NOV '04

THE PROPAGATOR.

Club Call VK2AMW

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PRICELESS.

Meetings held second Tuesday of each month (except January).
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Official newsletter of the
ILLAWARRA AMATEUR RADIO SOCIETY INC.
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Greetings all, I would hope everyone is making the most of this very wet last half of October to get a lot of construction and repair projects completed in the shack.
I have finally got my WBFM 10 gig rebuild project finished. I am now looking at a transverter unit using an American Qualcomm brand of 11-12 gig xceiver board that many of the USA hams convert to 10 gig. Will show pics further into this newsletter. Also presented in the issue is part 1 of a 2 part article by Fred Backer VK2JFB, On the life of Nicola Tesla. Jack Hayden VK2XQ will also present a 2 parter on 6 metres and hopefully over issues to come we will see regular reports of 6m and 2m propagation. Thanks to both of you. I must also thank everyone that has contributed articles to the newsletter over the last 12 months, it is much appreciated.
It is through the many and varied articles that keeps our newsletter vibrant and interesting to read.

Read on for the rules for the up and coming Club Auction Sale on Nov. 9th come with lots of money in your pockets ☺ that's an order (wink)

Ohhh ma gosh ... the thought just struck me ... this is the last newsletter for the year and its time for early xmas wishes to everyone ... Have an awesome christmas and new year to you and your families.

RULES OF CLUB AUCTION.

The Illawarra Amateur Radio Society inc. Will be acting as agents for the auction. There will be NO warranties given or implied. All goods sold are as seen. The goods remain the property of the seller until the hammer drops. All items MUST be in working order and BE labelled with the seller's name and call.
The items will be sold in lot numbers, which will be given at time of booking in for $1 EACH number given which is non-refundable.

ALL ITEMS MUST BE BOOKED INTO THE AUCTION ROOM

BEFORE 7:30PM.

The clubroom will be open from 7pm so come early to avoid the last minutes rush.
The auction will start at around 8pm.

At the fall of the hammer, ALL items to be paid for.

The commission taken by the club will be 10%. Rounded up to the nearest dollar.
IE. Item sold $79:00. 10% Commission = $7:90 rounded to $8:00.
If change is to be given the Treasurer, will issuse and IOU for the change. This IOU can be used for other auction items when sold or at the end of the night, a cheque will be given.
The items for AUCTION MUST be in working order. If they are not and sold, the former owner is responsible for the repair or replacement of the faulty item.
ALL ITEMS ARE TO BE CLEAN. AUCTION ITEMS. MUST HAVE A RESALE VALUE OF $10.IN OTHER WORDS NO

JUNK.

Please use the council clean up to get rid of your rubbish. Not some poor club member, GETTING A HERNIA carrying it to the garbage bin for you.
Amateur Radio equipment sold to known licensed amateur radio operators.

PLEASE BRING ALONG SMALL NOTES.
DO NOT HASSELL THE HELPERS THEY WOULD LIKE TO ENJOY THEMSELVES AS WELL.

A note I received from the Westlakes Amateur Radio Club may be of interest to some of the more adventourous members of the IARS who want to have a chat to members of the WARC at their Club station.

"Dave VK2RD reports that the 160 metre mast is now a going concern. Our thanks go to Paul and the group of enthusiastic members for making this possible." The "mast" is near enough to a quater wave antenna, located in a tidal swamp at the back of their club rooms at Teralba.

73's Rob Heyer

Nicola Tesla

1856 - 1943

The Eccentric Genius of Electricity

Part 1

You may have grown up as I did, believing that Guglielmo Marconi invented radio. Well, he didn't. Radio's true inventor was a Croatian American by the name of Nicola Tesla.

Indeed, Tesla invented a lot more besides, like AC power systems, the polyphase AC motor, the hydro-electric generator, fluorescent light and many more useful and useless things. It is amazing how many of this almost forgotten man's inventions we still use on a daily basis, but then Tesla was one of the most truly eccentric characters in the history of electrical science and technology.

Early days

Tesla was born in 1856 in a small Croatian village, the son of the local minister. Showing an early interest in learning he went on to a prestigeous grammar school in Carlstadt. Here he soon showed himself a brilliant mathematician who could do complicated mental arithmetic at blinding speed. Spurred on by a gifted physics teacher he also developed an overwhelming interest in electricity and its applications. Shown an early demonstration model of a DC electric motor with a brightly arcing commutator he reckoned that a motor without a commutator would be so much better. The idea of a better motor, running on AC, became a persistent itch with him, which he had to keep scratching until he found his brilliant solution some years later.

From Carlstadt Tesla went on to study engineering at Graz Polytechnic and Prague University. Here, as in Carlstadt, his fellow students got to know him as a loner without any real friends - male or female, totally absorbed in his studies.

The first job

His father's death brought Tesla's studies to a halt. He had to find himself a job, which he found with a telephone company in Budapest. His obsession with the AC motor didn't leave him alone, however. He felt there had to be a way to overcome the fact that single phase AC wouldn't create a rotating field suitable to power his motor. Eventually he found the answer.

Tesla's solution was revolutionary. He envisaged not one, but multiple AC voltages shifted in phase. As one phase went down, another would rise, thus creating a rotating field for his polyphase motor. Over the next few months he developed a complete multiphase power system complete with generators, motors and transformers, all in his head and on paper. Tesla's work methods were as revolutionary as his results in that he was the first electrical engineer to solve his problems theoretically, rather than by trial and error.

Meanwhile, in America . . . .

Thomas Alva Edison had gravitated into electricity from quite a different angle. Starting out as a telegraph operator he was quick to realise the potential of Faraday's DC generators. Soon the Edison company was making a lot of money making generators and incandescent lamps and installing complete electric lighting systems. Edison himself was a thoroughly practical experimenter.

Shunning all theory - including Ohm's law - he totally relied on trial and error to achieve the results he wanted. Whilst this approach worked well initially, it lead to problems as Edison attempted to build bigger systems and tried to bridge longer distances. The problem of voltage drop was rearing its inevitable head.

Tesla meets Edison

Tesla changed jobs and joined the Continental Edison Company in Paris. Here he made several improvements to the company's DC motors and invented an automatic dynamo regulator. He was half-promised a bonus for this work but this never eventuated.

In 1883 the company suffered a disastrous setback with a complete power system and lighting installation supplied for the Strassbourg railway station. The design was seriously flawed. A short-circuit blew the wall off the power station as it was officially opened by Kaiser Wilhelm. Tesla was called in and was promised a $25,000 bonus if he quickly fixed the problems. However, this was never put in writing before Tesla undertook the work and was conveniently forgotten once the job had been completed.

In his spare time, meanwhile, Tesla had built his first small scale AC motor and generator and was looking for financial support. The Con. Ed. people were unimpressed, however. If your company has so many millions of dollars invested in DC technology you don't take kindly to a 27 year old engineer telling you your stuff is obsolete and you should change to AC.

Tesla's manager, however, recognised Tesla as a brilliant troubleshooter who could bring welcome relief to the growing problems at Edison's head office. He persuaded Tesla to migrate to the U.S. and gave him a glowing letter of introduction to Edison.

The two men met, and Edison immediately put Tesla to work, promising him $50,000 for improving the designs of his DC power generators. Tesla set to work with a vengeance and produced dozens of designs for improved generators, regulators and synchonisers. When he went then to Edison's office to collect his hard-earned bonus Edison's response was: "Tesla, you don't understand our American humour". Tesla was so incensed that he resigned on the spot and took a temporary job digging sewer trenches at $2.- a day.

The Tesla Electric Company

In 1887 Tesla finally managed to set up little company in New York with the help of a Mr. Brown of the Western Union Telegraph Co. and a friend. At last Tesla could get to work on his polyphase AC system. Within 6 months he had made up several working prototypes of motors, generators and transformers, all working well over thin wires. Tesla applied to the Patent Office for a single patent to cover his whole system but, at the Patent Office's insistence, this was broken down into 30 simpler and more detailed patents.

Brown, meanwhile, had concluded that these patents somehow had to be turned into moneymaking products and that Tesla was not the man to do this. However, Brown happened to know a business entrepreneur called George Westinghouse who, he thought, might just be the man. In 1888 Brown invited Westinghouse to a lecture which Tesla was to give before the American Institute of Electrical Engineers and Westinghouse came away impressed.

Next Issue we will continue with the Tesla – Westinghouse connection and Tesla's other experiments and trials.

Fred Backer VK2JFB
19.11.2003

COMING EVENTS.

1) Club Broadcasts Tuesday nights 1930 hrs local time
2) Club Slow Scan TV Monday nights 1930 hrs local time
   The above events take place on the 146.850 and linked repeaters.
   The Tuesday nite club net can also be heard on 3.620MHz
3) The 'new' have a chat net is on 28.320, 1700 onwards, most nights
4) 9 Nov. Auction Sale ... gear for sale to arrive no later than 1900 hrs so it can be listed, See the the information page elsewhere in this issue
5) 14 Dec last meeting for the year

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A Note via Rob VK2XIC on a VK4 6M repeater

Hi Rob,

The URL you need is: http://www.qsl.net/kf6yb/newplexer.html Our 6M repeater (VK4RSN , 53.7/52.7) is now on the air and working well, although we are using separate tx and rx antennas, as we had a bit of desense with an attempt to use a single antenna. We tuned the cavities up with a sweep generator and CRO, and got almost 70db of rejection. Insertion loss is difficult to measure, but no more than 2db. We found that a good sig gen, with a continuously variable attenuator, combined with a good RX and "S" meter, can also be used to good effect to tune up the cavities. I hard wired the 1/4 wave loops between cavities, to cut down on expense and the possibility of noisy BNC plug socket connections.

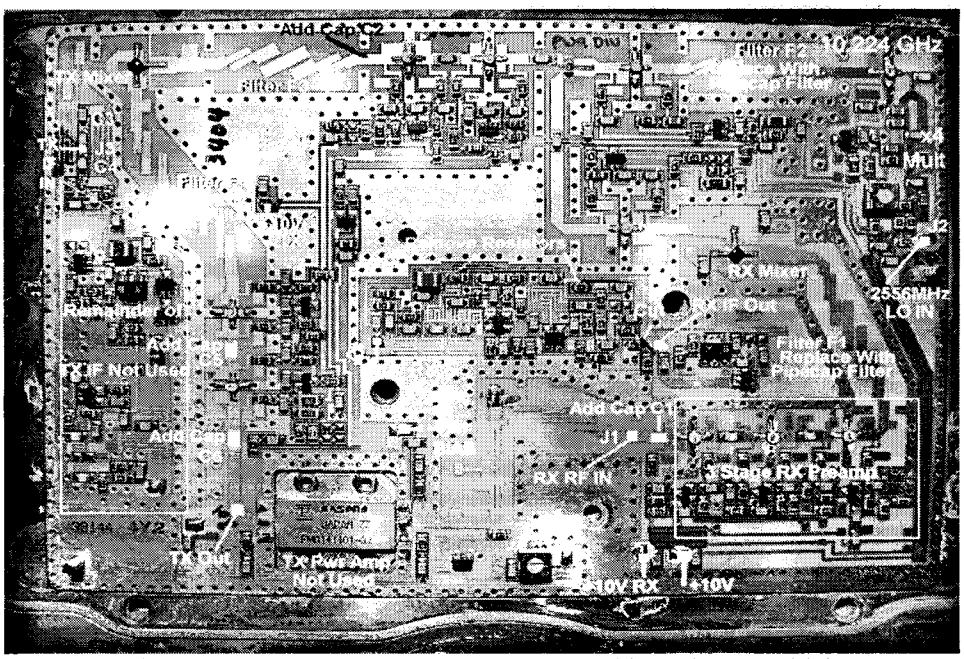
The tops of the cavities I built in small paint sample tins, with push on lids. I inserted small lengths of hobby brass tube, sweat soldered in place, and than fed the RG58U through, with the shield soldered to the outside of the brass sleeves. It works fine, but you need to solder quickly, so that the co-ax doesn't melt.

Got to go. 73, Harvey Wickes

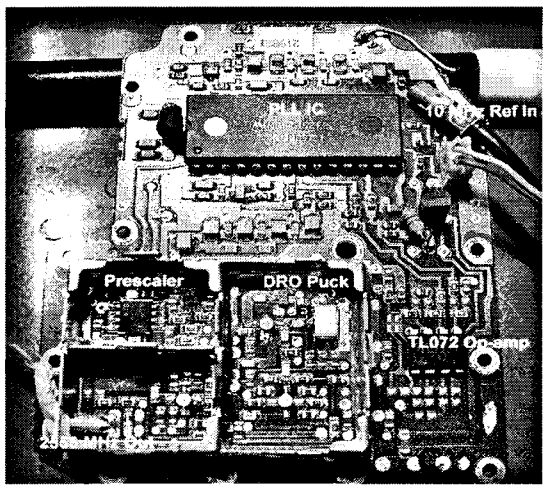
Some thoughts on a 10 GHz Transverter

Dave VK2TDN

As mentioned earlier in the issue intro, I'm looking into building a 2m to 3 cm transverter based on the Qualcomm transceiver board. I was given this board and a local osc/PLL board by Alan Devlin VK3XPD, who is also active in microwaves. Alan was given these boards by a ham at the Dayton Hamfest ...one of the biggest amateur get-togethers in the USA.
Below are pics of the xceiver and LO/PLL boards



The xceiver board above measures 14 cm wide and 9.5 cm high
I have labelled the board showing the main sections



This is the 2556 MHz L.Osc. board which incoporates a PLL – Synthesiser IC the common MC145152P2. This board is usually running and 2620 MHz so hardware reprogramming of the synth and other minor mods are required to drop the freq to 2556 MHz. The L.O. signal is fed to the main xceiver board where it is multiplied by 4 to 10,224 MHz, this leaves 144 MHz difference for the I.F.

There are a lot of power supply and switching considerations to be worked out but I will keep you up to date as the project progresses. For me, this a major step away from using Gunn oscillators and WBFM techniques to a Narrow Band all mode transceiver. Not that I will be leaving WBFM Gunn systems behind ! They are a great way to get onto the band and are much more readily available to the experimenter.

Introduction to Six Metres

Part 1

Jack D. Haden VK2XQ

The six-metre band is very unique and requires a certain amount of dedication to achieve results in the world of DXing. Situated between the 28MHz HF band and the 144MHz VHF band the propagation characteristics experienced on 50MHz are quite fascinating, and often appear confusing to the newcomer.

For many amateur radio operators' six metres rapidly becomes a passion, with others it's an obsession and with the latter, the only band they ever work. Operating on six metres is far from easy; compared to the relative ease one can work DX on the HF bands six can be a very frustrating band.
Unlike the HF bands, six metres opens on an unpredictable basis. Some openings only last a few short minutes, or less, whilst others can last for an hour or two, perhaps more. The season, time of day, and current situation of the solar cycle all play a vital role in determining DX paths on 50MHz.

Characteristics

The characteristics of six are quite unique and display many aspects of the 28MHz 10-metre band and the 144MHz two-metre VHF band. Six is close to the crossroads between the HF and VHF spectrum, thus providing an interesting challenge to the newcomer.

Even during the absence of favourable ionospheric propagation conditions, a well appointed 50MHz station can achieve contacts over a radius of 300km via tropospheric scatter. Quite often stations in the Illawara work stations in Newcastle and beyond, often as far north as Taree or even Tamworth via this mode. Good troposheric contacts depend on terrain, power output, receiver sensitivity and antenna.

Weak signal troposcatter allows the well appointed 50MHz DX station contacts up to 500km virtually at any time. Weather effects (high-pressure cells) often extend this range by a few hundred kilometres, especially during the summer.
During the peak of the 11-year solar cycle some very interesting long haul DX can be worked on six via the F2 layer. F2 scatter often provides a greater operating distance, with ranges of up to 4,000km experienced when the MUF is just below 50MHz. Europe and Ascension Island, in the Indian Ocean, have been contacted by radio amateurs in NSW on 50MHz in recent years.

The Trans Equatorial path is the ultimate in 50MHz DXing and when the solar cycle is at its peak, offers path of up to 8,000 kilometres across the magnetic equator, hence the name Trans Equatorial (TE). The best time to experience TE is around the spring and autumn equinoxes of peak solar years.

Sporadic E is the most popular and common propagation mode on six; single hop E openings may last many hours for contacts ranging from 600 to 2,300km. The best time for sporadic E is during spring and early summer and thus give the VK radio amateur excellent interstate paths and also across the Pacific to New Zealand and some neighbouring Pacific islands.
Multiple hop E's provide extended range enabling VK's to make contacts deep into the Pacific, South East Asia and the Americas. Multiple hop E's occur up to several times a year when conditions are right, it's a case of being about the band at the right time to enjoy this extended range.
Typically, the maximum range for most E layer propagation is around 2,300km. Meteor scatter also exists on 50MHz and can provide brief contacts during the early morning hours, just prior to and after sunrise. There are around a dozen or so annual meteor showers that attract the attention of VHF operators worldwide.

Auroral propagation often appears during the late afternoon when the earth's geomagnetic field is active or disturbed, usually after a major solar flare taking place. While the general HF bands experience a short wave fade out, six metres often comes alive. Auroral E propagation may extend the range of 50MHz contacts to 4,000km or greater, often late at night.

The 50MHz DX station

As with any DX station the equipment employed plays a key role in any success achieved on six metres. The most important part of any VHF DX station is of course the antenna. The more antenna gain the less pain, the more height the better the might. Directional antennae is the way to go on six, co-phased beams offer a distinct edge over a single beam antenna.

DX can be worked on six using elementary equipment, such as a vertical or a dipole with just 10 watts, but to work the real long distance DX stations (overseas) more up-market accessories are mandatory.
To achieve real results a five element beam with at least 50 watts of input power would be a substantial improvement over a vertical and 10 watts (around four to five 'S' points in fact!). However, the real ultimate would be an "M" squared beam with a 100 watts (maximum power permitted on six for VK2 stations).

The main considerations for a 50MHz antenna would be gain, radiation pattern, height gain, polarisation, type of transmission line, matching methods and mechanical design.
Receiver sensitivity is a key factor on 50MHz, if you can't hear the DX then you can't work it. It's of little point in having a great antenna system if the receiver is poor, and vice versa. Transceivers have come a long way in the past decade with HF /VHF and even HF/VHF/UHF combinations proving very popular. In the old days one used to have a sole radio devoted to six, however, these days you can procure a Yaesu, Kenwood, Icom, JRC or Alinco HF/VHF transceiver, usually with a 100 watts of power for six.

Modes on six

The most outstanding results on six, as far as long haul DX goes, are achieved by proficient use of the CW mode followed by SSB. Six metres can be a very noisy band when it's open, often smothered in splatter and crud from the TV video transmissions in the 45-49MHz band. This is where CW proves its value, plus some excellent notch filters help smooth things over too.

CW is the mode of preference for the hard core DXers who are chasing their DXCC (100 countries confirmed) certificate on six. Currently, there are around five or six VK amateur radio operators who have DXCC on six, all proficient CW operators.

SSB also works well on six, but doing battle with weak signals, often covered in noise, especially during an opening from Australia to Europe or the Middle East, is often a hit or miss affair.

FM is seldom used as a DX tool; however, some excellent interstate DX contacts have taken place on the 52.525MHz FM simplex call frequency. It's very rare that overseas DX is worked on FM, more often than not it will be a ZL or P29 station if any.

PSK31 is also used on six metres and is very popular with many Japanese stations and VK's alike.

Tracking the rising MUF

By monitoring the rising Maximum Useable Frequency (MUF) one can predict with a certain degree of accuracy when 50MHz will open and to roughly where.

There's a variety of Australian, Asian, Middle Eastern and Pacific television video signals in the 45 to 49MHz band to monitor and predict a possible opening on six. The majority of modern transceivers have receiver capabilities extending from 45 to 60MHz and TV spots can be programmed into the memory bank.
You can also track the MUF rising through the bands via a VHF scanner or communications receiver that receives from 30-45MHz. You will notice when the band is wide open splatter and crud from the 45-49MHz band will virtually cover parts of 50MHz making operating difficult at times.

Part 2 Next Issue.

73 de Jack D. Haden VK2XQ (ex VK2GJH).

PLEASE SUPPORT OUR CLUBS SPONSORS AS THEY SUPPORT OUR CLUB.

Some Thoughts, Ideas and Suggestions

As you are not doubt aware, the new Committee is trying to encourage all members and their partners to join into the Club activities that are already planned and some that at this stage aren't.

Our Calendar, so far, consists of a Meeting the second Tuesday of each month at the SES Hall but we know that this is not good enough and more needs to be planned to be able to meet in person and show the latest "home brew". For new members, a social event is the place to put faces to call signs and for others it's a chance to talk face to face without static, interference or that annoying little voice that keeps saying the same thing on a very regular basis.

We realise that a lot of our members cannot get to the monthly meetings, so if you would like to attend, but transport is a problem, please contact the club and we could arrange this for you.

We should really get together at least once every two months or so in some sort of activity, be it a BBQ, a Fox Hunt, Lighthouse, Treasure Hunt or a Dinner out.

In the "OLD" days, the Club had a lot of activities, but now it seems that we only have the very odd occasion where we get together outside the monthly meetings.

It would be good if we could get the whole family involved, especially the partners and the kids. Remember, our kids and grandkids are our future members.

Some of the suggestions!

1 Events in a family friendly place eg a park on the beach at Kiama coinciding with the Craft Market day, where there is actually something for the partners to do rather than brush off flies with monotonous regularity. Not to mention the dust and the heat!

2 Organise a supper at the Monthly meeting, the women can get together and have a laugh at their partners radio habits – lets face it they all have the same bad ones.

3 Organise a "reward day", make it our other halves reward for support, patience and silence – a Club Dinner once a year, maybe at Christmas. What about a Kris Kringle at the Christmas Party, everyone brings a $5 present?

Could you please put your thinking caps on – this is YOUR club, for your enjoyment.

Bring your suggestions to the November meeting, and please consult your other half for suggestions – make it an interesting Club for all the family! Alternatively, contact Geoff VK2HIC or Maeva by email, secretary@iars.org.au or by phone 4297 6065.

Thanks for reading this.

Geoff Howell VK2HIC and Maeva Bennett VK2H???????????(If I passed!!!!!!!!!!)

Club Picnic

When: **11.00 am Sunday, 21 November 2004**

Where: **Hindmarsh Park, Terralong Street, Kiama**

Why: **Its nearly Christmas - so here is one for everyone!**

While the Hams discus radios, contacts, home brews etc,

the rest of the family and friends can look around Kiama.

There's lots to do in Kiama, especially for those who like to explore!

Kiama Craft Markets are on today for those who need to do some Christmas Shopping.

There are lots of specialty shops to browse, a beach for the kids, a park to play

in and even lovely Cafes and Take Aways for those who wish to grab a bite to eat.

Now is the chance to put faces to names and meet and talk and to have a fun day out.

Grab a blanket, a basket and some goodies – See you there.

Maeva Bennett

Secretary

*** In case of inclement weather listen to the 10.00 broadcast callbacks for an alternative site, or contact John Bennett VK2AAL on 146.850MHz after the broadcast, or telephone Màeva Bennett on 0242 976065

Our Committee.

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Repeater Committee. Rob VK2MT, John VK2AAL
Canteen. Leigh Whitmarsh, Peter VK2HPR.
Web Master. Michael EckArdt VK2GNV, with help from Daniel VK2TAU.

A Note concerning the above list .... Michael VK2GNV has indicated he is leaving the region and moving to Rockhampton (nthrn VK4) around the end of October 2004. As a result we will be looking for a new webmaster ... some one who has experience in working with web pages, html, and the uploading of files to the server. Please see one of the committee members or myself reguarding this position. It is important to keep the web site active and up to date.

On behalf of the club, I wish Michael all the best in his new endevours up north in the land of cane toads ☺ and not to forget us down this way ...
there's always IRLP to keep in touch. Thankyou for your efforts and work with the club www site.

cheers
The Editor, VK2TDN

From the Secretary's Desk

Hi, my name is Maeva Bennett, (DOT of John Bennett VK2AAL) and I am the new Secretary of the Illawarra Amateur Radio Society (Inc). As yet, I am not a holder of a radio licence, but I am half baked, I have passed my Novice Theory and I will be sitting for the Regs in October.

You will notice I put "female" articles in the Propagator, hoping to get other females involved in the IARS. There are some fully qualified female hams in the Illawarra, but they are not members of our Club, I hope this will change. I believe it is a positive step and will make the Club and Ham radio more enjoyable for all involved. Please feel free to give me your ideas about this.

The Club has spent a lot of time in the past few months with discussions regarding the current situation between the National WIA and WIA NSW. As you are aware, our Club only takes the National Broadcast on Sundays and will continue to do so until the situation between the two WIA's is resolved. As your Committee, we would like to see a combined broadcast at 10.00 am on Sundays as we feel it would be a more interesting broadcast and would not tie up the Repeater system for as long.

Our major fund raisers this year are raffles. We are currently selling Rotary raffle tickets at shopping centres and our friends to help keep our finances healthy so that we can maintain our repeater system to a high standard of reliability for all to enjoy. Also, we are running a Christmas Raffle for a BBQ kindly donated by John R. Turk, to whom we are very grateful. Please remember, that these tickets need to be returned to the club, by 9th Nov, for drawing at our Christmas (December) meeting."

Our September meeting was very interesting as we had a presentation to Lyle Patison (VK2ALU) by the Mayor of Wollongong, Alex Darling, for his contribution to the radio telescope and Wollongong. It is sad to hear that Lyle is leaving the area, but we wish Lyle and his family all our very best in their new home.

You will notice that because of legalities, we are not broadcasting items for sale, swap etc. These items are now published on our internet site and at our monthly meetings. Don't forget that our November meeting is Auction night. If you wish to sell, swap or buy equipment please bring your money or the item to the meeting.

Some members have doubled up on their 2004 subscriptions. I will be writing to those members and ask them if it is alright to credit them with next year's membership. Our membership numbers have remained steady, and we are getting inquires regarding our Club from our internet site. If you don't know if you are financial or not, please contact our Membership Secretary, John Bennett VK2AAL.

The Club has been offered 2004 Callbooks and Logs at a substantial discount, Callbooks $25.00 and Logs $8.50; these will be at the Meetings as soon as they become available.

Regards
Maeva Bennett
Secretary

Some WWW Sites From Rob VK2XIC's Favourites List

http://www.advancedreceiver.com/index1.html
http://www.hamtronics.com/
http://www.mrx.com.au/wireless/TestGear2_4ghz.htm
http://www.mrx.com.au/wireless/ConfierModifications.htm
http://www.oreillynet.com/cs/weblog/view/wlg/448

A computer was .....

A computer was something on TV
From a science fiction show of note
A window was something you hated to clean
And ram was the cousin of a goat
Meg was the name of our neighbours daughter
And gig was a job for the nights
Now they all mean different things
And that really mega bytes
An application was for employment
A program was a TV show
A cursor used profanity
A keyboard was a piano
Memory was something you lost with age
A CD was a blank account
And if you were part of a corrupted network
You hoped the police never found out
Compress was something you did to the garbage
Not something you did to a file
And if you unzipped anything in public
You'd be in jail for a while
Log was adding wood to the fire
Hard drive was a long trip on the road
A mouse pad was where a mouse lived
And a backup happened to your commode
Cut you did with a pocket knife
Paste you did with glue
A web was a spider's home
And a virus was the flu
I guess I'll stick to my pad and paper
And the memory in my head
I hear nobody's been killed in a computer crash
But when it happens they wish they were dead

Found on a Ham Radio web site Via VK2UBF Brian

Good laugh Brian .... Ohhh how times and language use have changed !!!

That's it for this issue,
73 Dave VK2TDN