

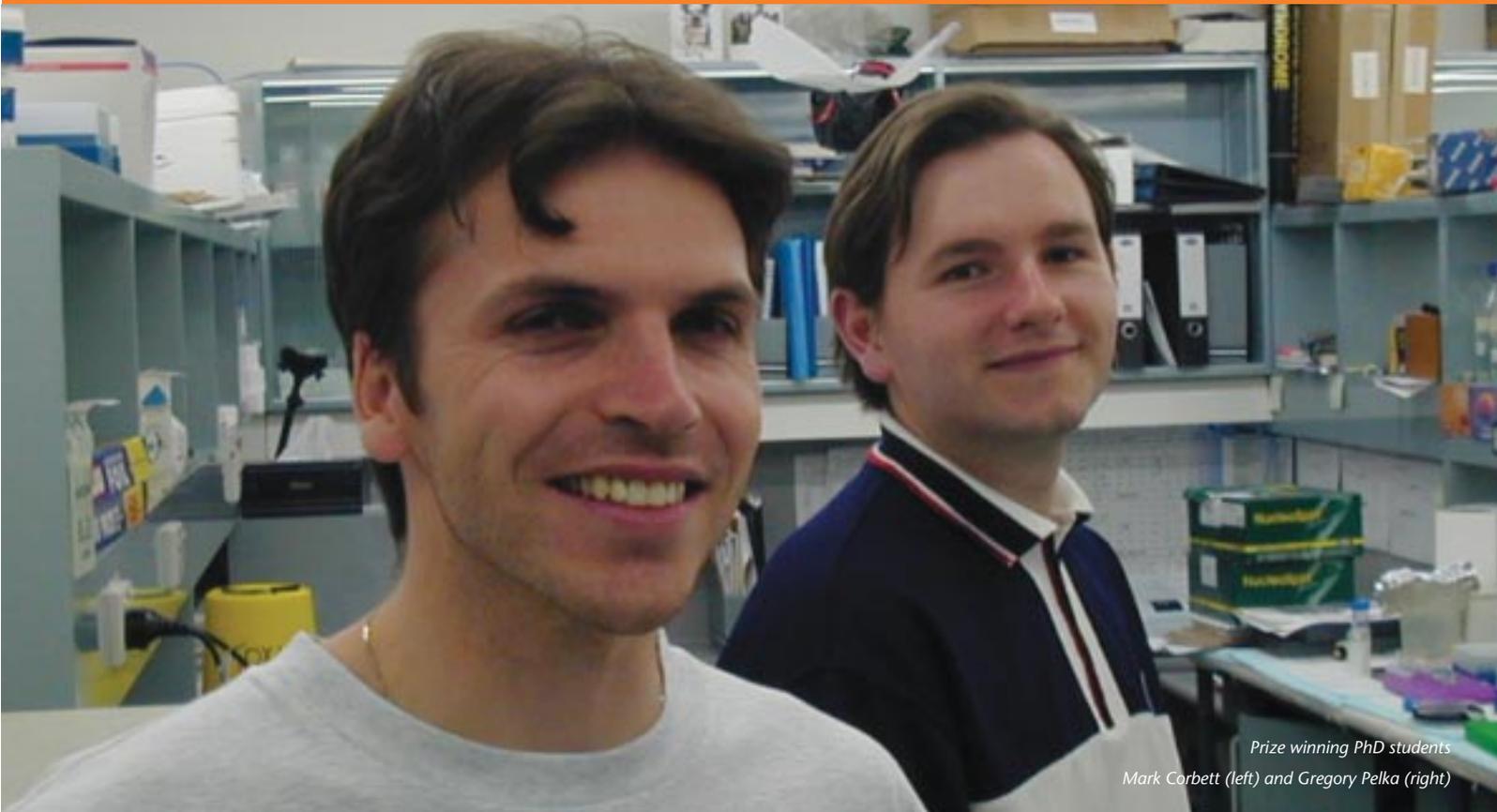
under the microscope

2 Computing Power

4 Jeans for Genes

5 Telomere Workshop

6 Fundraising



Prize winning PhD students
Mark Corbett (left) and Gregory Pelka (right)

CMRI PhD students shine ...

CMRI PhD students proved yet again that they are the pick of the bunch with Mark Corbett of Muscle Development and Gregory Pelka of Embryology both winning poster prizes at recent scientific meetings.

when it comes to minds...

Gregory Pelka won his accolade, the David Walsh Student Poster Prize, at the ComBio 2002 Conference held in Sydney in September (see page 3). Gregory presented his work-in-progress to establish a mouse model for Rett syndrome (RS).

RS is an inherited neurological condition accounting for up to 10% of severe mental handicap in females. Initially girls with RS appear to develop normally, but from about 6 to 18

months of age their development stalls and they gradually lose the ability to communicate and coordinate movement. There is currently no way to halt the devastating effects of this condition.

Gregory's research project is a CMRI collaboration with Associate Professor John Christodoulou at the Children's Hospital, Westmead, to study how mutations in a gene called *Mecp2* lead to this disruption in brain development.

Continued on page 3

*Shown in the 'O' is muscle tissue with labelled actin proteins showing the characteristic striations of skeletal muscle.
Photograph Mark Corbett.*



Director's desk



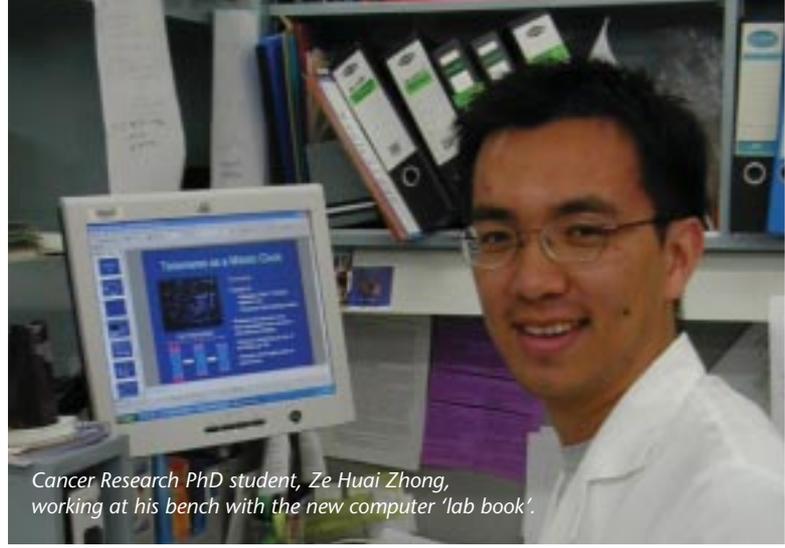
Over the many years I have been involved in Australian bio-medical science it has always been

accepted that it is our

absolute birth right to fully criticise our political leaders, both State and Federal, for their failure to adequately recognise and support our research activities. The Institute has, however, benefited significantly from key decisions by our State Government. Firstly the decision in 1989 by the then Minister for Health, Peter Collins, to support the redevelopment of our facility at Westmead was critical to our future. Secondly, the creation five years ago of the research and infrastructure grants scheme by the current State Labor Government has been essential for our survival in an era where research grants barely cover a third of project costs.

I must now admit to being impressed by the depth of knowledge and understanding displayed by the Federal Senate Community Affairs Legislation Committee dealing with the Research Involving Embryos and Prohibition of Human Cloning Bill 2002. I had the recent privilege of giving evidence before this committee and, despite the wide-ranging and often disparate views held by both the committee members and those giving evidence, the final document provides a clear and balanced assessment of the ethical and scientific discussions that were held. The desire of committee members to obtain opinions and advice was evident at all times and many questions were quite probing. Senate debate on this important issue is about to commence and it will be of considerable interest to follow proceedings and to gain some idea as to whether we have influenced the decision making process.

Professor Peter Rowe



Cancer Research PhD student, Ze Huai Zhong, working at his bench with the new computer 'lab book'.

Computing power for Cancer Research

Over the last few years, with the exponential growth of the fields of genomics and proteomics (the study of the complete sets of genes and proteins present in an organism), the nature of research has changed dramatically. The speed with which genes and proteins can be identified has increased beyond measure, but this requires that a large amount of time be spent at the computer trawling through vast databases of information.

Data gathered from experiments in the laboratory also increasingly comes in a digital format: digital photo-micrographs of cells seen down the microscope; data on cell counts; DNA fingerprints, sequence data, and so on.

The Cancer Research Unit has recently undertaken a major computer upgrade that will give a big boost to the research power of the Unit, allowing them to take full advantage of the upsurge in digital data management.

Every scientist's laboratory bench has been fitted with a computer connected to the Institute's main server. A flat screen mounted on a moveable arm allows the researchers easy use of their new computing power at the bench.

"While this may not sound like a huge advance, in practice it's like night and day for us," said Dr Roger Reddel, Head of the Cancer Research Unit. "We have always had good computing facilities, but at times it was necessary for researchers to queue for computer access. Now everyone has continual access."

The cancer researchers now write their laboratory notebooks online, instead of on paper. "The data will be searchable and secure and we can cross-reference each others work without searching through reams of paperwork," said Dr Reddel, "and the data will be a lot more legible!"

As well as frequently using external databases, the Cancer Research Unit also have a vast collection of over 25,000 vials of frozen cells, including precious samples of human tumours. "We need to keep track of every vial of cells in our collection, so we have a complex in-house database containing all that information," Dr Reddel said.

The cell database is searchable and contains many cross-references to experimental data about each sample and photomicrographs. Now every lab member can log onto this database at any time, through their lab bench computers.

"This is going to make a massive difference to us," says PhD student, Lyndal McLure. "Not only does it mean instant access to a terminal when we need it, but the moveable arm mounting of the screen means that we can have our 'e-lab book' open and visible so that we can follow protocols as we work at the bench."

CMRI PhD students shine ...

Continued from front page..

Other research groups have tried to study Rett syndrome by developing mouse models in which a large part of the gene is eliminated. However, most of the mutations that cause RS cluster in particular parts of *Mecp2*, impairing specific aspects of gene function. So Gregory has designed experiments to delete just these crucial parts of the gene.

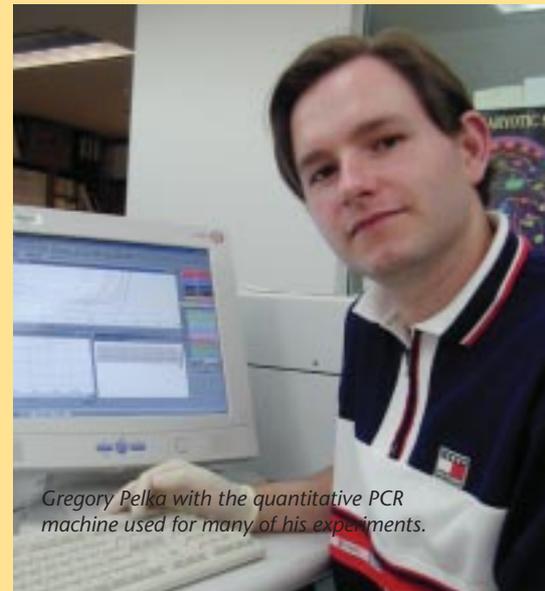
"My poster described the initial success we've had in obtaining mice carrying the

mutations and the establishment of the techniques we will need to use to analyse the mice," Gregory said.

Mecp2 is involved in regulating the activity of a variety of, as yet unknown, genes.

"What we want to look for in our mice is how the activity of *Mecp2* is changed by the mutations and what effect that has on the activity of other genes," says Gregory. This will shed light on why the mutations lead to the changes in brain development seen in girls with RS.

Gregory had previously distinguished himself by winning two competitive scholarships to support his PhD research including the prestigious NH&MRC Dora Lush Biomedical Postgraduate Scholarship and the Western Sydney Genetics Programme Rett Syndrome Scholarship.



Gregory Pelka with the quantitative PCR machine used for many of his experiments.

ComBio2002

In September, CMRI scientists had a significant presence at one of the biggest scientific meetings on the Australian researcher's calendar.

ComBio, this year held at the Sydney Convention Centre, is the joint meeting of three scientific societies representing Australian and New Zealand researchers' interests in the fields of biochemistry, molecular biology, cell and developmental biology and plant physiology. Together the three societies are able to assemble a host of scientists with overlapping interests at one, cost-effective meeting.

CMRI Unit Heads played a major role. Dr Phil Robinson was on the organising committee and also co-chaired a symposium on proteomics and genomics. Dr Roger Reddel organised a symposium on cell senescence and Drs Edna Hardeman and Tracy Bryan gave lectures. Dr Patrick Tam is the national scientific advisor to ComBio and also helped organise a symposium on development. Other CMRI scientists presented their research findings in poster form.

"Gregory has put a lot of hard work and thought into designing his experiments.

The work he has done to date has been an outstanding achievement,"
Dr Patrick Tam, Embryology Unit Head.

... and Muscles

Mark Corbett distinguished himself at the Westmead Association Hospital Week Research Symposium held in August. His prize-winning poster describes the use of a new technique to rapidly analyse genetic mutations that cause the childhood muscle weakness disease, nemaline myopathy (NM).

"Mark is an outstanding student. This is the fourth prize he has won for his work on nemaline myopathy including two from international meetings!" said Dr Edna Hardeman, Muscle Development Unit Head.

Over 50 different mutations have been discovered that cause NM. "Normally we would develop mice carrying the mutated gene to study the disease, and we did this with the first gene to be discovered [for NM], but it is too costly and time consuming to do for all the mutations," says Mark.

Instead Mark, and his colleagues, used a newly developed technique to deliver genes directly to intact muscles in mice, allowing the analysis to be carried out in a much shorter time frame.

They initially chose to study two mutations that cause a very severe form of the disease and then used fluorescence microscopy and electron microscopy to reveal the effects of the mutations on the internal structures of the muscle fibres.

"We were very quickly able to see that although the mutant proteins accumulate in the abnormal structures, called rods, that are characteristic of the disease, the mutant protein was also incorporated into the normal contractile machinery of the muscle fibre," says Mark. This indicated that the mutated proteins actively cause the weakness from within the machinery.

"This is an incredibly important finding," says Dr Edna Hardeman, "and now we know that the technique is so promising we can go on and rapidly identify the subtle differences in pathology caused by all the other mutations. This will help with the diagnosis of nemaline myopathies."

Another unexpected finding, will also have wider implications. The use of electron microscopy revealed some serious changes to mitochondria caused by the gene delivery technique, rather than the mutant genes.

Mitochondria are crucial to all cells as they provide the energy to drive the cells' activity. "The technique has been touted as useful for human gene therapy," says Dr Hardeman, "so our study suggests that people should proceed along this line with caution."

Jeans for Genes welcomes Julijana!

Julijana Trifunovic joined the team in September 2002, as National Campaign Manager, Jeans for Genes. Julijana will be a great asset to the CMRI with her strong history in both medicine and fundraising.

"It feels like a great fit here, because I can combine my creative streak with my medical knowledge," says Julijana, "I'm really excited to be part of such a well-established and professional organisation."

Julijana started her career as an Oncology nurse at the Children's Hospital in Camperdown, where she worked for 5 years. But she was soon bringing her creativity to the fore when she organised the Under Construction Ball in 1993 to raise funds for the

Hospital's move to Westmead. And in 1994, she organised the Glass Slipper Ball to raise funds for the in-hospital radio station, Radio BedRock.

Realising she had a flair for fundraising, Julijana made a permanent move away from the bedside to become Development Officer for Technical Aid to the Disabled and developed their first fundraising plan. In April 2001, she moved to SIDS NSW as Fundraiser and Red Nose Day NSW Campaign Manager.

Now at CMRI, Julijana is enthusiastically throwing out ideas for a big 10th anniversary Jeans for Genes Day celebration!

"G" whiz the Genie's have done it again!

Jeans for Genes 2002 has proved to be extremely successful to date with over \$3 million already counted and more to come. Collectively, our Genies (including individuals, schools, workplaces, government departments, banks, retailers, community groups and hospitals) have worked extremely hard in raising these much needed funds for our research programmes and on behalf CMRI, I would like to thank you all. A special congratulations must go to the Olympic Hotel in Melbourne, who raised the largest amount in Victoria. This is the second year in a row that they have achieved this amazing result!

As hundreds of cheques are deposited and the total raised increases, the Jeans for Genes team here at CMRI have already begun planning for Jeans for Genes 2003. Many of our retail distributors have already pledged their support

once again and have promised to work even harder in 2003.

Next year will be the 10th anniversary for Jeans for Genes and we plan to make it a very special year for the CMRI and the Genies who support us. Our aim will be to raise \$4 million. As part of our celebrations we will also be going back to auctioning Celebrity Jeans (painted on by renowned Australian artists) at our annual Dinner Auction. Some 'big' name jeans that have already come in include Michael Jordan and Arnold Schwarzenegger!

Don't forget (and tell your friends) to pop it into your diary - Jeans for Genes 2003 - Friday August 1.

- Julijana Trifunovic, Jeans for Genes, National Campaign Manager

From top to bottom:

Welcome to the team: new Jeans for Genes, National Campaign Manager, Julijana Trifunovic with Arnie's jeans!

It's the generous Genies that make Jeans for Genes Day the success it is: Students and school master, Mr Roger Nurse, from Scots College, Sydney, helping out with badge selling at Circular Quay on Jeans for Genes Day, 2002.

Australia Post staff at the Prince Alfred Park Building, Strawberry Hills, NSW, raised over \$1300 on Jeans for Genes Day. From left: Michael Davidson, Christine Bottcher (Deputy State Manager NSW/ACT), Jennifer Philips (CMRI), Sim Ni Chung, Jim Nolan and Maree Lockyer.



Kirsten Steiner, Miss Australia Figure Champion 2002 with her trophies

CMRI's own Miss Australia!

The commitment, dedication and excellence of CMRI scientists is not just confined to the laboratory...

Kirsten Steiner, Senior Research Officer in the Embryology Unit, has won the title Miss Australia Figure Champion 2002 at the recent ANB Australian Natural Physique Championships.

She fought off stiff competition to bring home the trophy in the Women's Figure Tall category and also the Women's Overall Figure.

Kirsten put herself through a strict months-long regime of training and diet, even passing up the opportunity to indulge at numerous morning teas in the Institute tearoom!

Congratulations Kirsten. We are very proud of your outstanding achievement.

Australian telomere researchers at the inaugural Telomere Workshop held at CMRI in October.

CMRI hosts inaugural Australian Telomere Workshop

In October, CMRI sponsored and hosted the first ever conference on telomere biology in Australia. The successful event brought together telomere researchers from all over the country, many meeting for the first time.

Telomeres are key to the development of cancer, and there are high hopes that intensive research in this area will lead to new and effective types of cancer treatment.

"The conference went better than I could have hoped," said Dr Roger Reddel, Head of CMRI's Cancer Research Unit who, together with team member Liz Collins, organised the conference. "Almost everyone with an interest in this area of research was able to attend, and all of the presentations were of great quality and interest."

Telomeres are the protective caps on the ends of chromosomes. Their gradual erosion as cells divide is a normal process which limits the number of times that cells can proliferate. But cancer cells find ways to abnormally switch on telomere maintenance mechanisms to avoid these limitations and go on dividing indefinitely.

To discuss these issues, more than fifty scientists came from research organisations in Sydney, Newcastle, Melbourne, Canberra, Perth and



Brisbane. Several scientists from Japan, with whom CMRI researchers have been working for many years, also attended.

Presentations covered research findings on the molecular mechanisms of telomere lengthening, the genes involved in telomere biology and the clinical issues of telomeres in diagnosis, prognosis and treatment of cancer. An interstate panel of scientists awarded the prize for best presentation by a young researcher to CMRI PhD student, Lyndal McLure. Lyndal used cutting-edge protein analysis technology to identify some new proteins that appear to be involved in telomere maintenance.

"There is already a lot of cooperation between telomere researchers in Australia and overseas, and the conference identified some new opportunities for the Australians to work together" said Dr Reddel. "Many of us communicate regularly via email, which is very useful, but this can't substitute for the intensive discussions that are possible in face-to-face meetings. I expect that our first telomere conference will be a catalyst for progress in this very important area of research."



Prevention is better than cure...

And the key to prevention lies in research. It's as simple as that!

There are over 10,000 known genetic disorders. To correct these and many other disorders research is needed to find the causes.

Here is my gift:

\$100 \$75 \$50 \$25

Other \$

Please find enclosed my cheque

Please charge my credit card:

credit card number

cardholder's name

cardholder's signature

expiry date

name

address

postcode

telephone

Please send me:

- More information about CMRI
- Christmas catalogue
- Information on my nearest fundraising committee
- An annual report
- Information on how to make a bequest
- Please update your records for my contact details



All donations are tax deductible

I would like to join the Automatic Credit Card Donor Program

Automatic Direct Debit Amount to be donated:

\$

Please complete the Credit Card Details at left.

Frequency: Monthly Quarterly Other

Commencement Date:

Please complete this coupon, enclose it with your donation in the envelope provided and mail to:

Children's Medical Research Institute
Locked Bag 23, Wentworthville NSW 2145 Australia
Tel 02 9687 2800 Fax 02 9893 9166

Thanks for your help.



Clockwise from top:
Enjoying a day at the races with long-time Quirindi Committee member Beth Tanner (left), John Ronald, Annie Stent and current president Libby Gardiner (right).

Armidale Mayor Brian Chetwynd hands over a certificate to be presented to the Mayor of Coffs Harbour by Earle Page College students at the start of the Coast Run.

Windsor Rotary Heritage Picket Fence project: Left to right, artist Greg Hansell, Hawkesbury Mayor Rex Stubbs and wife Linda, Rotary Club president Tom Millington, Dr Lisa Melton (CMRI) and Samantha and Adrian Clark of Trend Timbers.

Fundraising Fun

Quirindi Committee

The Race Day was a wonderful success, with plenty of informal fun, including a sweep on the Caulfield Guineas. The event included a splendid fashion parade provided by three local businesses and Dr Peter Jeffrey of CMRI was the special guest.

Earle Page College, Armidale

Extending the run to finish at Coffs Harbour instead of the traditional Nambucca heads expanded the fundraising potential of this Years Coast Run. Students ran legs of 1-10km over the space of two days, raising both awareness and funds along the way. Patricia Ruma-Haynes of CMRI's Developmental Neurobiology Unit donned her running shoes to join the keen students on the first leg.

Rotary Club of Windsor

In an outstanding initiative that will benefit the Windsor community and six deserving charities, including CMRI, the Rotary Club of Windsor is to build a beautiful picket fence around the historic McQuade Oval. The project involves selling 180 posts and 4000 pickets. Buyers will receive a replica picket signed by a celebrity! Posts have already gone on sale for \$500, and a special dinner was held in October to thank the first generous sponsors of the project and award them with beautiful certificates and a celebrity-signed picket. Local artist Greg Hansell painted the McQuade Park cricket scene for the certificates and Trend Timbers recycled the wood from the old McQuade Oval fence to make the certificate frames and replica pickets. To be a part of this historic initiative please contact Richard Clark on 0418 207 344.

Scone Committee

Beautiful weather and a great turn out made the annual Gala Golf Day another great success. There were lots of fun competitions, including the dubious honour of producing the shortest drive, and plenty of prizes to go round.

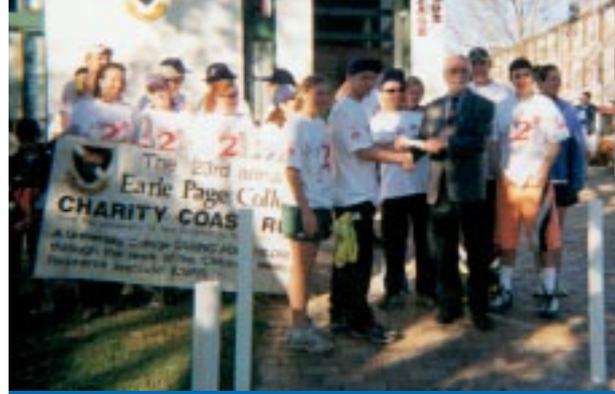
Hills Committee

The Spring Race Day held at Rosehill was very glamorous and an outstanding success. The fashion parade by couturier Mel Clifford and hats by Isabella Klompé was magnificent and the support of Gai Waterhouse, Jeannie Little and Maria Venuti made this a very happy day. Many thanks to Committee member Jenny Grant for her great efforts in coordinating the event.

Racquet Committee

Many thanks to the Pymble Players for the great theatre night held at the end of July with their performance of 'Vocations' by Alma de Groen. The committee took over the theatre for the night and served a delicious supper during the interval.

**Thank you all for your support throughout the year.
We wish you a healthy and peaceful New Year**



Dates for your Diary

Hills Committee Floral Art Show

at historic 'Glenhope', West Pennant Hills with delicious homemade refreshments prepared and served by the Maroota Committee, and floral arrangements by NSW Floral Art Club, 23 & 24 November

Strathfield Committee Luncheon

At the Curzon Hall, with gourmet goods, floral craft, Christmas cards and more, 28 November

Treasury of Crafts Christmas Fair

Don Moore Community Centre, North Rocks, 6 & 7 December

Carols in the Park

Tamworth, with performances from Little Maestros, 15 December

Goodwill Charity Card Shop

Open until 18 December, School of Mechanical Arts, 4th Floor, 280 Pitt St, Sydney

For details of all events contact Jennifer Philps
(02) 9687 2800