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Institution of MECHANICAL ENGINEERS

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ENGINEERING HERITAGE AWARDS

In December last year a momentous Engineering and IMechE event took place; Sydney hosted the first Engineering Heritage Awards to take place outside of the UK. At the event three engineering artefacts were celebrated and presented awards by the president-elect Isobel Pollock.

Debbie Rudder, Boulton and Watt Curator, accepts the award from President-Elect Isobel Pollock.

The event, held at Sydney's Powerhouse Museum, meant the heralding of Locomotive 1, the Humphrey Pump at Cobdogla and the Boulton and Watt Engine. Each award winner was represented by an expert or enthusiast involved with their upkeep and, in the Humphrey Pumps case, continued use.

The Boulton and Watt Engine, which is housed and displayed at the Powerhouse Museum, is the oldest surviving rotating steam engine in the world and was one of the first to be built. Originally manufactured in 1785, the engine was used to drive machinery in Samuel Whitbread's brewery in London. It drove equipment such as rollers to crush malt, an Archimedes screw for lifting the crushed malt, a hoist, a three-piston pump and a stirrer. Additionally a reciprocating pump was connected to the engine for pumping water. Unlike other steam powered engines from the time, the Boulton and Watt Engine combined a separate condenser, parallel motion mechanism, a governor and sun and planet gearing, all engineered by James Watt. The engine remained in service for 100 years, until 1887 when it was retired from service. The engine achieved an early fifteen seconds of fame when it was visited by King George III and Queen Charlotte.

Through some fluke it ended up being transported to Australia to the

ON THE INSIDE

President-elect presents the plaque for the Humphrey Pump to Robin Firth.

Sydney Powerhouse Museum (or Technological, Industrial and Sanitary Museum, as it was then known). Archibald Liversidge, a trustee of the museum, was in London at the time the engine was being decommissioned in 1887. On hearing the engine would be scrapped he negotiated with Whitbread & Co for the engine to be donated to the museum for educational purposes. Thanks to various rounds of restorative works the engine still turns today, although steamed from the museum's central boiler. It continues to educate and fascinate the public about the achievements of engineers from another era.

The Humphrey Pump at Cobdogla is the only surviving and working pump designed by Herbet Humphrey in the world. Installed as part of a pair in 1927, the pumps drew water from the Murrary River for irrigation. The Humphrey pump can be seen as a pump and a combustion engine. The force caused by an explosion of a mixture of inflammable gas and air provides pressure that acts directly on the surface of the water, forcing it to an elevated position. The most striking difference between the Humphrey pump and other pumps/engines is that the water itself is made to perform the functions of the moving parts, such as the piston and flywheel. The oscillation of the water column in the pump, approximately 300 tonnes, draws in fresh water, removes the combustion bi-products, draws in a new charge of the gas-air mixture and ignites it during each four stroke cycle.

The two pumps at Cobdogla, placed adjacent to each other, provided irrigation water for the Cobdogla Irrigation Area for 40 years until 1965. Only one pump was used at a time, the other pump acting as a standby. It has been lovingly restored by volunteers from the Cobdogla Steam Friends Society and operates several times a year. It is reported that during operation the shock wave from the water pump can be felt throughout the locale.

Locomotive 1 is not the train to have pulled the first passenger train in New South Wales, but it should have been. Built by Robert Stephenson and Company, who built the Rocket, it arrived from the UK in January 1855. One of four locos all identical, it was Locomotive 3 that actually pulled the first passenger service from Sydney station to Long Cove viaduct as a special service for Queen Victoria's birthday. However, it is the oldest surviving locomotive that was designed by James McConnell (a founding member of the IMechE).

Museum curator Andrew Grant accepting the plaque for Locomotive 1.

The four locomotives hauled passengers and cargo, mainly wool from Parramatta to Sydney. After 22 years of service it was retired in 1877 having travelled over 250,000 kilometres. After being repainted and refitted with the best components from all four of the original locomotives and it was donated to the Museum of Science and History.

The president elect praised the event organised by the New South Wales Panel, and she also gave mention to the effort put in by Clive Waters and Robin Firth to get the applications submitted. The Powerhouse Museum welcomed the IMechE members and spectators. After the ceremony the audience was given the opportunity to watch the Boulton and Watt engine in motion and tour the vast array of articles on display at the museum. ■

Matt Springer

EDITORIAL

I'd like to start this editorial with a quick thank you to a few key people. Firstly, thank to all of the members who sent in some feedback on last issues' articles, and the *News Bulletin* in general. This feedback is really valued as it provides insight into what the members really do want, and also do not want.

Secondly, thanks to Monika – NSW Panel Chair – for the excellent AGM in Sydney in February.

Thirdly, thank you to Michael Riese for all the pictures of the AGM and other events. Articles are really helped along with some visuals and it helps make the *News Bulletin* more readable breaking up passages and pages.

As always the *News Bulletin* relies upon submission of articles, the next issue will be in September and I need more technical and social articles before then, please! Please feel free to submit any articles, letters or notes from an interesting seminar or site visit that you would like to share. Length of the article is unimportant and photos or images are appreciated. ■

Matthew Springer
m.j.springer.03@aberdeen.ac.uk

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

WHAT, OR WHO, IS AN ENGINEER?
(THE INFERNAL QUESTION)

Who and what an engineer is provokes discourse across the world. It can be seen across petitions, online forums and regularly in the IMechE Professional Engineer's Eye section. I think I am an engineer, and by default anyone receiving this magazine probably feels they are an engineer too. But everyone's definition is different, yet unspecific.

What an engineer is and who an engineer is can be easily coupled together. However, this would confuse an already complicated question. If we break the questions down then we can perhaps answer the question more effectively.

What is an Engineer?

The answer is dictated by the broad classical definitions of the word engineer *[see inset]* and can only be made more specific when prefixing with a denominator such as mechanical, structural etc. However, some might argue that too many prefixes dilute the title engineer. For example "Technical Engineer", I think that any engineering job has to be technical to be called engineering. However, one element of the classical definition that the general engineering community do have trouble with would be maintenance.

Operations and maintenance engineers are critical to any long term project, asset management or manufacturing environment; but do car mechanics and plumbers qualify as engineers? Looking at this logically and in black and white terms, these positions do fit within the definition as roles that maintain machines or public works. This is why the general public see no significance to using the term engineer when referring to a technician coming to fix a photocopier, or a gas fitter when the hot water is not working.

At this point the definition the Royal Academy of Engineers gives becomes more significant [see inset]. The focus is solutions, at a professional level, using scientific knowledge, mathematics, economics and ingenuity. Whilst this definition requires a little more time to appreciate, I think it makes a clear distinction between a technician and an engineer. A technician works within the world of engineering and solves problems, but they do not practice the key traits described.

So what is an engineer? A professional who seeks solutions and uses experience and knowledge to solve problems.

Royal Academy of Engineers' definition of an engineer...

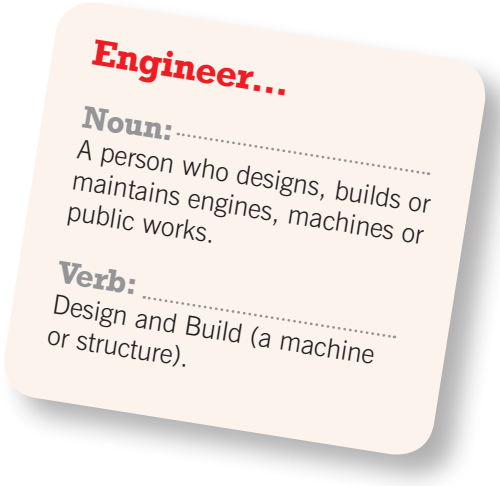
> "a professional practitioner of engineering concerned with applying scientific knowledge, mathematics, economics, and ingenuity to develop solutions to meet economic and societal needs."

Who is an Engineer?

This question invokes the most controversy amongst engineering students, qualified engineers and engineering institution members. Why is someone able to classify themselves an engineer?

The term engineer is an ancient word, first associated with creating war "engines" such as the catapult. To make a distinction between military and non-military problem solving, the term civilian, or civil, engineering was created (not, as most civil engineers would have you believe, because they are more civilised). The world has changed a lot since ancient times and engineering now captures a host of inter-related faculties and domains.

The journey to becoming an engineer has evolved throughout history. Engineers have been inventive artisans like Leonardo Da Vinci, entrepreneurial spirits like George Stephenson, and more recently have followed a formal, higher education route. These three "paths" to the mantle engineer still form the main options. An individual can earn the title engineer either by results and outcomes, job definition or by education. This begins to explain why the answer to who an engineer is so complicated.



The easiest to explain is the individual who has become an engineer by attaining an accredited degree, either masters or bachelors. To become a professional engineer the individual must prove their competence in the field to an institution or professional body. This route is accredited and audited by a governing body, and is accepted by the majority – especially contemporaries.

A recent example of a results borne engineer is James Dyson, who became a fellow of the Royal Academy of Engineers in 2005. Although attending Arts College, studying furniture and interior design, he designed his first vacuum cleaner in the 1970s. Dyson went on to defy the £100 million disposable bag cleaner, setting up a manufacturing factory and providing the fastest selling vacuum cleaner made in the UK. His success has been a source of pride for the technical minds of the UK. However Dyson's election to fellow at Royal Academy of Engineers caused some conflict among professional engineering society members. This is a shame as such a public figure accredited with such a significant engineering accolade should help educate the public about what engineering is all about; an important task when encouraging young minds into considering science and engineering as a career.

The final route to being an engineer, is job definition. Any professional can perform the role of an engineer,

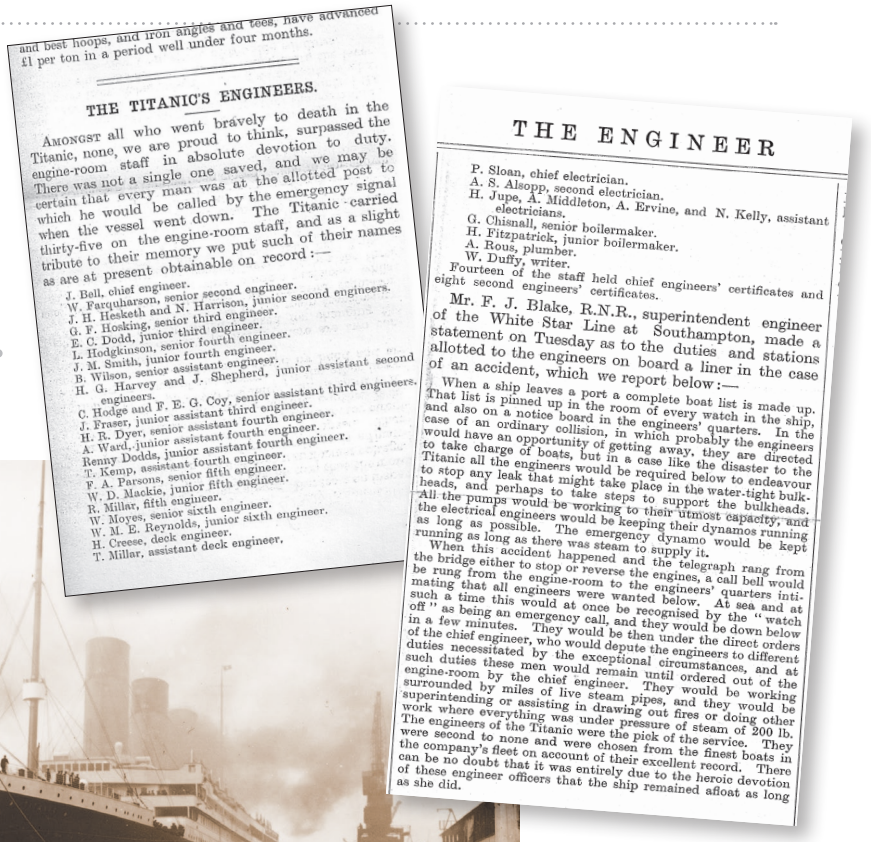
providing they have the right skills or experience. In a lot of fields, positions with an engineer job title cover individuals with backgrounds in physics, chemistry and bio-science all working under the guise of an engineer. The work they do will inevitably be related to their respective fields, however the results they achieve and method required fit the description of an engineer. Why then would these engineers be any less worthy of their title?

So who is an engineer? Anyone can be an engineer, regardless of background, as long as they have the competence, skills and knowledge to perform the role. Who can be a professional engineer? Someone who can prove through education and experience that they posses and maintain competence. ■

Matt Springer

TITANIC ENGINEERING REMEMBERED

Victorian member Peter Heywood wrote in to remind us all of the contribution and dedication the engineers on board the Titanic made on its fateful voyage. The IMechE publication *The Engineer* from 1912 published this article:



and best hoops, and iron angles and tees, have advanced £1 per ton in a period well under four months.

THE TITANIC'S ENGINEERS.

Amongst all who went bravely to death in the Titanic, none, we are proud to think, surpassed the engine-room staff in absolute devotion to duty. There was not a single one saved, and we may be certain that every man was at the allotted post to which he would be called by the emergency signal when the vessel went down. The Titanic carried thirty-five on the engine-room staff, and as a slight tribute to their memory we put such of their names as are at present obtainable on record:—

J. Bell, chief engineer.
W. Farquharson, senior second engineer.
J. H. Hesketh and N. Harrison, junior second engineers.
J. H. Hesketh, senior third engineer.
G. F. Hosking, junior third engineer.
E. C. Dodd, junior third engineer.
L. Hodgkinson, senior fourth engineer.
J. M. Smith, junior fourth engineer.
B. Wilson, senior assistant engineer.
H. G. Harvey and J. Shepherd, junior assistant second engineers.
C. Hodge and F. E. G. Coy, senior assistant third engineers.
J. Fraser, junior assistant third engineer.
H. R. Dyer, senior assistant fourth engineer.
A. Ward, junior assistant fourth engineer.
Renny Dodds, junior assistant fourth engineer.
T. Kemp, assistant fourth engineer.
F. A. Parsons, senior fifth engineer.
W. D. Mackie, junior fifth engineer.
R. Millar, fifth engineer.
W. Moyes, senior sixth engineer.
W. M. E. Reynolds, junior sixth engineer.
H. Creese, deck engineer.
T. Millar, assistant deck engineer.

THE ENGINEER

P. Sloan, chief electrician.
A. S. Alsopp, second electrician.
H. Jupe, A. Middleton, A. Ervine, and N. Kelly, assistant electricians.
G. Chisnall, senior boilermaker.
H. Fitzpatrick, junior boilermaker.
A. Rous, plumber.
W. Duffy, writer.

Fourteen of the staff held chief engineers' certificates and eight second engineers' certificates.

Mr. F. J. Blake, R.N.R., superintendent engineer of the White Star Line at Southampton, made a statement on Tuesday as to the duties and stations allotted to the engineers on board a liner in the case of an accident, which we report below:—

When a ship leaves a port a complete boat list is made up. That list is pinned up in the room of every watch in the ship, and also on a notice board in the engineers' quarters. In the case of an ordinary collision, in which probably the engineers would have an opportunity of getting away, they are directed to take charge of boats, but in a case like the disaster to the Titanic all the engineers would be required below to endeavour to stop any leak that might take place in the water-tight bulkheads, and perhaps to take steps to support the bulkheads. All the pumps would be working to their utmost capacity, and the electrical engineers would be keeping their dynamos running as long as possible. The emergency dynamo would be kept running as long as there was steam to supply it.

When this accident happened and the telegraph rang from the bridge either to stop or reverse the engines, a call bell would be rung from the engine-room to the engineers' quarters intimating that all engineers were wanted below. At sea and at such a time this would at once be recognised by the "watch off" as being an emergency call, and they would be down below in a few minutes. They would be then under the direct orders of the chief engineer, who would depute the engineers to different duties necessitated by the exceptional circumstances, and at such duties these men would remain until ordered out of the engine-room by the chief engineer. They would be working surrounded by miles of live steam pipes, and they would be superintending or assisting in drawing out fires or doing other work where everything was under pressure of steam of 200 lb. The engineers of the Titanic were the pick of the service. They were second to none and were chosen from the finest boats in the company's fleet on account of their excellent record. There can be no doubt that it was entirely due to the heroic devotion of these engineer officers that the ship remained afloat as long as she did.

It should be of note that several Titanic themed engineering programmes have been aired on Australian TV channel SBS. The programme celebrated not only 100 years since the Titanic set sail, but also the engineering feats involved in the design and manufacture of the ship. The series focussed on several engineering solutions that were used in the Titanic and that form the basis of modern ship building. This highlights the success of the engineering developed at that time and its longevity.

Hopefully the engineering pride and prowess of the Titanic can be used as powerfully as the message of safety and the Victorian era societal inequality. ■

Matt Springer

MELBOURNE'S METRO TRAIN SYSTEMS A YEAR ON

Andrew Lezala, CEO of Metro Trains, gave an update on his previous talk about the Melbourne network to the Victorian Members in November.

Melbourne's Metro is a world-class system, with an 830km route length, 212 stations, 15 separate lines, over 1000 vehicles and a total staff over 4200. During the past year 29 new 6-car trains have been added as part of an overall capital investment of around one billion dollars. Some 1131 new services per week have been added, allowing new timetables plus an overall 92% on-time performance.

Technical developments have included improvements to the braking systems on the Siemens trains, with automatic sanding using salt water as a lubricant. The overhead centenary system has received an exhaustive analysis, indicating a need for closer tolerances at some 500 locations. A track-recording vehicle has been in extended use, indicating needs for ballast renewal and other track infrastructure items. A decision is pending on the heavy maintenance (or perhaps replacement) of the "Comeng" fleet. The 250 level crossings on the system remain a problem; two have been removed this year – at a cost of $1.2million each.

The new timetables allow a 5-minute frequency at peak times, 10-minute off-peak and 20-minute at other times. Factors affecting this include time to load and unload passengers, hence new cars will have four doors

instead of three, and seating will reduce from 3+2 to 2+2. (It was noted that in one Chinese metro, the cars have only three seats per car!!). Doors maintenance is as important as traction motors.

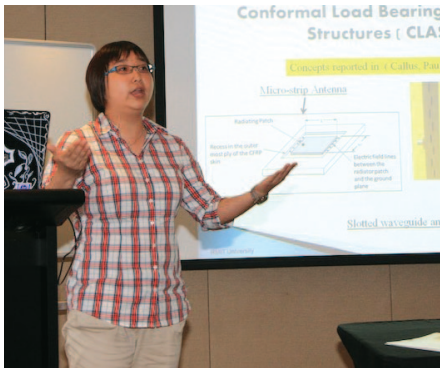
This meeting attracted a very full audience, with a lot of interesting questions. These were answered by Andrew in the most professional manner. A vote-of-thanks was given by John Burt, Victorian panel Chairman. ■

Patrick Russell-Young

SPEAK OUT FOR ENGINEERING 2011 NATIONAL FINAL

At the AGM in Sydney this February the National Speak Out for Engineering competition was held. As every year the final had several strong contestants representing their states. The four finalists were; Nathan Boland, Jacquelynn Tian, Jack Lowe and Yassmin Abdel-Magied.

Nathan, representing the New South Wales Panel, spoke on the topic "Engineering the Perfect Brew". A very entertaining, and dipsetic, presentation on how to achieve the ideal cup of coffee. It covered the entire process of coffee bean production from tree to roasting, and went into detail on the various factors which can make a great cup or quite often something a little too bitter. The presentation was engaging and interesting and made all of the audience thirsty.



Jacquelynn Tiann runner up

Nathan Boland NSW Finalist

Tian Xue Ting, or Jacquelynn Tian, represented the Victorian Panel speaking on the topic "Mechanical Properties of a Slotted Log Spiral Conformal Load Bearing Antenna Structure". Jacquelynn gave the audience an in-depth look at how antennas, such as the Slotted Log Spiral antenna, are integrated into a plane's structure. Also what requirements the material used to make the antenna must have so as not to become an area of weakness on the skin of the plane. Jacquelynn followed a process of producing a suitable slotted log using CAD and FEA. Several material options were investigated theoretically and then compared with physical test results. Whilst a complex subject the audience asked some in-depth questions which Jacquelynn handled with ease.

Jack Lowe SA Finalist

Jack Lowe, our youngest contestant and a first year undergraduate, represented the South Australian Panel. His presentation on "Mechanical Engineering and Material Selection" was, without doubt, fun. Covering the tools which can be used for materials selection as an engineer, Jack used various props and slides to further explain material properties and characteristics. Whilst not as technical as others, this fun and enjoyable presentation style was exactly suited to explain to younger minds what engineering is all about. Jack was posed some difficult questions on Nano-technology at the end of his presentation which he handled very competently.

Yassmin Abdel-Magied representing the Queensland Panel gave her presentation on the topic of "Design of a Chassis for a Formula SAE Race Car". Yassmin had clearly thoroughly enjoyed the work and effort she had put into the project work she was presenting on. Her passion shone through her presentation. Yassmin

Yassmin Abdel-Magied

introduced Formula SAE, her role within the team as previous team principal and went on to describe her task of re-designing the racing car's chassis. With the inclusion of some amusing anecdotes, Yassmin's presentation was a very well oiled machine which captured the room.

The four presentations covered a diverse range of topics and complexity from the engineering world. Each presentation reflected the individual's approach to their subject and their technique of capturing the audience's attention. The presentation were difficult to score, with such a high standard, however at length a winner was chosen with Yassmin taking first place and Jacquelynn taking runner up.

Yassmin went on to represent the Australian IMechE Branch at the next Region meeting in Singapore this April, where she won the competition! Congratulations to all the national contestants and well done Yassmin. ■

Matt Springer

FROM THE CHAIR

Fellow Mechanical Engineers…

They say it's a sign of one's own aging when you notice time accelerating and years passing more quickly than you can recall. Should that be the case, then I am aging! It is somewhat surprising that a year has passed already since I became chair here in Australia.

We held our Australian AGM in Coogee in February, ahead of the Institution AGM in May. Congratulations to Monika on arranging excellent facilities, and somehow, excellent weather in what has been an otherwise poor summer in Sydney.

I presented my Chairman's report during the meeting, and noting it is a very long way for many of our members to travel to hear it presented, we have taken advantage of that modern internet-thingy and have included the report on the website at: http://nearyou.imeche.org/near-you/oceania/Australia/documentation

I trust the report speaks for itself, but I am happy to have a dialogue with any member in respect of any element of the report.

In fact, I am always happy to have a dialogue with any member. The engineering community has many stories to share, and frankly many lessons which can be learned more easily (and less painfully) through dialogue within and between industry sectors, rather than through making mistakes others have already made perfectly well on their own! I encourage members to attend the lectures hosted by IMechE, and engage in dialogue with your fellow engineers. One never knows what gem you might uncover.

Formal dialogue, in the form of professional interviews, continue to be held across the length and breadth of this vast country. It is fair to say that over the last few years there has been something of a bow wave of professional interviews for those seeking Chartered Status and Fellowship of the Institution. We endeavour to arrange interviews locally (or as locally as possible) and to arrange them promptly. That said the interviewers tend to be those same volunteers who also arrange the lectures, and keep the heartbeat of the institution strong here in Australia. The occasional chase up on progress is received from HQ – I consider these neither necessary nor warranted. Our active volunteers have work, family, and other interests that also command elements of their time. That leads me to a thought, should you wish to assist in being an interviewer, your offer would be most gratefully accepted. Please contact either myself, or your relevant Panel Chairman to progress that.

Speak out for engineering continues apace – and congratulations must be extended to Yassmin Abdel-Magied who having proved successful in the Australian final in February, swept all before her to be victorious in the Regional Final in Singapore. That's two years running that the Australian candidate has been successful in the region. So a challenge to our younger members – can you make it a trifecta?

Entries will be called in the various state competitions throughout the year, and the opportunities this competition offers are outstanding; Not only a substantial financial prize, but also the chance to travel if you are successful, and a very good differentiator on that all important CV.

I would be very keen this year to extend SOFE to the ACT. With the ANU and the ADFA in town, there can be no shortage of young, bright engineering minds who might relish the challenge of competing for the monetary prize and honour of being the Champion

With an expansion theme in mind, I would seek direct feedback from our members in Tasmania. What more can we be doing to support you? Should we be allocating budget during 2012 to take forward some Tasmanian activities –and if so what and by whom? Is there a member in Tasmania who wants to lead some activities?

That's probably enough from me. The editor has told me he is actually struggling for space in the *News Bulletin*s recently (what a nice problem to have).

Off to work out why all those policemen seem so young….

Cheers all. ■

Ian Mash

BULK HANDLING SYSTEMS

In March Gary James, director of Minerva Engineers, gave a presentation on Bulk Handling Systems to an audience of IMechE and Engineers Australia members.

The newer Australian mine sites for Iron Ore and Bauxite require belt conveyors an order of magnitude longer than earlier practice. Several new installations are more than ten kilometres long in a single flight, requiring drive motors in the 1500-2500kW class with belt speeds up to 4m/sec and capacities around 3500 tonnes/hr.

Some of the terrains over which the conveyors may run are very difficult. One solution is a suspended span, or catenary, between pylons that are placed in position by specialised helicopters. Experience has shown that a conveyor slope up to twenty degrees to the horizontal is feasible if the material lump size is suitable. A flywheel is incorporated in the drive, a tail-end brake is used and of course an appropriate size motor. "Downhill" sectors can be used to regenerate power.

Route selection is quite involved, as some ten issues have to be considered. These include; community expectations, possible problems with land titles, noise, dust and the environmental impact statement approval. The actual customer standards may be non-existent, and its design team consensus liable to inconvenient changes. Route design work is sometimes assisted by the use of three-dimensional models. Conveyor belt is generally supplied in 500m lengths, weighing some 3.5 tonnes. Use of large diameter fully balanced idler rollers has been successful in control of belt "tracking". Material deed to the belt requires an "apron" some 27m long.

It was altogether a most interesting address, and not surprisingly attracted a full capacity audience. Gary was able to answer numerous questions with impressive authority. ■

Patrick Russel-Young

PUTTING A FACE TO A NAME

If you haven't been fortunate to go to an AGM or national event in the past then you might not have heard of the key people that form the committee behind the IMechE Australian branch.

To unveil these outstanding volunteers, they were posed with providing a picture and an anecdote about themselves. Hopefully, this will shed some light on what sort of engineers are representing you on a local, national and international level.

Firstly the Branch Executive, this is formed of several unique positions which exist nationally only. The Branch committee is made up of the executive as well as the state chairmen and a few additional volunteers.

Chairman of the Branch – Ian Mash

Your chairman spinning at Wakefield Park – tried to blame the brakes…The guys in 111 had eyes like dinner plates when he went past me.

Hon. Secretary of the Branch – Ranehipura Dharmasiri (Daya)

Pick out any time of my life to this day, and I can guarantee that it was the best time.

Asst. Secretary of the Branch and *News Bulletin* Editor – Matthew Springer

Despite being nearly an official giant, at over 2 metres tall, I work in the micro and nanotechnology fields; and just as impressively, own a bright yellow smart car.

Hon. Treasurer of the Branch – Ken Tushingham

I retired in 2009. So many of the turbogenerators and power stations I helped build have also been retired, and broken up. Others have undergone a 'reconstruction'. Maybe that's what I need.

Web Officer – Geoff Stone

As Web Officer for IMechE in Australia I manage the Australian content of the *Near You* website, assist local panel Web Officers and liaise with HQ on IT affairs. I work as a piping and pipeline consultant specialising in surge analysis. My hobby is in miniature engineering of British railway models, pre 1948. I prefer steam not smelly, noisy diesels. After all ***Thomas*** is a steam engine!

Victoria Panel Chair – John Burt

Not only a driver, as pictured, but also the builder of the 5 inch gauge locomotive running at the Steam Locomotive Society of Victoria. Since retiring I have set up a home workshop and embraced Model Engineering, and I have become a keen follower of George Stephenson (the first IMechE president).

NSW Panel Chair – Monika Sud

Indians are not famous for their swimming prowess and the UK is not known for its beach lifestyle, so as Brit with Indian heritage it constantly amuses my friends to hear that I am now an active volunteer Surf Life Saver at our local beach Coogee.

SA Panel Chair – Michael Reise

For six semesters I was enrolled at university in an arts degree with a major in Egyptology, and minors in Japanese and historical comparative languages.

Queensland Panel Chair – Leslie Yeow

Although a Mechanical Engineer, for some peculiar reason, I work in the Electricity Distribution industry building substations, installing Transformers (not the Megatron or Optimus Prime kind…), erecting poles and stringing cables to deliver electricity from the power station to our homes.

WA Panel Chair – David Heppenstall

I'm a first dan in Shotokan Karate and used to teach the sport and referee competitions (I met my wife-of-thirteen-years doing that too!). Whilst at university I was able to maintain the lifestyle to which I was accustomed by lecturing in technical drawing at the local technical college.

Young Members Panel Chair – Brian McAvaney

If I was to compare myself with Ludwig van Beethoven

- Ludwig van Beethoven produced numerous symphonies even after losing his hearing. Beethoven is famous, and will forever be written into history.
- I was part of the management team leading a Formula SAE team (UniSA) for two years, without having any experience in motorsport, nor any driving experience. Though not yet famous, there is still time!

PANEL NEWS

NSW NEWS

The NSW Mechanical Chapter have had some recent popular technical presentations of late in conjunction with EA and ASME.

In November Steve Zakaria Business Development Manager, Marine Equipment International presented on "The No Weld, Stainless Steel Press Fit Piping System" This system offers the ability to install SS piping without welding. The system is ideal for utilities and services lines for working pressure up to 1,600kPa (232psi). Pipe sizes range from 15nb to 100nb. This system is tested and proven, with its use in Europe being wide spread over the last 25 years.

In February Wayne Sharmam ArmorGalvs General Manager presented on "Thermal Diffusion Galvanising" this technique was invented over 100 years ago, but had never been introduced into Australia until now. Modernization of the process has made it efficient, clean, and cost competitive as a high end, highly corrosion and abrasion resistant coating alternative.

In March Ian A. White with WAI Engineering presented on procurement practice; in this presentation Ian spoke about the process and obligations on both parties in procurement and gave some useful tips on how to ensure you get what you should be getting.

In April Tony Wallis, managing Director of BRV Pty will present on "Development of an Australian Formula One Engine technology".

Queensland's panel on a social visit to the Castlemaine XXXX Brewery

In February the NSW Panel hosted the 52nd Annual General Meeting & Annual Dinner of the Australian Branch. The Speak Out for Engineering national competition was also held. The meeting was held at the Crown Plaza Hotel in Coogee, Sydney and was a great success. The annual general meeting was attended by members of the NSW Panel, Australian Branch Executive as well as Chairpersons of other state panels.

The SOFE National competition had an extremely high level of presentations. All the speakers were of an excellent standard. The competition was won by Yasmin Abdel-Magied who presented on "The design and analysis of space frame chassis" for the university of Queensland Formula SAE race car.

AGM in Sydney

Second prize went to Jacquelynn Tian (Xue Ting Tian) who presented on "Mechanical properties of a composite conformal load bearing antenna structure".

Yasmin went onto presenting at the Finals in Singapore and won the competition. Well done Yasmin. ■

Monika Sud
NSW Panel Chair

QUEENSLAND NEWS

Thankfully, the first quarter of 2012 was much drier in Queensland than 2011 with no repeat of last year's floods and cyclones.

The Queensland Panel held its AGM in February just prior to the Branch AGM in Sydney. I was elected Panel Chairman for 2012. Simon Clarkin was elected Panel Hon. Secretary as Roger Buckley stepped down. Ian Marshall was re-elected as Panel Hon. Treasurer. The Panel thanks Roger Buckley for his sterling efforts as Secretary for 2011.

Committee Members Daya Dharmasiri (Branch Secretary) and Belinda Herden (YM Regional Representative) attended the AGM in Sydney in February. Unfortunately, I was overseas and could not attend.

The Queensland SoFE winner for 2011, Yassmin Abdel Magied, competed and was successful in winning the National Finals at the

Jock Farrington and Shaun Cuckson at University of Southern Queensland prize giving

Branch AGM in Sydney. As part of her prize, she was invited to represent Australia in the Regional Finals in Singapore in April. Such was the quality of her presentation that Yassmin went on to win the Regional Finals as well. Congratulations to Yassmin.

One of the key events that took place in February was the Panel's presence at "Market Day" at the University of Queensland. Market Day was a day where industries and Institutions set up a stall at set locations around the campus of the University of Queensland to introduce their companies or Institutions to new and existing students. A stall was set up and various Committee Members took turns at staffing the stall over the day to represent the IMechE and introduce the Institution to potential members. This was a very successful day with 50 students signing up for Affiliate Membership. The Panel thanks all the Committee Members who gave up their valuable time to staff the stall on that day.

Belinda Herden, our Panel Committee Member and the YM Regional Representative, attended the International Strategy Board meeting held in Singapore in April.

I attended the Queensland 2012 SoFE held on the 19th April at the University of Queensland. As usual, the standard of presentation and competition was very high. 28 Affiliate Members competed in the event. Scott Fisher won the event with his presentation on the "Preliminary Design of a Solid Rocket Motor for a Direct Descent Lunar Braking Stage". Vanessa Solanki took second place with her presentation on the "Application of Thermoelectric Generators in Solar Thermal Power Plants". The Panel thanks Dr Bo Feng and Professor David Mee for their support and the organisation of the event.

I travelled to the University of Southern Queensland at the end of April to award the FBW Best Student and the Institution Best Project Prize to Shaun Cuckson and Jock Farrington respectively. As usual, both were found to be very articulate and able students. The Panel thanks Dr Selvan Pather and the University of Southern Queensland for their support of the Institution.

Together with an organised visit to the local XXXX Brewery in April, the Queensland Panel has been busy scheduling a few events over the first quarter of 2012. We look forward to the next quarter of the year to see if we can implement some of the initiatives derived from the ISB meeting in April in Singapore. ■

Leslie Yeow
QLD Panel Chair

SA NEWS

Early February 2012 saw the congregation of around 30 members and supports from the SA panel for our traditional NY lunch. It was a good mixture of senior and younger members and the event was enjoyed by everyone throughout.

Although some changes have been made to the Joint Technical Program, so far the committee has held 3 successful events, with a number of different hosting organisations. We expect to continue the prepared program for the foreseeable future and hope that as many members as possible can make it to the events.

Brian McAvaney is very successful in distributing announcements via the nearyou website, which makes our communication with members and supporters ever so much easier.

In April, the IMechE presented two prizes each to the University of Adelaide and UniSA. Again, Brian is congratulated in stepping up to the mark and representing the panel at the UniSA ceremony, as it was held in the middle of the day and hence prevented other members of participating.

SA panel members at their annual NY Lunch

SA panel members at their annual NY Lunch

Finally, preparations are well underway to unveil the heritage plague at the Humphrey's Pump in Cobdogla, SA. We hope that the initiator of the whole process, Robin Firth, will be present at the ceremony to do the honours. ■

Michael Riese
SAPanel Chair

VIC NEWS

The New Year is with us and the panel committee has begun planning the activities for 2012 in conjunction with the Mechanical Branch of Engineers Australia. We are arranging the usual range of Technical meetings, a Dinner, a Retired Members function and a Speak out for Engineering later in the year.

In connection with the "Speak Out" we always have difficulty attracting entrants, so if you know any young engineers it would be appreciated if you can "work on them" to encourage their entry to the competition later in the year. The only stipulation is that they must be members – for students we can arrange affiliate membership at no cost, but for young graduates they would require to arrange membership themselves.

Nominations for the student prizes for academic year 2011 are now all in and the Panel chairman has begun attending the round of functions to present the awards. The first awards were presented at the Victoria University at a dinner held at the city campus. Mr Zoltan Kozak was awarded both the Barnes Waldron Best Student and Best Project Prize. Next an awards function was attended at the Warm Ponds Campus of Deakin University in Geelong. Mr Daniel Hurst was presented with the Barnes Waldron Best Student Award whilst Mr Thomas Brislane was presented with the best student project prize. The presentations were followed by drinks and light refreshments. In all cases the awards consist of a medallion, a certificate, an IMechE data book, book tokens to the value of $150 and the offer of free graduate membership for one year. The medallions are usually much admired by all recipients, however I am a little bemused that rather than bearing the new IMechE image they carry the original "dobbin" image – some traditions apparently still remain. Other presentations will be made during the course of the year. ■

J.W.Burt
VIC Panel Chair

YOUNG MEMBERS PANEL NEWS

So I hear you asking, "What are you doing for the IMechE Young Members, Brian?" (You're not? Well work with me).

I am working on a project for SA's young student engineers. Here at the University of South Australia we are in the process of establishing the first IMechE "Help Desks" on campus. This has the potential to be rolled out across the country.

The concept is simple – We'll look at training up some high achieving mechanical engineering students, and along with other young members here in SA, help serve the rest of the student body. We also get a physical base that we can promote from as well. It's a win-win for everybody!

OK, so you may not see the benefit of this in your area right away, but something is happening. ■

SA – Brian McAvaney
SausPublicity@imechenetwork.org

VIC – Matt Springer
m.j.springer.03@aberdeen.ac.uk

QLD – Belinda Herden
OceaniaYM@imechenetwork.org

WA NEWS

Representatives from the WA Panel have attended prize giving ceremonies at Murdoch and Curtin Universities, and for the first time, at Edith Cowan University. The prize winners were at Murdoch University: Bethany Williamson winning the Fredric Barnes Waldron Prize, and Raymond Kilgariff winning the Best Project Prize. At Curtin University: Ricky Luzny won the Fredric Barnes Waldron Prize and, John Bills won the Best Project Prize. At Edith Cowan University: Anurag Dhull won the Fredric Barnes Waldron Prize.

Presentations titled "TUNRA – Stockpile and bin design" and "History and design features of Mechanical Power Transmission" were hosted by Engineers Australia as part of the WA joint technical programme on 22 February and 28 March, respectively. During March, the WA Panel Committee secured James Fairbairn to conduct a presentation on recruitment and retention at the IMechE mid-year event, as part of the joint technical programme. Invitations for this event will be issued shortly.

The WA Panel recently conducted a professional review interview for someone wishing to apply for Membership and Chartered Status (thank you to Graham Bonner for his assistance with conducting that interview), and a further request to conduct a professional review interview has been received recently. Members wishing to participate (in the capacity of reviewer) in professional review interviews should contact the WA Panel Chairman, David Heppenstall at dhoq@chevron.com . The WA Committee has also assigned a mentor to someone who embarked on a MPDS in the UK and has recently moved to Western Australia and wishes to complete the MPDS as a route to Chartered Status. ■

David Heppenstall
WA Panel Chair

ORCHESTRAL ENGINEERING

A seemingly contradictory pair of words; However, with a little reflection it will be obvious that they close parallels. Let us start at the beginning. All enterprises originate in the mind of a talented composer or inventor; their brainchild must then be brought into the world via either sheet music of engineering drawings. These must then be translated into physical reality – either using orchestral instruments of various types – or similarly varied mechanical equipment.

In both cases these will then be brought into operation by virtuoso players – or skilled tradesmen. Let us not forget the vital function of the conductor – or project engineer, to put it all together. The final result will be an improvement in the mental or physical well-being of many people.

So far so good; two apparently very different exercises of human talent have common ground, at least in theory. Curiously enough, the oft-met problems that separate theory from practice also apply. There are failings of printers, of hardware and of course in the many people involved. Your correspondent (an engineer by day and a musician after hours) has encountered just about all of these vexations in extensor, followed by an all-too-familiar strategy and tactics to resolve matters.

Cross fertilisation of tried and tested remedies can be quite useful. So next time you (and maybe your partner) attend a concert of any magnitude, pray reflect on the highways and byways of assembling skilled people, fully developed hardware and the theoretical inspiration that started it all off. Tomorrow in the office you may find something delightfully similar. ■

Vulcan

ISB BRINGS ANOTHER WIN FOR YASSMIN

Last month, Ken Tushingham and Belinda Herden represented the Oceania Region at a regional ISB meeting held in Singapore. At this meeting our SOFE national finalist Yassmin Abdel Magied represented Australia in the regional final. She competed against national finalists from around the Asian region, including India, Sri Lanka, Malaysia, Singapore, Hong Kong and China.

Yassmin's passion and presentation skills previously demonstrated at the national finals, held at the AGM in Sydney, clearly held strong as she won the regional competition. ■

SOFE Winners from Regional championship in Singapore (L-R, Ken Tushingham - Oceania Chair, Yassmin Abdel Magied - SOFE winner, Stuart Cameron - IMechE Vice President and ISB chair, Liu Yuchun - SOFE runner up, Tony Martin - Singapore Chair

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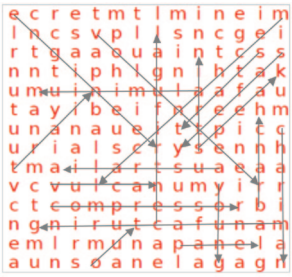

Solution to NB163

Institution of MECHANICAL ENGINEERS

Executive Committee:
Ian Mash
Clive Waters
Ken Tushingham
Dayaratne Dharmasiri
Matthew Springer

Branch I.T Co-ordinator:
Geoff Stone
10 Carrbridge Drive
Castle Hill NSW 2154
Ph (w) 02 8850 2313
Email: blenray@yahoo.com.au

Websites:
IMechE Australian Branch
www.nearyou.imeche.org/aust
IMechE UK
www.imeche.org

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Please address all *News Bulletin* correspondence to:
The Editor
IMechE *News Bulletin*
1 Dalmore Drive,
Scoresby
Victoria 3179
Ph: (w) (04) 6882 9412
m.j.springer.03@aberdeen.ac.uk