they can be detected. This means the SKA needs to be very large.

Technology

To provide a million square metres of aperture at an acceptable cost, the Square Kilometre Array must make a revolutionary break with current radio telescopes. Institutions participating in the SKA are now designing and building prototype systems, and the key technologies will be determined from these. Many different technological solutions will be selected and integrated into the final instrument.

Both planar phased arrays, and reflectors, are being considered for the antennas. The technology must allow for multi-beaming (viewing the sky in more than one direction at once over large areas of sky, preferably with fields of view that can be targeted independently).

Reference Design

The SKA's collecting area of one million square metres will be distributed over a number of "stations", perhaps as many as a few hundred. Each station will have a diameter of 100 - 200 m. For comparison, Arecibo is the world's largest radio telescope with a diameter of 305 m (although not steerable), followed by the GBT (100 x 110 m), and the Effelsberg telescope (100 m).

Artist Chris Fluke's impression of the SKA using Luneberg lenses.

The Reference Design is composed of planar Aperture Arrays for the low frequency band, and small steerable dishes with "smart feeds" for the intermediate and high frequency bands. The "smart feeds" comprise Focal Plane Arrays for the intermediate frequencies and wide-band feeds at higher frequencies.

Richard was part of the CSIRO SKA design team. He was involved in the design of a Luneberg Lens antenna using foam and ceramic dielectrics. He described the design theory and the manufacture of a prototype. When tested it performed almost exactly as designed. It was a significant advance on anything else, having the capability of focusing VHF, UHF and microwave signals beyond X band into a receiver. It would be easy to use one lens to focus on three or more parts of the sky independently and simultaneously. Unfortunately, this breakthrough in RF design has been dropped in favour of existing technology. The lens could have been made in Australia, but there would be risks of exceeding the budget and time frame because the technology was new, and no existing factory had experience with the processes involved in manufacture.

The Australian proposal is for the main antenna farm to be located in Western Australia near Geraldton, and for a line of other clusters of dishes to be placed in a spiral across Western Australia, the Northern Territory and Queensland giving a base line of 3,200 km with a possibility of extending this another 2,000 km to New Zealand.

The key to the telescope operation is the ability to combine the signals from each part of the vast array in the correct phase and to process them in a central super-computer.

A decision as to where the SKA will be sited, Australia or South Africa, has yet to be made.

Johann Carl Friedrich Gauss

Ron Cook VK3AFW
RAOTC member No 824

Here is another in the series of eminent scientists who have an influence in amateur radio. This information is based on the entry in Wikipedia, the free on-line encyclopaedia.

We know the name of Gauss through its use as the unit of magnetic flux density in the centimetre-gram-second system of units. The gauss, abbreviated as G, is the cgs unit of magnetic flux density (B), named after the German mathematician and physicist Carl Friedrich Gauss. One gauss is defined as one maxwell per square centimetre.

Johann Carl Friedrich Gauss was born on 30th April 1777 in Brunswick, Germany and died on 23rd February 1855 in Göttingen. He is known as a German mathematician and scientist of profound genius who contributed significantly in many fields, including number theory, analysis, differential geometry, geodesy, magnetism, astronomy, and optics. Sometimes known as the "prince of mathematicians" and the "greatest mathematician since antiquity", Gauss had a remarkable influence in many fields of mathematics and science, and is ranked as one of history's most influential mathematicians.

According to legend, his gifts became very apparent at an early age. One famous story has it that, in primary school, his teacher, J G Büttner, tried to occupy pupils by making them add up the integers from 1 to 100. The young Gauss produced the correct answer within seconds by a flash of mathematical insight, to the astonishment of all. Gauss had realised that pair-wise addition of terms from opposite ends of the list yielded identical intermediate sums: 1 + 100 = 101, 2 + 99 = 101, 3 + 98 = 101, and so on, for a total sum of $50 \times 101 = 5050$.

Although at that time it had been forgotten, the formula for the sum of the first 100 natural numbers was known to the Persian mathematician Ibn al-Haytham (known in the west as Alhazen) nearly 1,000 years before Gauss was born!

The Duke of Brunswick awarded Gauss a fellowship to the Collegium Carolinum (now Technische Universität Braunschweig), which he attended from 1792 to 1795, and from there went on to the University of Göttingen from 1795 to 1798. While in college, Gauss independently rediscovered several important theorems. His breakthrough occurred in 1796 when he was able to show that any regular polygon with a number of sides which is a Fermat prime (and, consequently, those polygons with any number of sides which is the product of distinct Fermat primes and a power of two, can be constructed by compass and straightedge. This was a major discovery in an important field of mathematics. Construction problems had occupied mathematicians since the days of the Ancient Greeks. Gauss was so pleased by this result that he requested that a regular heptadecagon be inscribed on his tombstone. The stonemason declined, stating that the difficult construction would essentially look like a circle.

Carl Friedrich Gauss, painted by Christian Albrecht Jensen.

The list of theorems, and their proofs developed by Gauss, makes impressive reading but means very little to non-mathematicians. One of these was further development of the understanding of complex numbers that we are familiar with when making calculations involving capacitance, inductance, aerials and transmission lines.

In 1801 the Italian astronomer Giuseppe Piazzi discovered the planetoid Ceres, but could only watch it for a few days. It was lost after it passed behind the sun and, in spite of their best calculations, it could not be found. Gauss took the available data and, using a technique he had invented, predicted correctly the position at which it was rediscovered by Franz Xaver von Zach on 31st December 1801 in Gotha, and one day later by Heinrich Olbers in Bremen.

The method of Gauss, now called the method of least squares, is used today for fitting curves to experimental data that contains measurement errors.

Gauss extended this work and incorporated some of the methods he had used later in surveying work. He developed the theory of normally distributed errors, often called the Gaussian distribution, and the basis of a whole school of statistical analysis.

Though Gauss had, up to this point, been supported by the stipend from the Duke of Brunswick, he doubted the security of this arrangement and also did not believe pure mathematics to be important enough to deserve support. Thus, he sought a position in astronomy and, in 1807, was appointed Professor of Astronomy and Director of the astronomical observatory in Göttingen, a post he held for the remainder of his life.

Gauss was a prodigious mental calculator. Reputedly, when asked how he had been able to predict the trajectory of Ceres with such accuracy he replied, "I used logarithms." The questioner then wanted to know how he had been able to look up so many numbers from the tables so quickly. "Look them up?" Gauss responded. "Who needs to look them up? I just calculate them in my head!"

In 1818 Gauss, putting his calculation skills to practical use, carried out a geodesic survey of the state of Hanover, linking up with previous Danish surveys. To aid in the survey, Gauss invented the heliotrope, an instrument that uses a mirror to reflect sunlight over great distances to measure positions.

Gauss is believed to have discovered the possibility of non-Euclidean geometries but never published it. János Bolyai is credited with the independent

discovery of non-Euclidean geometry in 1829 and his work was published in 1832.

This discovery was a major paradigm shift in mathematics, as it freed mathematicians from the mistaken belief that Euclid's axioms were the only way to make geometry consistent and non-contradictory. Research on these geometries led to, among other things, Einstein's theory of general relativity, which describes the universe as non-Euclidean.

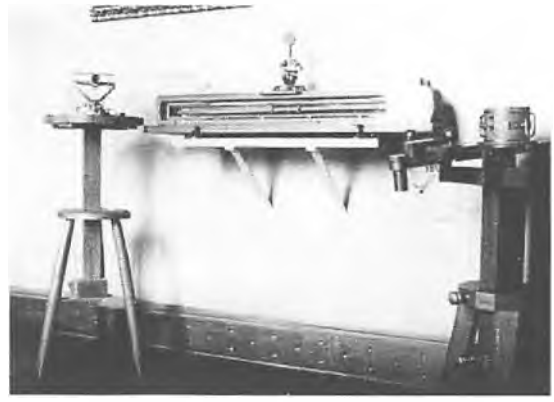
In 1831 Gauss developed a fruitful collaboration with the physics professor Wilhelm Weber. It led to new knowledge in the field of magnetism (including finding a representation for the unit of magnetism in terms of mass, length and time) and the discovery of Kirchhoff's circuit laws in electricity.

It is not well known that Gauss and Weber constructed the first electromagnetic telegraph in 1833, which connected his magnetic observation observatory with the institute for physics in Göttingen. It was about this time that Samuel Morse became interested in such a system, although he did not take out a patent for telegraphy until 1847.

Gauss developed a method of measuring the horizontal intensity of the magnetic field, which was in use well into the second half of the 20th century, and worked out the mathematical theory for separating the inner (core and crust) and outer (magnetospheric) sources of Earth's magnetic field.

Gauss was an ardent perfectionist and a hard worker. There is a famous anecdote of Gauss being interrupted in the middle of a problem and told that his wife was dying. He is purported to have said, "Tell her to wait a moment 'til I'm through".

He was never a prolific writer, refusing to publish works which he did not consider complete and above criticism. This was in keeping with his personal motto *pauca sed matura* (few, but ripe). A study of his personal diaries reveals that he had, in fact, discovered several important mathematical concepts years or even



The Gauss Weber telegraph (1833).

decades before they were published by his contemporaries. Prominent mathematical historian Eric Temple Bell estimated that, had Gauss made known all of his discoveries, mathematics would have been advanced by fifty years.

Unlike modern mathematicians, Gauss usually declined to present the intuition behind his often very elegant proofs. He preferred them to appear "out of thin air" and erased all traces of how he discovered them.

Gauss was deeply religious and conservative. He supported monarchy and opposed Napoleon, whom he saw as an outgrowth of revolution.

From 1989 until the end of 2001, his portrait and a normal distribution curve, were featured on the German ten-mark banknote.

Places, vessels and events named in honour of Gauss, apart from the unit of magnetic flux density, include the Gauss crater on the Moon, the asteroid 1001 Gaussia, the first German Antarctica expedition's ship *Gauss*, and Gaussberg, an extinct volcano discovered by the above mentioned expedition.

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Radio Amateurs Old Timers Club South Australia

The **Annual Luncheon** will be held on

Thursday, 25th October 2007

(12 noon for 12.30 pm lunch)

Please bring your Seniors Card

Venue: **Marion hotel**

Marion Road

Mitchell Park

Public transport Bus M44, stop 24.

RSVP to one of the following committee members

before 22nd October 2007:

President: Jim McLachlan VK5NB - phone 8294 2992

Secretary: Ray Deane VK5RK - phone 8271 5401

Assistant Secretary: Ron Coat VK5RV - phone 8296 6681

Radio Amateurs Old Timers Club Australia Inc

In accordance with the Rules of Association notice is hereby given of the

Annual General Meeting 2007

of the ***Radio Amateurs Old Timers Club Australia Inc***

to be held at

12.30 pm on **Thursday, 27th September 2007**

at the

Bentleigh Club, Yawla Street, Bentleigh, Victoria.

Business: Confirm minutes, adopt accounts, elect committee members.

(Note: All the existing committee members are willing to continue in office and offer themselves for re-election.)

The AGM will be followed by the Melbourne September Luncheon at 1.00 pm.

The guest speakers will be several Club members presenting a "show and tell" of interesting older radios and peripherals.

The Luncheon comprises a three course meal, plus tea, coffee and fruit-juice, at a cost of $30.00 per head (alcoholic drinks at members' prices).

Members are welcome to bring a friend, but we must have firm bookings to PO Box 107, Mentone 3194 no later than Thursday, 20th September 2006.

Nomination for RAOTCA Inc Committee

In accordance with Rule 23 of the Articles of Association.

We, _____ *(name and callsign)* and

_____ *(name and callsign)*

hereby nominate _____ to the committee of the **RAOTCA Inc.**

Signed by: _____ *(first proposer)* and

_____ *(second proposer).*

I agree to accept nomination, signed by: _____ *(nominee).*

All nominations must be returned to:

The Secretary
PO Box 107
Mentone VIC 3194

to reach him by 6th September 2006.