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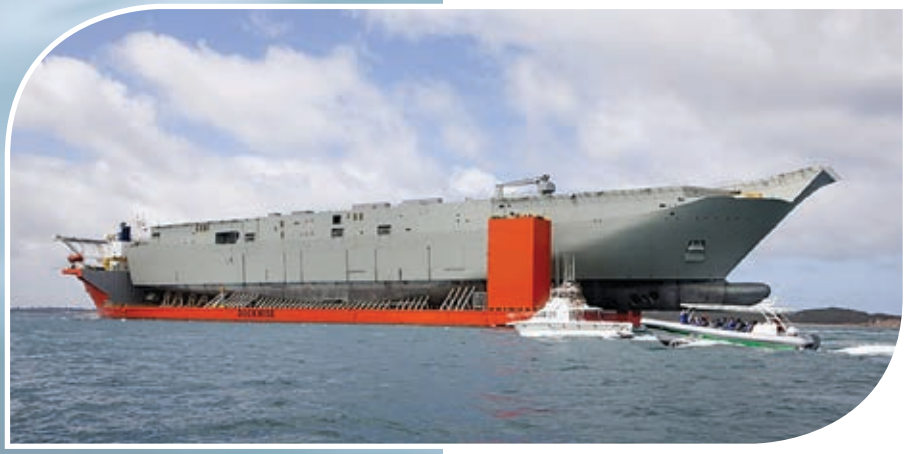
AUSTRALIA'S LANDING HELICOPTER DOCK IS HERE!

On a clear day in mid-October 2012, the first Australian Helicopter Landing Dock (LHD1) arrived in Melbourne's Port Phillip Bay. As if the arrival of the Royal Australian Navy's (RAN) largest ever vessel was not exciting enough, the sight of it being carried by the world's biggest semi-submersible heavy lift ship the Blue Marlin was certainly a sight to behold.

LHD1

Top: Arrival of LHD1 and Blue Marlin. Bottom: Submerged Blue Marlin and LHD1.



As part of Australia's future naval defence commitment, two Canberra class LHDs are currently being built in a joint venture between the Spanish ship builder Navantia and defence company BAE Systems, Australia. The former being responsible for the construction of the hull up to and including the flight deck, and the latter for the superstructure and final fit-out. Construction of the Australian LHDs began in September 2008 when the first steel was cut by Navantia in Ferrol, Spain. The first ship was launched at Ferrol on 17 February 2011, and the second ship following on 4 July 2012.

After entering Port Phillip Bay, the Blue Marlin/LHD1 headed for Geelong where the transportation shackles and welds were removed.

On Saturday 27 October 2012 the wind dropped and conditions steadied enough for the Blue Marlin to head out into the bay and sink herself, allowing the grey bulk of the LHD hull to float free. *Image inset.* The LHD was then towed to the BAE Systems facility at Nelson Pier, Williamstown. The Blue Marlin refloated and headed for the open ocean, and on to the next job.

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Nuship Canberra alongside at BAE Systems, Williamstown.

The premise of the Canberra class LHD or amphibious assault ship is to ensure essential tactical and operational agility is retained by the Australian Defence Force (ADF). The vessel has been designed to be capable of supporting an embarked force either afloat or ashore for extended periods. The two ships are seen as being vital to Australia's future security and defence. When commissioned the ship's roles are to:

- Transport, deploy and support an embarked force (Army in the case of the ADF but could equally be an allied Army or Marines), along with aviation units and equipment.
- Carry out/support humanitarian missions.

Within the first few weeks of LHD1's arrival alongside at BAE Systems Williamstown, the superstructure and mast blocks were being lifted into place. These blocks are of modular design which allowed BAE Systems the flexibility of spreading construction between its sites located in Henderson, Western Australia and Williamstown, Victoria. LHD2 is due in early 2014 ensuring that the Williamstown site will be a hive of activity for at least the next three years. *See image above.* Each ship will undergo sea trials and acceptance testing before final handover to the RAN.

The LHD's impressive attributes include: a flight deck, heavy cargo garage, light cargo garage, hanger, fore and aft helicopter elevators, a hospital, command facilities, personnel quarters, and the list goes on.

Some of the technical details of the ship are quite daunting, they include:

- An overall length of 230.8m, which is almost twice the length of an ANZAC-class frigate.
- Displacement is 24,000tonnes, with a full load displacement of 27,831tonnes
- The flight deck is 4750 square metres or the area of 24 tennis courts
- Capacity for 100 armoured vehicles and 12 helicopters
- A hospital with 56 beds, intensive care, X-ray and dental surgery
- Six reverse osmosis water treatment plants (providing 150 tonnes of fresh water daily)
- SAAB 9LV combat management system (CMS)
- Capacity for 300 crew and 1103 embarked force, total 1403

The LHD is an electric ship, and as such has no direct mechanical drive to the propeller(s). Propulsion is delivered by two Siemens 11,000 kW azimuth pods and two Brunvoll/ Siemens 1,500kW bow thrusts. Power generation is handled by a General Electric LM2500 Gas Turbine (24,000kW) / Brush Generator set and two MAN 7,680kW diesel engine / Alcoza generator sets. There is also an emergency Mitsubishi 1,590kW diesel engine/ Stamford generator set.

LHD1 was officially named *Canberra* on 15 February 2013 at a traditional naval naming ceremony at Williamstown, Victoria. The ceremony attracted many dignitaries including Prime Minister Julia Gillard, and the Minister for Defence Stephen Smith. The Nuship *Canberra* was named by Mrs. Vickie Coates, wife of the late Rear Admiral Nigel Coates AM, RAN, who sadly passed away in 2010 after a respected naval career.

This is the third time an Australian Naval vessel has borne the name Canberra. The first *Canberra (I)* was a County Class heavy cruiser, after a valuable service career she was heavily damaged and sunk during the Battle of Savo Island in August 1942. *Canberra (II)* was a Guided Missile Frigate she accumulated many distinguished operations, the most recent being Operation Slipper as part of the international coalition against terrorism. *Canberra (II)* was decommissioned in 2009. Nuship *Canberra* will become *HMAS Canberra* when she is commissioned. LHD2 is due to leave Ferrol (Spain) toward the end of 2013, arriving in Australian waters in early 2014, she will be named '*Adelaide*'.

The Australian LHDs are scheduled to be in active service for approximately 40 years. Although strictly naval vessels, they offer fantastic diversity to serve Australia in both military and civilian missions. One only has to consider rescue situations such as the recent tsunamis, to see their immediate value in the Australasia region. Nuship *Canberra* is due for delivery in the first quarter of 2014, with her sister ship due to enter service in 2016.

This means BAE Systems are facing a tight completion schedule, but judging by the progress made to date at the Williamstown site, things are looking positive for Australia's newest and largest naval vessels. ■

Matthew Cook

IMechE Victoria Panel Committee member
Mechanical Engineer

EDITORIAL

I was really grateful for all the feedback received for the last issue, both hand written and electronic notes of thanks or approval are massively appreciated. As are any articles that are sent through!

I have decided that this will be the last year I shall be the editor, and so I am on the lookout for a replacement. You don't require previous experience in editing, I didn't have any, but you will need patience, organisation and time management skills – all things any engineer should already have.

I am really pleased to see the Australian Young Members section re-invigorated with a new committee and fresh passionate faces, and the news that the South Australian panel committee has re-invented itself as well.

The institution wouldn't be the same without the volunteers, and I would like to say thanks to all of them. I encourage you all to see how you can get involved and help locally and nationally. Especially the role of mentor and interviewer for professional registration, which I recently successfully passed through as a candidate for Chartered status.

I hope you enjoy this issue and I look forward to comments, feedback and any articles you would like to see published. Also good luck in this issue's wordsearch.

Matthew Springer

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Check out the ***nearyou*** pages on imeche.org for contact details and events.

PROFESSIONAL REVIEW INTERVIEWS

The professional interviewer process has been updated, Joanna Horton from IMechE HQ tells us all about it.

Your Institution needs you…

Every year, the Institution carries out more than 1,800 Professional Review Interviews for Chartered Engineer and Incorporated Engineer registration all over the world and we are currently looking for more volunteers to support this vital role in Australia.

The role…

The Role of an Interviewer is to carry out competence based reviews of individuals against the criteria set out in the UK SPEC for CEng and IEng.

Interviewers provide guidance to IMechE staff and the Institution's Professional Review Committee (PRC) by evaluating an Applicant's written submission and their ability to discuss this at interview.

Each Interview is conducted by a panel of two Interviewers, and is a peer review of an Applicant's competence and application of engineering principles and commitment. Each Interviewer is then asked to submit written feedback and a recommendation to the PRC that makes the final decision.

Although this is an unpaid role, the Institution will reimburse all reasonable travel expenses.

Why volunteer…

Becoming an interviewer is a good form of CPD and is particularly useful if you are mentoring graduates towards professional registration. Our Interviewers also say that they enjoy hearing about other industries and interacting with developing engineers.

Interested?

If you are a Chartered or Incorporated engineer and interested in this role please forward a copy of your CV to us at **assessortraining@imeche.org.** It will be reviewed by the Chairman of the PRC and if selected, we will send you the Professional Review Volunteer registration form, which includes a Data Protection agreement.

You will be asked to complete six short online training modules and observe some interviews (optional).

For more information visit:

http://www.imeche.org/learning/volunteering/volunteer-roles/volunteering-for-membership/professional-review-volunteers

Joanna Horton

Head of International Development

If you're already registered as a interviewer but have not completed the training please go to **http://www.imeche.org/learning/volunteering/volunteer-roles/volunteering-for-membership/professional-review-volunteers** or email: **assessortraining@imeche.org".**

NB167 – Wordsearch Competition

Prize for first entry with all words found correctly - email answer to editor.

AUSTRALIA COMMITTEE CRICKET DREAMWORLD ENGINEERING ENGTRAVAGANZA FOR INTERVIEWS OUT PROFESSIONAL REGIONAL REVITALISE SECTION SOUTH SPEAK STATE TREBUCHET WINNER

NB166 – Wordsearch Winner

Rodney Puzey from QLD was the first to respond with all the words found correctly. This is Rodney receiving his IMechE prize from YMS Chair Amy Lezala.

WEAPON OF MASS DISTRACTION

Thousands of people battling Friday night peak hour traffic in Sydney to witness an engineering display? It's all about the way you market it.

I design equipment for special effects in films such as motion bases to simulate helicopters flying. I'm fairly used to odd requests and solving unusual problems. The phone rings on the 7th June 2011 and its Jeremy Sparks from Partridge Event Engineering, "our draftsman has told a radio station we can build a device to throw a car."

"How far" I ask.

"Oh … 50 metres…" with a pause.

Jeremy was wondering if some special effects equipment could be used – a high pressure gas powered device or a pyrotechnic driven cannon. I told him that any device capable of firing a car this distance would be highly visible. I suggested that if they really wanted to throw it, they'd need to build a large trebuchet. "A treb-u-what ?" was the reply.

I offered to send a few links to internet articles and warned that it would be an expensive build, if it went ahead.

Trebuchet were a siege machine that were widely used in the 12th to 15th centuries. The basic design relies on a pivoting beam with a short and long end. A large force is applied to the short end which results in much greater acceleration at the end of the long arm. A simple sling was secured to the end of the long arm for firing missiles, typically rocks. Designs improved over time from manually powered versions to large units with free swinging counterweights to provide the force. The advantages of trebuchet were that they could be erected outside the range of archers and other fortress defences, and, once constructed, were capable of firing hundreds of missiles a day.

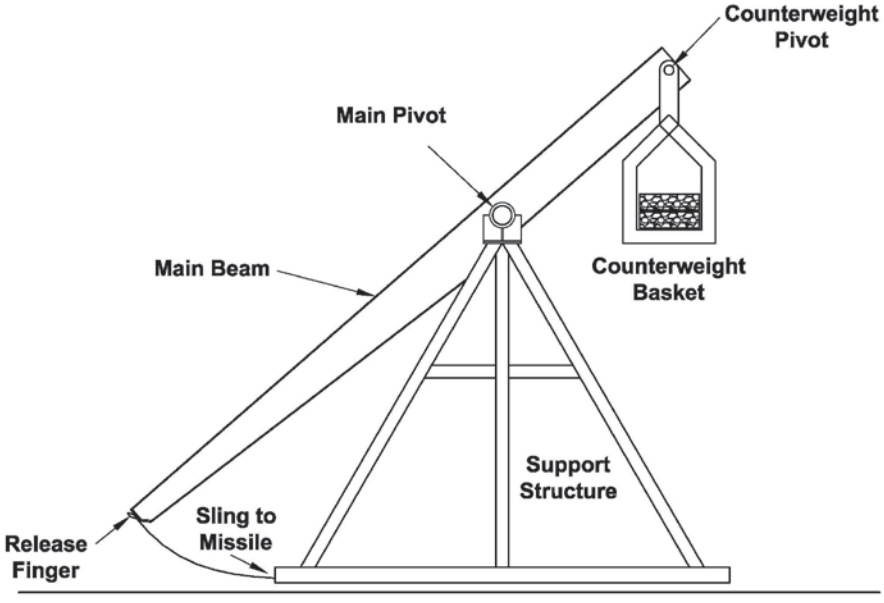
Major Components of a Pivoting Counterweight Trebuchet

It appeared that the UK television show "Top Gear" had thrown a small car with a simple trebuchet, however the car didn't seem to have travelled a great distance. A video clip of this and the Wikipedia entry on trebuchet was sent through as a possible solution. Discussions were held with the radio station and a small budget for a preliminary design was approved.

While the concept of the trebuchet is fairly simple, there are many variables that affect the final performance. Simulation software is readily available at low cost and "Atreb" was recommended by a friend who had previously built a trebuchet. A preliminary design was developed with a fair degree of conservatism, as I doubted the software designer had a trebuchet capable of throwing a 1 tonne car over 50 metres in mind when developing the simulator.

A range of factors had to be considered during the preliminary design including material availability, transport and constructability issues. A major consideration was the shock loadings the structure could be exposed to. Any "potential energy" device relies on the transfer of energy to balance loads. That is, the large falling counterweight is gradually accelerating a lighter weight missile, minimising shock loads. However there is a risk that the missile is not attached to the throwing arm due to mechanical or rigging failure. As the preliminary design indicated the counterweight required was in the order of 10 tonnes, the dynamic loads associated with this falling freely were around 300 tonnes. The main pivot axle and support structure had to be capable of withstanding this load, in the unlikely event the car detached during firing.

A preliminary design was developed, overall sketches prepared and a simple animation compiled. The idea was pitched to the radio station who approached the audience for a car to throw and other products and services to get the trebuchet built. Detailed design commenced in early July with



a date for the show set at 5th August. It was a great example of concurrent engineering with drawings for parts of the trebuchet checked and approved for construction before the total design had been completed. Meeting this tight schedule, which involved fabricating about 18 tonnes of steel, demanded plenty of long nights and working through weekends.

During the course of the build it was discovered that a world record for the most powerful trebuchet existed. The record is measured by multiplying the mass of the missile by the distance thrown, in kilogram.metres. The current world record was 52,088 kg.m. To claim the world record a 1 tonne car would have to be thrown over 52 metres.

Erecting the trebuchet commenced on Wednesday 3rd August with a view to testing on Thursday. However the complexity of the "basket" to support the counterweight had been underestimated by the fabricator and this crucial component was only completed late on Thursday night. A crew working overnight got the counterweight basket assembled to the main beam and two 4.1 tonnes blocks of counterweight steel loaded.

Final tightening of bolts on the Friday morning and the trebuchet was ready to test. A 50 tonne crane lifted the main beam and counterweight, the quick release engaged and safety slings installed. A four door sedan with the engine and gearbox removed was the first test vehicle. The sling between the release finger on the main arm and the car was about 6 metres long. Cameras rolled and the trebuchet was fired. The car was heaved about 40 metres straight up, looking like it would crash back down onto the trebuchet. Luckily it had some forward momentum and landed about 10 metres in front of the trebuchet. Not an encouraging result and the live radio show was only seven hours away.

The sling was shortened to 4 metres and the next car fired. This time the car travelled 35 metres. The finger angle was increased and the counterweight lifted even higher in an effort to get the car to release with more forward momentum. The final test car travelled 45 metres. With greater confidence in the trebuchet and release mechanism, an additional 3 tonnes of counterweight was added and the main arm lifted to the firing position.

As the trebuchet neared completion the earlier offers of listeners' cars to throw evaporated. A 1960s Volkswagen Beetle was finally selected as the car for the event. An advantage was its low weight - 765 kilograms including its engine and gearbox. However this also presented a challenge - the Beetle had to be thrown over 68 metres to seize the world record. A few thousand people had come to the speedway in western Sydney to witness the event. The trebuchet had been named the "Katter-pult", after the outspoken Queensland politician Bob Katter, and he had travelled down to fire it. The countdown began just after 5:30 pm. A solid pull on the release rope sent the counterweight falling much faster than in earlier trials. The car was whipped beneath the trebuchet and hurled down range, travelling well beyond the 50 metre long fireworks display and crashing into the ground, a shower of body filler, rust and paint marking the impact. The crowd erupted as it looked like the world record had been smashed. The radio station's website also crashed as listeners rushed to see the action. When the dust settled, the distance was measured at 76.94 metres resulting in a calculated power output of 58,859 kg.m, and a place in the Guinness Book of World Records.

Listeners and the live audience had been exposed to a fast track engineering project and a fantastic display of basic engineering principles without even realizing it.

Go to www.partridge.com.au and then Event Engineering – Gallery for links to the video and pictures. ■

Arran Gordon
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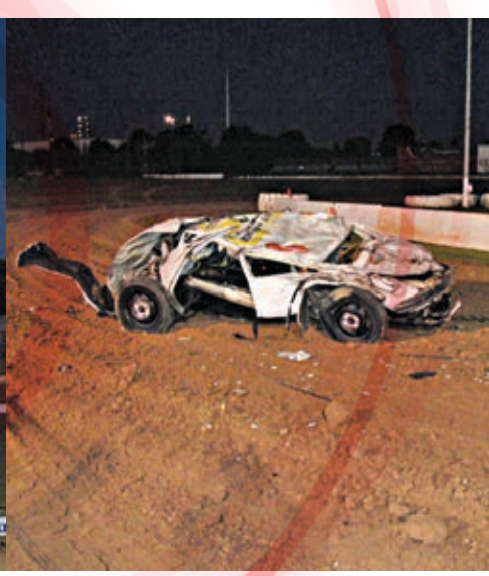

FROM THE CHAIR

Greetings all.

They say time flies. The past 2 years sure have. I sit today writing my last input for *News Bulletin* as Chairman of our Branch. But rather than a melancholy feeling, I confess to having a boyish excitement about all that we have achieved in 2 years and what foundations have been laid for the immediate future of the Branch under the leadership of Daya.

Let's start with the young members section – which has been revitalized, repopulated and now appears to be a fresh strong heartbeat that the rest of us will likely struggle to keep up with. Their recent Engtravaganza was (by all accounts) a raging success despite the weather. Further, their newly elected panel is replete with volunteers, good ideas and the energy to deliver on them. What a fantastic thing to be able to report.

Next is our perennial challenge of the Branch finances. Under the careful stewardship of our Treasurer (Ken Tushingham), last year we avoided being technically insolvent (which is a great improvement upon the 4 such events of that nature in the previous financial year). For 2014, our carefully prepared budget has been reviewed, considered and our annual monetary allocation confirmed. Make no mistake, the Branch is far from well off, but we don't need to rattle tins on the street corners (yet).

More success in the Professional Review Interview process too. We have now navigated through the confusion created by the suspension of all interviews which occurred in Q1 2013. After a sterling effort by some of our dedicated volunteers in March, we have the backlog that created cut in half. Also worth reflecting that we are seeing an ever increasing workload in terms profession review interview – so if you have some time to volunteer, I am sure your respective Panel chairs would love to hear from you!

News Bulletin itself is another success. I cannot recall a time when we enjoyed the quantity of positive feedback on the format and content of the *Bulletin*. Make no mistake, it takes hours and hours of another volunteers time to put his together (though this will drop markedly when Daya assumes the role of Chair as most of that time must be correcting my plethora of typos). All jokes aside, the work and dedication of Matt Springer is most appreciated, and not just by me, but also by many members Matt has never met. Good work mate!

We had our AGM in Brisbane in February, and this coincided with the final of the Speak Out for Engineering competition. Both events went off smoothly, due in no small part to Leslie Yeow's excellent logistics. Excellence was also evident in the Speak Out competition. The standard set here in Australia is amazing. Those in attendance enjoyed four papers, all delivered with finesse and all of a quality that would wow an audience anywhere, including in Birdcage Walk. Simon Fisher came out on top, and I am sure he will do us proud as and when he has the opportunity to present again in the Regional Competition in Hong Kong in September.

Despite my ignorance of the subject area (of which I remain strangely proud) both our Facebook and Twitter presence remains a strong. Again I encourage all without my luddite tendencies to get involved check out the Young Members Section nearyou page for links.

I am sure I could write much more. I am however, equally sure you the reader would not want me to. I completed my Chairman's report in a powerpoint format and this can be seen on the Australian Branches nearyou web page if you wish to read more.

I set out a vision 2 years ago of the things I wanted to achieve as Chair, and a goal to have fun whilst doing them. I reflected to the participants of our annual face to face committee meeting (see picture below) just how much laughter was present that day. The last 2 years have been fun. The last 2 years have been rewarding. That said, the last 2 years have had their fair share of frustrations and in some cases, my exasperation has been evident. But isn't that a nice problem to have? To be passionate enough and have the drive to want to make progress for the benefit of all our members in Australia. That's what I have strived to do, and I am sure Daya and the 'new' team will continue in that vain, and continue in accordance with the Business Plan we have established.

Finally, I extend my thanks to the families and loved ones who have put up with much inconvenience to allow the volunteers to do what we do. Without their support, it simply wouldn't work.

Off now to have a coffee and put my feet up. Or so you'd think… ■

Cheers,

Ian Mash

ENGTRAVAGANZA

The Young Member Section's inaugural national event. This year it was a behind-the-scenes trip to Gold Coast's Dreamworld. Amy Lezala the new YMS Chair has written a review of the day out.

This year the Australian Young Members organised the first ever annual Engtravaganza. The national event began its legacy at Queensland's Dreamworld theme park on 3rd March with delegates attending from across the country for "Engineering: A Roller Coaster Ride".

The young engineers received exclusive access to Mick Doohan's Motorcoaster, the Tower of Terror and the Engineering Facility where rollercoaster cars are maintained. Chris Deaves, Lead Engineer at Dreamworld, gave insightful information regarding the design, operation and maintenance of the thrill rides. Chris was kind enough to answer the many questions asked over the hour long tour.

Following the behind-the-scenes experience, the group spent the day on all of the rides. The overcast weather led to low park attendance making it possible to hit each of the Big Seven at least once. Treasurer and Oceania YM Rep, Belinda Herden, encouraged all of those with weaker nerves to fight their fears. Much to the entertainment of the local children, the YMS Chair Amy Lezala did not fight her fears quietly. Rodney Puzey watched calmly from the side lines with a bemused grin on his face until the 105kph Buzz-saw very rapidly wiped it away.

The day out was a fantastic event with a lot of laughter along the way. The discussions with Chris Deaves at the start of the day allowed for technical reflection on the rides when travelling at speeds of up to 161kmh. The daily demand on the machines is immense which is why the cars receive a full overhauled on an annual basis.

The tracks of the rides are monitored using Non-destructive Test (NDT) methods along with weekly realignment of the magnetic propulsion system used on rides such as the Tower of Terror. The safety of this famous ride cannot be met without the positively pressured steel wheels running along the steel guide rail. The high pitched squeals of this metal-metal interface can be heard for miles around. Dreamworld technicians have attempted using a sacrificial coating; however this only lasts a short period of time which leads to additional maintenance. When there is no redundancy in car availability the optimisation of the maintenance regime is crucial.

Dreamworld is famous for providing a fun day out for all, not only for those who enjoy travelling at near-warp speed in all directions. The other two features of the park are the water rides and the animal habitats.

The water rides are as adrenaline pumping as the thrill rides however this comes at a cost. Chris Deaves and his Engineering team are working to reduce the environmental impact of the Park without limiting the experience of the park guests. Water conservation systems are being implemented to reduce the volume of water pumped down the slides when they are not in use. Sensors identify the presence of a rider and full water pressure is activated.

The park boasts some of the greatest records for animal hospitality; the tiger sanctuary is the number one contributor to tiger conservation in the world and boasts the rare white tiger family. The Bilby marsupial family is another rare breed benefitting from the expert help of Dreamworld staff.

The Engtravaganza was a great success, despite the weather. Work is already underway for planning the 2014 event which will take place in Adelaide in conjunction with the AGM.

For more information and pictures, please refer to our page on the IMechE nearyou webpages or follow us through social media to find out more about who we are and what we do. We have our own Facebook page, we are part of the IMechE Young Members on LinkedIn and our handle on twitter is @IMechE_OzYM. If you would like a question answered directly please email. ■

Amy Lezala

Young Member Section Chair

SPEAK OUT FOR ENGINEERING NATIONAL FINAL

At the AGM in Brisbane this March the Australian Speak Out for Engineering (SOfE) competition was held. A continuing trend is the quality of presenters representing their states. The four finalists were; Phillip Richards, Amy Lezala, Scott Fisher and Simon Cowling

Phillip (*below*), representing the South Australia, spoke on the topic "Adopting Appropriate Design & Development Techniques to suit one-off Product Manufacture".

Phillip discussed the hard task of making one-off's more affordable and the mistakes engineers can make in "over-engineering" the solution. For example rather than creating a specification and identifying the perfect gas-strut for a hinged lid, buying tens of struts and testing them is cheaper and quicker. Phillip looked to future manufacturing techniques including 3D-printing and how this will speed up prototype and one-off manufacturing. Phillip confidently answered all the questions fired at him about both the presentation and the 3D Cad viewing dome.

Amy Lezala (*below*), represented Victoria speaking on the topic "Comparison of Three methods for Determining Evacuation Time in the Design of Rail Vehicles". Amy, although based in Brisbane had competed in Melbourne to win the Victorian heat, Amy wrote up her presentation in News Bulletin 166. Amy clearly described the three methods for modelling train evacuation, including the emerging CFD method, and summed up with the pros and cons of each. Amy delivered a confident presentation and calmly handled the well informed railway engineers' questions.

Scott Fisher (*below*), represented Queensland presenting on "The Preliminary Design of a Solid Rocket Motor for a Direct Descent Lunar Lander". With an introductory video about the Google Lunar X-Prize, a competition for the first privately funded lunar landing. Scott worked on

the solid rocket motor for his final year project, and clearly enjoyed working on the design and feasibility taking the approach of how not to crash into the moon. He discussed what rockets are available as well as the importance of how to pack the fuel into the rocket, and the impact these have on thrust force and time. Scott engaged well with the audience and had both the engineering and non-engineering audience interested in his presentation and the Google X-Prize.

Simon Cowling, (*top right*) represented NSW, delivering a presentation on a Balance Drive System for a Three Cylinder engine. Simon covered the whole project process well covering the reasons for his project and the various approaches he took to creating both a functional and reliable solution which was cost effective. Simon gave and overview of some of the innovative sintering and mating processes which went into the final prototype. Simon's style of using all available tools to engage the audience, including a white board and parts to handle worked well and led to lots of questions.

The four presentations covered a diverse range of topics and complexity from the engineering world. Each presentation reflected the individuals approach to their subject and different techniques for capturing the audience's attention. The presentation were difficult to score, with such a high standard, however at length a winner was chosen with Simon taking first place and Scott taking runner up. Both Simon and Scott go on to represent the Australian IMechE Branch at the next Regional event in Hong Kong in August. Congratulations to all the contestants and good luck to Scott and Simon. ■

Matt Springer

YMS Digital Media Rep.

STATE NEWS

SA NEWS

The SA Panel has enjoyed a couple of interesting events recently. Firstly, our Panel's traditional New Year Lunch was held at an Adelaide Hills winery, attended by 16 members and partners.

Secondly, a visit to the South Road Superway construction site in February was the first event of our 2013 Joint Technical Programme. The 2.8km elevated roadway, which is due for completion at the end of 2013, has been funded jointly by State and Federal Governments. At $842m, the project is the largest single investment in a South Australian road project. It will link Regency Road at its southern end with the Port River Expressway and, by being erected above the existing South Road carriageway, is frugal with land use. The concrete sections are precast in a purpose built facility adjacent to the site and raised and fitted using a gantry-style transporter, as shown below.

Representing the SA Panel, the writer attended the Australian Branch Committee Meeting and AGM in Brisbane in March. This was a great opportunity to witness the workings of the Branch, as I have not been involved in the "top tier" since 2004, and I was impressed. One satisfying outcome from the meetings a mail-out to all SA members, requesting assistance for the Panel Committee. Thanks to Geoff Stone who engaged IMechE's head office IT guru. So far we have had 4 offers of help and we will welcome the new volunteers at our May Panel Committee Meeting.

As our Young Members group has disbanded due to the departure (to greener pastures) of the dedicated Brian McAvaney, the baton has been taken up by the newly invigorated Australian Young Members, who have a robust membership around the country. We hope to re-establish the SA YM Group at the earliest opportunity.

We were naturally disappointed that our SA *Speak Out for Engineering* finalist was unplaced at the Australian Branch Final, but we congratulate Phil Richards nonetheless for his excellent presentation. We will re-double our efforts in grooming a Branch winner, by holding our 8th SA Competition later this year.

Stan Gafney
SA Panel Chair

VIC NEWS

It is an honour for me to take over as Chairman of the Victoria Panel from John following his tragic death. All in the IMechE owe him a debt of gratitude for all of the great work that he did for us.

I am a Railway Engineer and have been in the industry for 36 years, during which time I have been involved in design engineering, project engineering, maintenance, vehicle production, sales, project management and railway operations.

Having been very involved with the IMechE in the UK, particularly with the Railway Division but more latterly with the Technical Strategy Board, I have not been a very active member here in Australia until recently, and so I am very pleased to now have the opportunity to make a contribution.

I am delighted to have a very active and strong group of Panel members in Roshan Dodanwela, Matthew Springer, Hugh Evans, Geoff Bearne, Paul Costello, Brian Carter, Matthew Cook and Thila Kandiah, I thank them for

their dedication and willingness to take on tasks and programs.

The team has put together a great program for this year including a trip to Craigieburn train maintenance in late April, Bombardier Transportation and Puffing Billy to mention a few. The railway theme is purely coincidental!

We have some excellent lecture topics coming up including Electric Vehicles, Bionic Eye, and Nuclear Engineering. More details to be posted on the *nearyou* pages soon.

If there is demand we shall also be hosting a Christmas in July Dinner to provide an opportunity for further networking and fun.

Recently we have had a car racing theme with a networking event together with Melbourne University Racing (*picture above*) and a *Look inside Monash Motor Sport* both of which were excellent with a turnout of over 50 at each.

As we move forward your Panel is aiming to generate further interest and engagement of members and potential members, and to encourage Engineers in Victoria to become more involved, recognise the value of being Chartered, and to actively participate in the Engineering Community.

Andrew Lezala
Vic Panel Chair

QLD NEWS

With hosting rights for the 2013 Branch AGM offered to the Queensland Panel late in 2012, it was time to begin organising for this event as soon as New Year festivities were over. The Queensland Panel held its own AGM prior to the Branch AGM to elect its own Office Bearers for 2013. A number of previous Committee

Members have stood down and made way for our younger members. The Queensland 2013 Office Bearers are:

Myself – Chair
Simon Clarkin – Secretary
Daya Dharmasiri – Treasurer
Committee Members: Jonathan Martin, Paul Groves, Yassmin Abdel Magied, Amy Lezala, Rodney Puzey, Joe Percy, Roger Buckley, Michael Anderson and Alan Skyring

The Panel thanks all previous Committee Members for their valued contribution.

The Branch Committee Meeting was held at the Rendezvous Hotel in Brisbane on the 2nd of March on a very wet weekend. The morning was informative and productive with many issues discussed. The National SoFE was held later that afternoon (*See the write up on page 8)*. The judge's task of picking a winner was not easy as there the standard of presentations were very high. Simon Cowling from NSW eventually won the event he now goes on to contest the Regional Finals which will be held in Hong Kong in September 2013. The Queensland Panel thanks the judges (Ian Mash – IMechE Australia Branch Chair, Professor David Mee – Head of Mechanical Engineering, UQ and Rodney Luck – President, QR Toastmasters) for their time and support of the National SoFE.

The Branch AGM was held soon thereafter with the Chair's presentation of the years events and the Treasurer's presentation of the Branch Financials. At the conclusion of the Branch AGM, Daya Dharmasiri was elected as the next Chairman and I was elected as the next Hon. Secretary of the Branch. Both of us were elected unopposed and will assume our duties on the third week of May 2013.The dinner that evening was attended by 21 people. The meals were enjoyed by all.

The next day, some members of the Branch and Panel Committee were invited to perform Professional Review Interviews for five candidates for Corporate Membership of the IMechE. Even though the weather was very wet, the other members, not participating in the interviews, took the opportunity to travel to the Gold Coast as part of the Young Members organised "Engtravaganza". Members visited theme parks on the Gold Coast and participated in the rides on offer at the parks. Further details on page 7.

The Queensland SoFE was held on the 10th April at the University of Queensland. Ian Cheong with his presentation "Ball Mill impact Fatigue Test" won and Ms Caitlin Prior was runner up.

On the evening of the 11th April, the Young Members section organised a Young Members evening with the theme of…" a Day in the life of…." The evening was well organised and a great success with many presenters providing an insight into their working day. Many students were also present to speak to industry representatives to talk about potential careers and engineering in general. The Young Members who organised the evening should be (and have been) congratulated for their efforts. Further details can be found in the Young Members Report.

The Frederic Barnes Waldron Best Student Award for the University of Southern Queensland will be awarded to Simon D Thompson. The awards night is on the 19th April.

I have been invited to attend the IMechE organised Volunteers Conference in June 2013 which is being held at Aston University in Birmingham, UK. It will be a good opportunity to represent Australia, gain some insights from fellow participants and to present our views of what happens on this side of the world.

Leslie Yeow
QLD Panel Chair

NSW NEWS

It has been pretty quiet here in NSW of late but our influence as ever is far reaching. In February Simon Cowling, our Honorary Secretary, was successful in the SOfE National Finals in Brisbane and will now go on to compete in the Asia –Pacific finals where the biggest pressure for him we believe is Australia's desire to make it a hat-trick of wins in the competition! Additionally our Adams[2] who are our Young Members representatives on the NSW Panel have both successfully been appointed onto the National Young Members committee, Adam Warburton as NSW Representative, and Adam Benwell as Honorary Secretary. Congratulations to both of them.

We are making good progress on performing like dogs in the circus and getting more members through the hoops to become interviewers under the new system so the backlog of interviews should be completed sooner rather than later. Finally, we hope to have a regular slot set up soon to meet in the city for socialising and occasional talks.

Chris Hoskin
NSW Panel Chair

PNG NEWS

The 2012 graduation for the PNG University of Technology was held on the 12th April 2013. The Andrew Fraser Prize was awarded to Malith Sumanasiri (*pictured receiving the award below*), the best Mechanical Engineering student in 2012. Malith has been consistently performing well throughout his four year degree and was also awarded with Council medal, Degree with Merit, Morobe Mining Joint Venture prize, Institute of Engineers PNG prize and Overall Dux of engineering Program. Malith has shown that with a goal and determination, it can lead to a success in life. The acting Head of Department, Dr K.E.D.Sumanasiri made the presentation and commended Malith on his approach to life.

Dr. Sumanasiri says, IMechE's assistance with the Andrew Fraser award is the icing on the reward for the best performing final year Mechanical Engineering student. He also said, "I take this opportunity to express my sincere gratitude to IMechE , for their efforts in promoting

Mechanical Engineering Education in Papua New Guinea. We look forward to IMechE's continual support in the future that motivates and encourages the students work harder. "

The Mechanical Engineering Department started awarding prizes to the best First year, Second year and Third year students to enhance their competency and promote competitiveness which ultimately improves the quality of Mechanical Engineering graduates.

Dr Sumanasiri
Assistant PNG Country Rep

OCEANIA REGION NEWS

From an Oceania Region point of view the main event of the year will be held in Hong Kong in September. This is an ambitious five day programme, aimed at our younger members, with the objective of assisting development in many aspects of their careers.

Currently the event is known as the **Asia Pacific Initiative** (API) but this will change in May depending upon the result of a 'Name and Visual Identity' competition that is now underway.

The API is being run by the North East Asia Region, in conjunction with the other Asia Pacific Regions, and the strong support of the Hong Kong Polytechnic University. There are three main elements that make up the five day programme. These are:

A Design Competition

An expanded Regional Final of the Speak Out For Engineering Competition

A Young Leadership Training Camp

Oceania Region will participate by sending a small group including the first and second place winners in the Australian Branch national Speak Out For Engineering competition, who will now represent the Region. Others will be involved in organizing and judging events. However, the event is open to all IMechE members and it would be fantastic if any could be there, even for a day or two if your programme takes you through Hong Kong between the 13th and the 17th of September 2013.

Much more information about the overall concept, the naming competition and the three specific events is available through the NearYou web site.

Specific links are:

Overall - http://nearyou.imeche.org/docs/api-identity-competition/api-flyer.pdf?WT.mc_id=EM_130194

Name Comp - http://nearyou.imeche.org/docs/Essex-Automobile/api-identity-and-visual-image-competition---rules-and-guidelines-(1).pdf?WT.mc_id=EM_130194

Ken Tushingham
Oceania Region Chair

YOUNG MEMBERS SECTION NEWS

The Australian Young Members are a here for the benefit and support of Students and newly qualified Mechanical Engineers. Our mission statement is "A group of enthusiastic Mechanical Engineers who support and develop one another in the transition from education to registration".

I am happy to announce that we now have a Young Members (YMs) Section in Australia to implement all of the fantastic initiatives suggested over the last year. The Australian Young Members Section (YMS) is supported by a group of volunteer representatives who meet on a monthly basis to discuss local and national events or issues, as well as to share ideas. Each active State is represented by the State Group Chair to ensure all local areas have a voice. Key contacts for the Australian Young Members Section are;

- Chair – Amy Lezala
- Treasurer – Belinda Herden
- Secretary – Adam Benwell
- Digital Media – Matt Springer
- Prof. Development – Open
- University Liaison – Open
- QLD YM Rep – Yassmin Abdel-Magied
- NSW YM Rep – Adam Warburton
- VIC YM Rep – Matt Springer
- SA YM Rep – Open
- WA YM Rep – Dan Stewart
- TAS YM Rep – Open
- ACT YM Rep – Open
- NT YM Rep – Open
- Committee Members – Rodney Puzey and Kally Baxter

Please join me in congratulating the above and in thanking them for all of their hard work.

The Australian YMS kicked off with the success of the first ever annual Engtravaganza. The national event began its legacy at Queensland's Dreamworld theme park on 3rd March 2013 with delegates attending from across the country for "Engineering: A Roller Coaster Ride".

The YMs received exclusive access to Mick Doohan's Motorcoaster, the Tower of Terror and the Engineering Facility where rollercoaster cars are maintained. Chris Deaves, Lead Engineer at Dreamworld, gave insightful information regarding the design, operation and maintenance of the thrill rides. Chris was kind enough to answer the many questions asked over the hour long tour. The next Engtravaganza will be held at the AGM in Adelaide in March 2014.

In addition to the national events, the State Groups have been active in providing unique opportunities. The

VIC Group provided a networking event with University of Melbourne in March 2013 at which the MUR Motorsport team presented their FSAE 2013 car design. Great feedback was given by both the supporting Engineers and the presenting Students.

The QLD Group hosted a "Day in the life of an Engineer" event at the University of Queensland on 11th April 2013. Representatives from various industries presented what a typical day involves, followed by a speed-interview around the table with the Students (*previous page*). The BBQ team provided the right atmosphere for some more relaxed networking.

NSW is a new Group and will be looking to hold the first event soon with focus being given to supporting newly qualified Engineers. We are still looking for members to help activate SA, TAS, ACT and NT.

The key issue for the States is volunteers to help arrange more events and provide the local support that is needed. If you are interested in becoming involved, either through providing advice or helping with local events, please contact your local Group representative or the Chair of the Australian Young Members Section.

Please refer to our page on the website below or follow us through social media to find out more about who we are and what we do. We are on Facebook and our handle on twitter is @IMechE_OzYM.

Australia Young Member Panel
http://nearyou.imeche.org/near-you/oceania/Australia/Australia-Young-Member-Panel

Amy Lezala
Young Member Section Chair

THE CHARMS OF CRICKET

The British race is noteworthy on several counts; (a) until recently it controlled the largest empire in the world, possibly because (b) its public service was virtually free from corruption. On the commercial front (c) it enjoyed for upwards of half a century an enormous export trade in manufactured goods. However, it now tends (d) to be famous for originating the game of cricket.

No country outside the erstwhile British Empire plays this most curious of field games. Outsiders are usually baffled by its rules and rationale - "Why does one side only have two players out there at any one time?" - "Why does the other side reverse its layout at frequent intervals? Etc. Etc. Efforts to explain all this to the uninstructed can result in anything from a condescending smile to an outraged snort.

For those brought up in the game, of course, there are endless facets to be treasured – witness its bible, otherwise known as Wisden. This is a fairly substantial work, containing a cornucopia of statistics on players, matches, teams and so on. Every sport-oriented family should have the latest edition. Before the days of television, the aficionado could spend a pleasant afternoon on his sunny back veranda with a glass of the needful, and an ear to the cricket commentary on the radio.

One aspect of the game that would be understood by the non-British is its percolation through the community. At the top we have the international Test Matches, followed by regional ditto, right down to the suburban and school affairs. Regarding minor matches, we recall from earlier days in the north of England, the possibility of playing two innings between leaving work and near twilight... preferably close to a suitable hostelry and "take-away" cafe. Quite a few evenings could be passed in this way, at negligible cost...

VULCAN
Published posthumously

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IMECHE ELECTIONS

You may have received notification of the 2013 IMechE Trustee Board and Council elections. This year there are representatives from outside of the UK, including one from Australia.

It is great to see nominations for the ever growing number of international members. Please remember to vote in this year's elections.

To vote in the 2013 Elections please send back your ballot paper or visit www.imeche.org, click on the link and follow the instructions.

Institution of MECHANICAL ENGINEERS

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Check out the young members on **Facebook** *as well! Follow the links on their* **nearyou** *page.*

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