



Imperial ENGINEER

**VOLCANO
DESTRUCTION TRAIL
RSMA 125th DINNER
STUDENTS
REPORT GOOD YEAR
VILLAGE CARBON
NEUTRAL AIM**

ISSUE TWELVE *SPRING 2010*

For members of

The City & Guilds College Association and The Royal School of Mines Association

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COVER PICTURE: RSMA members and guests join in the traditional Mines' Song at the 125th dinner. Picture Sang Kim.

Imperial ENGINEER

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IT SEEMS almost traditional that all presidents should start their spring report by expressing astonishment at how quickly their year in office has passed. I'm starting now to realise why. The progressive absorption into the many activities and tasks associated with CGCA becomes so fascinating that it's all too easy to forget there is an end and that it's looming. So what have we been doing during that time?

There have been, of course, the regular milestones of the year that are the core traditions of any association. The recent Annual Dinner at Carpenters' Hall was the usual triumphant event, where our principal guest and speaker was Dr Paul Golby, CEO of E.ON UK. He gave us an absorbing insight into the challenges and issues facing the modern power utility, not least of which was their desperate need for more quality engineering graduates - a fact that undoubtedly caught the attention of the numerous current students who attended! But his evening probably peaked when he was collected by Bo to be driven through London to the Hall. His evident thrill was matched only by the infectious delight of his wife at the experience and reminded me that the evening was all about the pleasure we get from engineering and the company of engineers.

And reinforcing that company has been much in the minds of the CGCA committee during the year. One of our main activities has been to reflect on the role and activities of the Association in the future and in the circumstances where many alumni will be returning to countries and cultures far from the UK, let alone South Kensington. Through a series of review and brainstorming meetings we have debated how best to maintain the core traditions of CGCA and to operate effectively and meaningfully in the modern world. I believe we have now done this and are able to articulate clearly a role and purpose for CGCA which will resonate as much with our established members as it will with alumni yet to come.

As there are a few processes we have still to complete I shall, in the best traditions of Dickens, leave the details to the next instalment of this report, to be prepared by my very able and dedicated successor, Prof Chris Hankin. I am deeply indebted to him and all the officers and members of the committees of CGCA for the contribution they make to the Association, and the support they have unstintingly given to me over the last year. I'm sure Chris will draw the same satisfaction from his term as I have mine.



John
Loughhead

PRESIDENTS REPORT



Coen
Louwarts

BY THE TIME you read this, I will be almost a year into my presidency. It's hard to believe time has passed so quickly and there is still so much to do. I guess, it's good that the RSMA presidency term is two years. Without the help of the committee and Trust members, who all balance a busy (work) life with the demands of RSMA, we wouldn't be where we are.

The 125th Annual Dinner in November was a splendid affair with a record attendance. David Weston, the Anglo American group director for business performance, gave valuable career advice to all present. Not only did the attendees enjoy a fantastic Californian cabernet sauvignon wine with an RSM twist (it was grown and kindly donated by Philip Togni, an RSM alumnus), the dinner was also a great kick-start to a renewed fundraising effort to enable the RSMA Trust to support students throughout their university time, be it with grants, bursaries or donations to the RSM Union.

I'd like to thank all the members who participated in the raffle, and also for donations received after the dinner. This year, John Monhemius was the deserving recipient of the Peter Harding medal for his long-time commitment to the RSM and RSMA communities.

Behind the scenes the committee, with Teresa and Rosie, are working on a number of initiatives. Amongst others are an updated membership database; a new RSMA website (any cyber-savvy people out there who can offer their help?); new regular events; a possible joint dinner with the Camborne School of Mines, and increased contact with our alumni overseas. In addition, we are working on turning up the fundraising a few notches, so we can fulfil one of the fundamental elements of the RSMA - supporting students and keeping the RSM spirit alive. I hope to be able to reveal more details in the next edition of *Imperial Engineer*. Of course, if you have any suggestions or would like to help, please let me know.

I hope to see many of you at our AGM on June 24. This will be followed by the Final Year Barbecue and will be a great opportunity for members to meet graduating students, who by then, hopefully, will be over the unfortunate loss of the Bottle Match this year. Please don't forget the fantastic transferable skills, besides technical and academic, that RSM graduates take away from their time at College. Although the job market seems to be improving from this time last year, it's still a tough time for students to get interviews and secure that vital first position in industry. I'm sure any help or leads would be greatly appreciated by the final year students and this barbecue is an ideal opportunity to get in touch with them.

Finally, may I remind you again to check your contact details and make sure subscriptions are up-to-date.

EDITORIAL**OF PRESS,
POLITICIANS
AND SCIENTIFIC
PROCESSES**

THE LATEST brouhahas over the climate change e-mails and Professor Nutt and colleagues' dispute with the Home Office over drug classifications are but the latest examples of the difficult relationships between various scientific communities, the media and political establishments.

Without commenting in detail on either of these controversies, they and their predecessors are the product of the desire of opinion formers and governing classes for instant certainty.

Unfortunately, science rarely does instant or certainty. As we push the frontiers of knowledge, we are probing issues of such complexity (in climate, biology, physics and just about everything else) that *Eureka!* moments are rare.

Advances today require large teams, large amounts of money and, above all, time. Unfortunately, the pressures to produce quick answers are great and some scientists succumb to these, usually against their better judgement. Desire for funding and recognition plays a part, combined with the human tendency to tell people what they want to hear. For science to recover its reputation with the public, the phrase 'we don't know yet' needs to be used far more often.

As engineers, we rely on our science colleagues to provide us with the knowledge to produce practical solutions. If they give us 'certainties' too soon, we may end up designing the wrong thing or diverting our resources from problems that we can solve.

Until the picture is clear, it may be better to take Ronald Reagan's immortal advice – 'Don't just do something, stand there!' **Bill McAuley**

THE OLD Centralians' Trust continues to sponsor students for projects overseas, appearances at conferences and similar. It also funds bursaries.

Among those sponsored, Veronique Mahue wrote thanking the Trust for helping her attend an electronics' symposium. The Trust continues to support the Imperial Racing Green team and the one which built a bridge in Rwanda. A grant enabled it to return to check it.

Other overseas' projects have been sponsored, including one in the Bolivian Altiplano to build a bridge that will change the life of locals. See the next *Imperial Engineer* for a report.

OC Trust spreads help**New London walks take first steps**

CGCA'S LONDON Walks with a qualified London guide, previously organised by David Hattersley for many years, have been revived under the lead-

ership of Dr John Backhurst (ChemEng 62). Two of four planned walks have already taken place.

The first, on November 21,

saw 18 Guilds and RSM alumni and guests (pictured) treated to a fascinating tour of the London bridges from Blackfriars to London Bridge, with historical detail from guide, Malcolm Dick. In February, a party of 21 (a maximum) gathered at St Paul's underground station to walk the area around St Bartholomew's Hospital and Smithfield Market.

Each of the walks finished with a sociable drink and a bite in a suitable local hostelry.

For other walks, contact John on 01892 822925 or johnsheilabackhurst@tiscali.co.uk

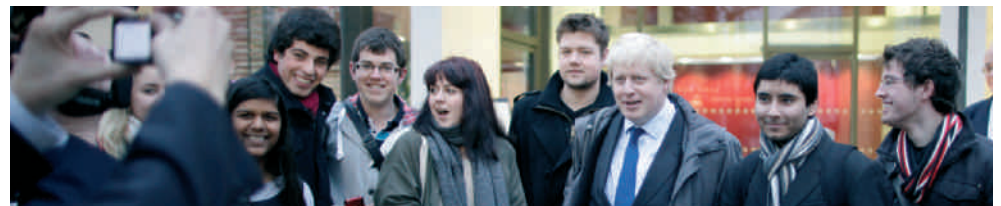
**First joint PhDs to start this summer**

IMPERIAL has announced that its first joint PhD programmes with other institutions will start in August 2010. The qualifications will be offered in partnership with the National University of Singapore, Nanyang Technologi-

cal University, Singapore and the University of Hong Kong. This will give students the opportunity to split their time equally between London and Singapore or Hong Kong.

Research students on these

courses will be working towards a qualification recognised as being of the highest international quality and for which they have met the demands of not just one world-leading university, but two.



IMPERIAL COLLEGE'S £160 million investment in Prince's Gardens was officially opened in February by Mayor of London Boris Johnson (pictured with students). Work begun in 2002, and completed last summer, replaced out-dated student accommodation with modern buildings housing over 800 students. The Gardens have been landscaped and the original railings and decorative central urn have been returned. The College's sports centre, Ethos, was opened on the north side of the square in April 2006.

RSMA enjoys 125th dinner

'IT WAS fantastic to see so many of you at the 125th RSMA Annual Dinner and I hope you enjoyed it as much as I did,' wrote president Coen Louwarts after the glittering and lively November event.

He continued: 'I am writing to let you know that the raffle alone raised the splendid sum of £1,128. We are extremely grateful to the contributors of such wonderful raffle prizes, as well as to you for purchasing tickets and helping us to make a good kick start for our fundraising initiative for the RSMA Trust.' He went on to thank



individual donors for donations received after the dinner, and encourage others to think about making a donation. Pictures by Sang Kim are on [http://picasaweb.google.com/rosie.tipples/RSMA AnnualDinner2009](http://picasaweb.google.com/rosie.tipples/RSMA%20AnnualDinner2009)



ABOVE LEFT: Guest speaker David Weston.

ABOVE RIGHT: Nick Fern with guest Heather Charlton.



ABOVE LEFT: John Monhemius, winner of the Peter Harding medal (right) with Jane and Rod Gochin.

BELOW: Enjoying the evening, from left, Martin Levy, Peter Waugh, Chris Webborn, Nick Bradshaw and John Mortimer.

LEFT: From the 35th dinner menu in 1907. This and other graphics were used on this year's tickets.



ABOVE: A great opportunity to catch up and make new friends

LEFT: Teresa Sergot (organiser of the evening with Rosie Tipples) with Coen Louwarts.



BELOW: past presidents Arthur Smith and Peter Walmsley.

The CGCA Annual Dinner is a popular date within the CGCA calendar, not only for alumni but for current students, too. I arrived with ICU president Ashley Brown and former RSM president Danny Hill.

There's something about walking into a room filled with ornate wooden carvings like those in Carpenters' Hall and having your arrival announced

Online reading

Once again, some articles throughout this issue have had to be abbreviated. Where specified, go to www.imperial.ac.uk/engineering/about/alumni/imperialengineer to read them in full or find links to pictures and obituaries.

Another stylish CGCA dinner

...a student take on a traditional event by Lawrence Weetman

by a booming gentleman in a sash that leaves you somewhat overwhelmed as an undergraduate.

We bustled in past the cohort of students who had turned out in support of Bo and shook hands with a variety of people, the varied lives and anecdotes of whom we couldn't even begin to guess at, until we engaged in conversation, before taking our seats in the dining hall.

I was with a group of undergraduates, sandwiched between even more interesting alumni. After the whispers of 'which fork do we use first?' had died down (some students aren't so accustomed to cut-



lery) we tucked into our feast. And oh, what a feast it was!

Fillet of red mullet, rolled saddle of Welsh Lamb, fluffy potatoes and the most impressive

Principal guest, Dr Paul Golby, CEO of E.ON.

dessert platter I've ever seen.

(Continued on page 16)

DIARY DATES

Tuesday May 25

CGCA AGM & President's Evening, 17:30, Read Lecture Theatre. Supper 19:00, Queen's Tower Rooms, Sheffield.

Saturday June 5

Walk round Old Shoreditch. Meet Old Street tube booking office.

Tuesday June 15

Faculty of Engineering Teaching Awards Ceremony and Reception, 16:00, RSM Building, room 3.01

Thursday June 24

RSMA AGM/Final Year barbecue. 18:30, 58 Prince's Gate.

Saturday July 10

Engineering Geology Centenary Reunion, 9:30, Sir Alexander Fleming Building. Dinner, 19:00, Queens Tower Room.

Saturday

September 25

Imperial College Alumni Reunion, South Kensington Campus.

Thursday October 21

Engineering Careers Fair, Queen's Lawn Marquee. Networking Reception, venue tbc.

Friday

November 19

RSMA, 126th Annual Dinner 19:00 for 19:30, Ballroom, Polish Club Ognisko, 55 Exhibition Road.

Saturday

November 27

CGCA 2010 Decade Reunion Luncheon, 12:00 for 12:30, Polish Club Ognisko, 55 Exhibition Road.

Thursday

December 16

CGCA Christmas Lunch, 12:00 for 12:30, 170 Queen's Gate.

For more information and booking for any of these events, contact the Chapter Office (see page two) or phone 020 7594 1184 or 020 7594 8606

Speed myth blown

HAVING persuaded Radical Sportscars to donate a racing car – the RS8, one of the fastest in the world (right) – students are just completing the conversion of the car to electric. They are exploding the myth that electric cars are slow as it is expected to do zero to 100kmph in seven seconds. In early summer, the Racing Green Endurance team will aim to explode another myth – that electric is for short distances – by driving from the tip of South America up to Arctic Alaska along the entire Pan-American Highway.

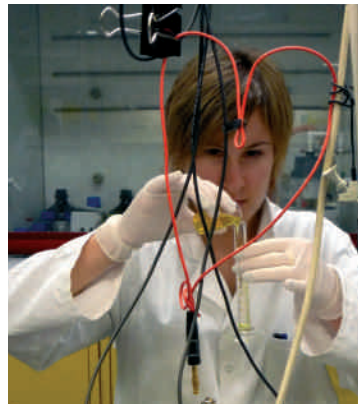


Exhibitions show women in science and engineering

TWO EXHIBITIONS early this year featured women in science and engineering. The first, '100 Women – 100 Visions' was of pictures by professional Jackie King. Co-organiser was Aiman Alam-Nazki (ChemEng).

The second was organised by students Mithila Patkunan and Ivy Leung with the title 'We.Are.Science.' A shortlist of 30 plus others were displayed to celebrate International Women's Day. Pictures were taken by students and judged within College by photography experts. First prize winner was Kathryn Rix (Chemistry).

The two runners-up were from Engineering – Nima Bagheri Tadi (Earth Science Engineering) and Tempest van Schaik (Bio-Engineering).



'I ♥ electro-chemistry' by Tempest van Schaik.

RSMC&SC president Henry Debens reviews Bottle Match weekend

CAMBORNE School of Mines (CSM) played well with a solid pack in this year's Bottle Match, and it was 13-0 in the end, with two unconverted, unanswered tries and a penalty.

However, on the day RSM's biggest opponent turned out to be the weather (not to take anything away from CSM), with the downpour during the game on the already wet surface nullifying our usually potent backs and reducing our threat of scoring. We resorted to a kicking game, as their pack was much stronger than ours, and it just never came together.

However, I can safely say that everyone involved had an amazing weekend, none more so than the new students. The

new addition to the Bottle Match weekend, Ladies Netball, went down an absolute storm, with

RSM romping to a 15-4 win. RSM also received the Ladies Rugby trophy which CSM has forfeited for the last two years.

All in all, not the most successful weekend. However I'm pleased to report that the spirit of the Bottle Match appears to be in no danger of fading any time soon.

A full match report is available at www.rsmonline.co.uk

Yes, we did lose...



First Chaps Club Annual in 21 years

EARLIER this year the Chaps Club decided that the *Chaps Club Booklet* should be resurrected. According to our records the last booklet (number 62) was published in 1989. New member and *Felix* section editor Charles Murdoch was chosen to edit the booklet.

The booklet was revealed at the Chaps Club Annual Din-

ner held in March. It is available to all members in .pdf form and will be emailed to all Chaps on the Chaps Club mailing list. Printed versions of the booklet will be available at this year's Derby Day (on June 10).

For more information, and/or to update your contact details, please contact chapsclub@imperial.ac.uk

Danny Hill (ESE 09)

Students votes back Guilds' flying start

THIS YEAR for the Guilds has been eventful, to say the least. We had a flying start in October with a well attended Fresher's Fair and the showpiece event, the Masquerade Ball selling out all its dinner tickets. We have also managed to establish close links with the IMechE, having worked with the Railway Division to produce a series of events at the College for students to attend. These were largely successful and we hope to continue this in future years.

Bo continues to be in good strength, as could be seen at the CGCA Annual Dinner. However, you may not know that Derrick, the motorbike, is now up and running – a fantastic achievement by the VVMC.

A change of personnel in the Guilds' exec at Christmas led to myself replacing Kirsty Patterson as Guilds' president. I would like to thank her for the work she put in. The second term produced some more great events. A tri-union comedy night, with over 300 people attending, was full of good-natured competition between the CGCU, RSM and RCSU and seen by many as one of the best events of the term. This was followed by the Great Egg Race which as



by CGCU president
Dan Lundy

always provided entertainment. The Guilds Annual Dinner was run in conjunction with the RCSU this year, something that we will be looking to continue.

Perhaps the most important piece of news to report is the resurgence of in-

terest in the Guilds. This year's elections have just passed and not a single exec committee position was uncontested with 43% of undergraduate students voting. The departmental societies are also in good health and over 12,000 votes were cast across the entire Faculty. There are certainly some great people taking over the helm next year so the Guilds can look forward to another successful period.

RSM societies more than alive and kicking!

WHERE will it end? I refer of course to the RSM's amazing expansion. Ever since the RSMC&SC lost its union status in 2001, student activity year on year has grown, with many students enthusiastically vying to take on positions of responsibility to keep the RSM machine not just ticking over, but expanding. This has all meant record turnouts at events, thriving clubs and societies, and the introduction of a few new competitions and rivalries.

It has been my honour to witness this incredible development of RSM culture and heritage. It has left me with some great memories which I'm sure will stick with me for many, many years.

This year has certainly been no exception, with the year getting off to the perfect start with the introduction of many a keen untarnished Fresher in October, nearly all of whom wanted to almost instantly be a part of the RSM action. Of course we in the RSMC&SC had no problems with this, and reciprocated their eagerness with a fantastic Freshers' Week. It was followed a week later by all the antics and debauchery of the infamous Freshers' Dinner, which went down a storm in its new home, the Union Dining Hall (UDH), despite major difficulties in obtaining sponsorship.

November and December heralded the inaugural year of the 'Hill Cup' (generously donated by Danny Hill), a competition set over three stages between the

De La Beche (DLB) society and MatSoc, designed to bring students of the Materials and Earth Sciences Departments closer together. Round 1 saw MatSoc explode into a 1-0 lead at paintballing, however in the more skill-based Round 2 DLB clawed it back to 1-1 with an inspired pub golf performance, led by Swansea fresher Jamie Thomas.

by RSMC&SC
president Henry Debens

December also hosted the more traditional RSM Christmas Ball. Thanks to generous sponsorship by BP, the black-tie event, held at the Kensington Close Hotel, went off without a hitch with many staff, alumni and students attending.

Despite a crushing 17-0 win over City & Guilds in a warm-up match, the 108th Bottle Match was a bit of a lo-light compared to the rest of the year. (See *story opposite*.)

The RSM Hockey club once again smashed its membership targets. As due reward for the hard work they put in, the Ladies' team is, for the first time in its illustrious history, being promoted! The men's team also fared well, just missing out on a promotion spot after a highly-competitive season. The RSM Football team is currently lying second in their table of 20 – a magnificent achievement.

In more academic affairs, the DLB has put on talks on a variety of subjects, including 'Dust from Outer Space' and 'Bubbles for Fun and Profit', as well as a fieldtrip to the Isle of Wight. MatSoc had trips to the CORUS and Rolls Royce factories and there was a GeophysSoc trip to the Schlumberger facilities.

The Chaps Club continues to thrive also, with rivalries between Links and 22s appearing healthy. A group of young daring Chaps stole the C&G mascot Spanner (above) in February in a bold swoop, duly returning it in March for a small sum to charity.

Despite all this, the year is far from over. The deciding round of the 'Hill Cup' is still to be played in a sports day in June; there's another DLB fieldtrip; RSM Cricket's first-ever net sessions; RSM Hockey tour to Blackpool; Real Ale society's Fuller's Brewery tour; and the DLB Annual Symposium on June 4, kindly sponsored by Rio Tinto.

The RSM Final Finale will be on June 11, where I will be handing over to my successor, president-elect Benjamin Moorhouse, a Materials PhD student. I'm sure he will do a fantastic job with the rest of the newly elected RSMC&SC!

All that is left to say is a big thank you to the RSMA, without whose constant financial support and wisdom the RSMC&SC would never be able to put on such fantastic events for its students.

DEVELOPMENTS IN & AROUND IMPERIAL ENGINEERING

Compostable plastic on way

PACKAGING and other disposable plastic items could soon be composted at home along with organic waste, thanks to a new sugar-based polymer. The degradable polymer, being developed at Imperial, is made from sugars produced from the breakdown of lignocellulosic biomass. This comes from non-food crops such as fast-growing trees and grasses, or renewable biomass from agricultural or food waste. It could be in use in two to five years.

Dinosaur demise cause agreed

COMPREHENSIVE analysis of evidence collected over 20 years has led an international panel of 41 experts to conclude that asteroid impact killed off dinosaurs. Dr Joanna Morgan (Earth Science and Engineering) says: 'Large-scale fires, earthquakes measuring more than 10 on the Richter scale and continental land slides creating tsunamis resulted from the collisions. The final nail in the dinosaurs' coffin came when material was ejected at high-velocity into the atmosphere. This shrouded the planet in darkness and caused a global winter, killing off anything that couldn't adapt.'

RESEARCH by a team from Earth Science and Engineering and UCL, analysing detailed images from NASA's Mars Reconnaissance Orbiter, suggests that approximately 3 billion years ago Mars had lakes of melted ice, around 20km wide, along parts of its equator.

Earlier research also suggested that Mars had a warm and wet early history but that between 4 billion and 3.8 billion years ago, before the Hesperian Epoch, the planet lost most of its atmosphere and became cold and dry.

Development to help athletes gain edge

A FIVE-YEAR research collaboration, launched last autumn and funded by the EPSRC to the tune of £8.5m, is developing a range of miniaturised, wearable and track-side sensors, computer modelling tools and smart training devices. They are aimed at helping British athletes gain a crucial competitive edge.

The Elite Sport Performance Research in Training with Pervasive Sensing (ESPRIT) project is led by Imperial College in partnership with UK Sport and supported by Queen Mary College London and Loughborough University.

Computing's Professor Guang-Zhong Yang is the principal investigator and programme director.

The project will also give scientists new insights into how people's bodies work and help them design devices that improve the health and wellbeing of the general population.

Miniature wearable sensors will monitor different aspects of athletes' physiological performance, in order to optimise training for competitive performance. The sensors will include wireless wearable nodes to measure biochemical

information, heart rate, EEG, ECG, muscle activity, joint speed and contact forces. Athletes and coaches will be able to use this information to understand how training is developing.

The team is also developing small track-side sensors, for detailed monitoring of an athlete's body movements and location, and of interactions within a team.

Currently data collected, mostly in controlled lab experiments, are not realistic enough for scientists and coaches to understand how athletes are performing.

Robots look beneath skin

PROFESSOR Guang-Zhong Yang (Computing) and Professor Lord Ara Darzi (Surgery, Oncology and Reproductive Biology and Anaesthetics) are developing a range of robotic technologies for use in healthcare.

One, robotic imaging, provides superhuman vision that will allow a surgeon to see through the exposed tissue surface, so that when he makes an incision, he already knows exactly what is going on behind.

Research computer checks material fusion

PREDICTING the way different materials fuse together at an atomic level in objects including iPods, computer chips and even ships may be possible using a new computer model being developed at Imperial.

One of the researchers, Professor Mike Finnis (Materials, Physics), said: 'A piece of metal is made up of lots of little crystals stuck together. The interfaces between those materials determine how strong the metal is.'

'Plaster' will detect vital health problems early

A DIGITAL 'plaster', based on Institute of Biomedical Engineering technology, is being used with patients and healthy volunteers to monitor vital signs continuously. This wireless, disposable device sticks to a patient's chest.

'We think fewer patients will have medical complications if doctors can spot health problems as soon as they arise', comments the Institute's Professor Christopher Toumazou.

A roundup of facts about Mars discovered with the help of Imperial researchers.

Findings add to question of life on Mars

The scientists are unsure how long the warm and wet periods lasted during the Hesperian epoch or how long the lakes sustained liquid water in them.

However, they say their study may have implications for astrobiologists who are looking for evidence of life on Mars. The team say these lake beds indicate regions that may have once been suitable

for microbial life. The team say these areas may be good

targets for future robotic missions.

Methane source puzzle

PROFESSOR Mark Sephton (Earth Science and Engineering), one of the leaders of a new study says that scientists have ruled out the possibility that methane is delivered to Mars by meteorites.

This has raised fresh

hopes that the gas might be generated by life.

Methane on Mars is being continuously destroyed by sunlight, but its levels remain constant, meaning that something must be topping it up.

DEVELOPMENTS IN & AROUND IMPERIAL ENGINEERING

Material could make car its own battery

IMPERIAL researchers and European partners, including Volvo Car Corporation, are developing a prototype material which can store and discharge electrical energy and is also strong and lightweight enough to be used for car parts.

Ultimately, they expect that this material could be used in hybrid petrol/electric vehicles to make them lighter, more compact and more energy efficient: they will go further and will

need recharging less frequently.

In addition, the researchers believe the material, which has been patented by Imperial, could be used for the casings of many everyday objects such as mobile phones and computers, so that they would not need a separate battery.

The project co-ordinator, Aeronautics' Emile Greenhalgh, says: 'We think the car of the future could be drawing power from its roof, bonnet or even

the door, thanks to our new composite material.'

In the £3.4 million project, the scientists are planning to develop the composite material so that it can replace the metal flooring in a car boot where it holds the spare wheel.

Replacing a metal wheel well with a composite one could enable Volvo to reduce the number of batteries needed to power an electric motor. A 15% reduction in the car's overall weight should

significantly improve the range of hybrid cars.

The composite material is made of carbon fibres and a polymer resin and will store and discharge large amounts of energy much more quickly than conventional batteries. In addition, it does not use chemical processes so that recharging causes little degradation in the material.

For the first stage of the project, the scientists are planning to develop their composite material further so that it can store more energy.

Blink guides Pong in research

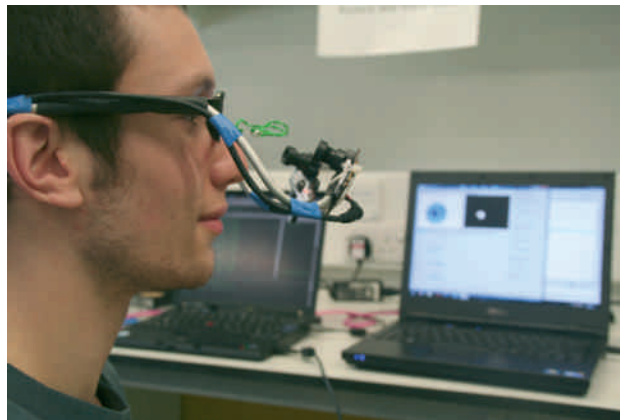
A COMPUTER game operated by eye movements, and being developed at Imperial, might ultimately enable eye movements to steer a motorised wheelchair. The initial aim is to allow people with severe physical disabilities to become 'gamers' for the first time.

Imperial students have adapted an open source game called Pong, where a player moves a bat to hit a ball as it bounces around the screen. The adaptation enables the player to move the bat using their eye.

To play, the user wears special glasses containing an infrared light and a webcam that records the movement of one eye. The webcam is linked to a laptop where a computer program syncs the player's eye movements to the game.

The prototype game is very simple and one of the major benefits of the new technology is that it is inexpensive, using off-the-shelf hardware and costing approximately £25 to make. Eye movement systems that scientists currently use to study brain and eye motion cost around £27,000.

Dr Aldo Faisal, the team's supervisor from Computing and Bioengineering, says: 'Remarkably, our undergraduates have created this piece of neuro-technology using bits of kit you can buy in a shop, such as webcams. The game that they've developed is quite simple, but we think it has enormous potential, particularly



because it doesn't need lots of expensive equipment. We hope to eventually make the technology available online so anyone can have a go at creating new applications and games. We're optimistic about where this might lead. We hope it can ultimately provide entertainment options for people who have very little movement. In the future, people might be able to blink to turn pages in an electronic book or switch on their favourite song, with the roll of an eye.'

The source of some of these articles and some of the words come from Reporter, newspaper of Imperial College. For more on these stories, go to Imperial's press releases at www3.imperial.ac.uk/news and click on 'More news' at bottom of page.

Ian Beer, a third year undergraduate from Computing, adds: 'We're really excited that we've come up with something that could ultimately help people who have really limited movement.' The technology is being adapted to monitor movements in both eyes. This would enable a user to carry out more complicated tasks such as plotting a journey on screen.

Imperial in climate initiative

IMPERIAL is joining with partners to lead a several hundred million euro initiative to combat climate change and its effects. Called the Climate Knowledge and Innovation Community (KIC), it will create new technologies and new businesses that will dramatically reduce Europe's carbon emissions and enable individual regions to increase their resilience to climate change's predicted effects.

The Climate KIC brings together researchers and industry – both large corporates and smaller enterprises – to tackle climate change head-on. It provides a vital opportunity to make radical changes on the scale we so desperately need.

Good scientists are sceptical

ONE OF the UK's most prominent climate scientists, Sir Brian Hoskins, chairman of Imperial's Grantham Institute for Climate Change, has highlighted the role that questioning plays in the process of scientific research. It followed claims of flaws in the reports of the United Nations Intergovernmental Panel on Climate Change (IPCC).

He said that one of the problems is the misleading use of the term 'sceptics', suggesting climate scientists are not sceptical in testing their own research.

'All good scientists are sceptical,' he says. 'We are always testing, probing, evaluating and trying to knock down theories.'

GLOBAL warming caused by our consumption of fossil fuels has often been cited as the reason for the increase in frequency and severity of climate-related disasters. However, based on Earth history, natural variability has also resulted in such disasters in the past and will certainly continue into the future irrespective of anthropogenic forcing. For effective mitigation, it is necessary to understand how natural forcing and anthropogenic forcing interact.

This article briefly reports selected severe weather events, within a two-month period after a volcanic eruption, through the impact of the eruption cloud on the stratosphere. Previously satellite observations have shown that such clouds may take two to three weeks to circle the Earth to impact weather.

On May 2 2008 at about 08:00 co-ordinated universal time (UT), the Chaitén volcano, at longitude 42.83°S and latitude 72.65°W in Chile's southern volcanic zone, erupted violently after an estimated time gap of 9,400 years. The explosive eruption lasted six hours lofting ash to an altitude of over 22 kms or 12kms above the troposphere. The ash plumes continued for about a week, punctuated by two stratospheric columns to 20km and 22km in altitude on May 6 and May 8 respectively. Based mainly on the volume of ash released, the eruption falls into the Volcanic Explosivity Index 4 range which is considered to be large with 0.1 to 1 km³ of ejecta. Because a fleet of NASA's five polar-orbiting spacecrafts, with overpass times separated by about eight minutes, were operating to provide aviation safety warning, a great deal can be learnt from the images col-

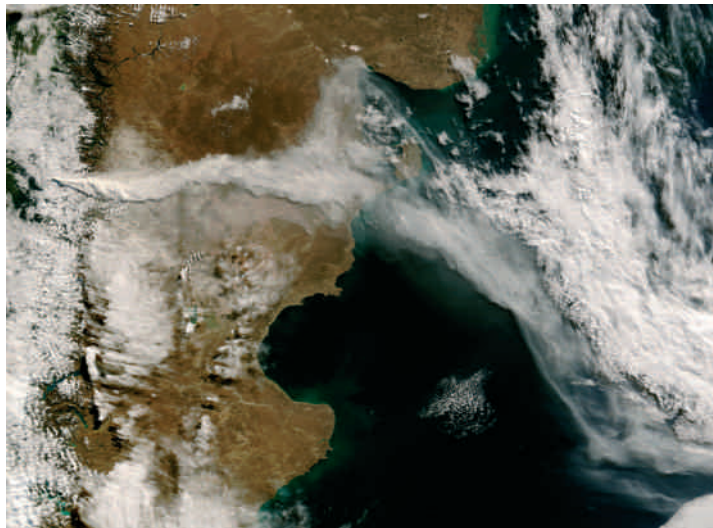


FIGURE I: The eruption cloud of the Chaitén volcano spreading eastwards across the Atlantic coast of Argentina on May 5, 2008 at 14:25 UT. (Courtesy of the MODIS Rapid Response Project at NASA/GSFC – <http://rapidfire.sci.gsfc.nasa.gov/>

lected on the long-range transport of fine ash following the eruption. A visible image from the Terra and Aqua MODIS sensors of ash plumes from Chaitén over Chile and Argentina on May 5 2008 at 14:25 UT is shown in Figure I. Based on a study by the Norwegian Institute for Air Research, the fine-ash mass loadings were significant and high enough to cause damage to jet aircraft engines several hundred kilometers downstream from the vol-

PROFESSOR *Wyss Yim, DSc PhD MPhil DIC CGeol FGS FHKMetS, was at RSM from 1971-1974. After RSM he spent 35 years until retirement at the University of Hong Kong where he taught civil engineering and geosciences students and helped found the Department of Earth Sciences. He was awarded the DSc by the University of London in 1997. Currently he is senior research fellow at the Guy Carpenter Asia-Pacific Climate Impact Centre, City University of Hong Kong and honorary professor at the University of Hong Kong.*

Wyss was the deputy chairman and a member of the Climate Change Science Implementation Team of UNESCO's International Year of Planet Earth 2007-2009. wswyim@cityu.edu.hk



Chilean volcano produces trail of destruction

by Professor Wyss Yim

Another space-borne asset is the Cloud-Aerosol Lidar with Orthogonal Polarisation (CALIOP) which detected stratospheric aerosol from Chaitén drifting over south-eastern Australia. This leads to two questions. First, how the spread of the eruption cloud within the stratosphere interferes with the 'normal' circulation pattern and, second, whether the ash and aerosol in the eruption cloud impacts climate by providing condensation nuclei to cause anomalous precipitation as it spread (FIGURE II).

The following is a chronological list of severe weather events possibly linked to the Chaitén eruption.

- Month of May – Driest on record across Australia; 3 typhoons in the northwestern Pacific for the first time since 1959.
- May 4 – Powerful storm in southern Brazil; 20,000 displaced.
- May 8-10 – Typhoon Rammasun (maximum wind speed 250km/hour).
- May 10 – 80 tornadoes and hail in central and southeastern USA; 23 deaths.
- May 12 – Storm in Bangladesh; 44 deaths.
- May 13-14 – Storms/torrential rainfall/flooding in Shreveport, LA, USA (51mm in 20 minutes and 164mm in two hours).
- May 14 – Strong wind in northern India; several deaths.

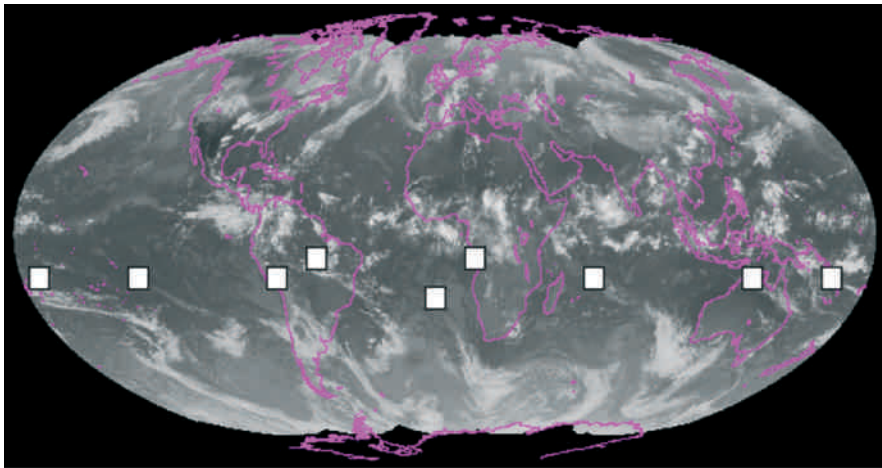


FIGURE II Storm systems on May 27 2008 at 00:00 UT. White boxes depict possible locations where ash and aerosols from the Chaitén eruption may be transported into the northern hemisphere to affect precipitation through the provision of condensation nuclei. Courtesy of SSEC, University of Wisconsin-Madison.

- May 17-18 - Typhoon Halong (maximum wind speed 130km/hour); 25 deaths.
- May 20-25 - Tornadoes including a deadly EF-5 tornado in Parkersberg, USA, 7 deaths.
- May 21-26 - Torrential rainfall/flooding/landslides in south central Chile; 15,000 displaced.
- May 23-25 - Torrential rainfall/flooding in El Salvador; one death.
- May 24-25 - Torrential rainfall/flooding in northwestern Pakistan; 10 deaths.
- May 27-28 - Torrential rainfall/flooding/landslides in southern China; 0.5 million displaced, 28 deaths; torrential rainfall/flooding in Colombia; 100,000 displaced, nine deaths.
- May 27-29 - Typhoon Nakai (maximum wind speed 232km/hour).
- May 29 - Torrential rainfall/flooding in Germany, France, Italy and Belgium
- Month of June - Wettest month ever in Hong Kong (1364.1mm) including a rainstorm with a return period of 1,100 years and numerous landslides (figure III), Guangzhou (872.7mm); Macau (1200.8mm); anomalously wet June in South Africa and Australia with records broken at various localities
- June 1-7 - Torrential rainfall/flooding in northeastern and western India; 25 deaths, 200,000 displaced.
- June 1-14 - Torrential rainfall/flooding in Mid-west, 1100 precipitation records broken.
- June 4-13 - Torrential rainfall/flooding in southern and central Mexico.
- June 7-18 - Torrential rainfall/flooding in southern China; US\$4 billion loss, 57 deaths.
- June 13-16 - Torrential rainfall/flooding in Kenya.

June 19 - Torrential rainfall/flooding in Eastern Province, South Africa; four deaths.
 Volcanic eruptions are a natural phenomenon of random occurrence.

Based on available satellite information and instrumental observation record, the severe weather-related events, occurring within two months of the Chaitén eruption, are thought to be linked to the spreading eruption cloud.

Further research is needed to distinguish between the natural forcing and anthropogenic forcing of climate-related disasters to assist the decision on engineering mitigation.

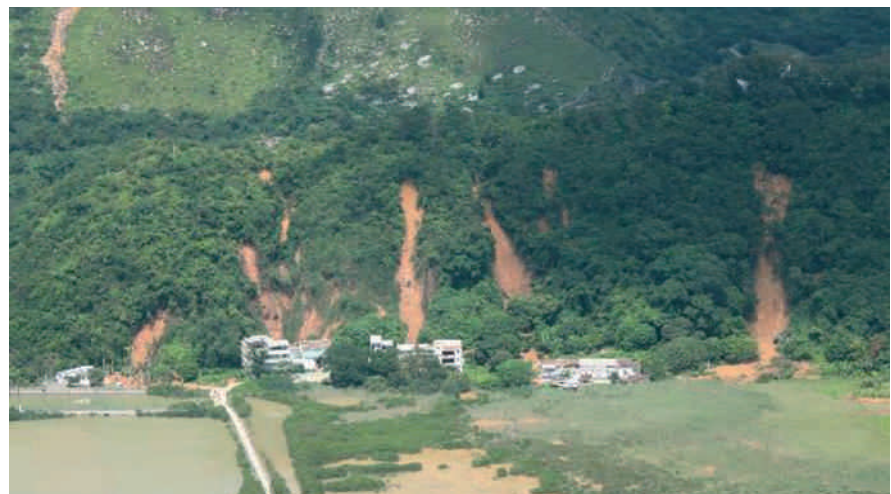


FIGURE III. Some of the 2400 landslides occurring on Lantau Island near Tai O, Hong Kong triggered by the severe June 7 2008 rainstorm. Total rainfall reached a maximum of 384mm over a 4-hour period. Courtesy of the Civil Engineering Development Department, Hong Kong SAR Government.

...AND MORE RECENT ACTIVITY...

SOUFRIÈRE HILLS, MONSERRAT ON FEBRUARY 11, at 1635 GMT, (latitude 16°43'N longitude 62°11'W), this volcano erupted, sending an ash plume into the stratosphere reaching an altitude of 15.2km. The plume tracked on Meteosat SEVIRI (available from www.sat.dundee.ac.uk) was caught up within the warm sector of a frontal system spreading in a northeasterly direction towards Europe.

On the morning of February 20, torrential downpours occurred in Madeira causing disastrous landslides and flooding with a death toll of at least 48. From February 26-28, violent storms, with winds reaching 175 km/hour, bit western Europe. France was the worst bit with a death toll of 51 out of a total of

at least 63. These disastrous east Atlantic storms were probably exacerbated by the eruption cloud interfering with the stratospheric circulation in addition to providing condensation nuclei to make the rainfall more torrential.

EYJAFJALLAJÖKULL, ICELAND IN THE eruption on April 14, the maximum plume height was only 11km and the amount of ash was below 250 million m³. Because it is much smaller than Pinatubo in 1991, climate impact is considered unlikely. Nevertheless, weather changes over much of Europe, including being cooler, more cloudy and rainy than normal, can be expected in the next one or two months.

FEATURES

LIVING in times of great change and great progress offers exciting opportunities but equally poses challenges. Tackling them requires visionary leadership, courageous decisions and a constant flow of new ideas. Responding to the challenges and turning them into opportunities demands ability, commitment and dedication to make the new ideas work.

The future of world energy, in particular, raises huge questions and demands. We are on the brink of a new energy future – a world that looks very different from the one to which we are accustomed. The goal of most international energy companies is similar. The responsible development of fossil and new forms of fuels, via talented people, pioneering technologies, and partnerships, whether commercial or academic (such as the ones we have with Imperial on predictive modelling of oil reservoir properties to earthquake hazard mitigation studies) and support for sustainable development. Shell is no exception.

The realities of the new energy future are stark. First, there will be three billion more consumers in the world by 2050 and double the energy demand. Second, by mid-century 70% of global energy will still be coming from nuclear and fossil fuels. Hydrocarbons will remain indispensable to world energy for many decades, steadily becoming harder to access.

Other energy

Tapping into challenging hydrocarbons demands higher technology capabilities and greater financial strength than ever before. There will undoubtedly be great developments in other energy forms – for example, biomass, wind and solar – but these still need a lot of investment, and a lot of technology

Ed Daniels of Shell looks at how the company's developments are tackling current challenges

Building a new energy future

advances, to gain the necessary scale and commercial strength to make the impact they promise. Third, the climate experts continue to lower their estimates of what constitutes a sustainable level of CO₂ in the atmosphere. More and more urgently, we need to be able to manage greenhouse gases.

To address these realities, energy providers, governments, NGOs and consumers all need to play their own part, working together to deliver what we call the 'energy trio':

- * energy conservation and efficiency – where consumers and businesses use energy efficiently and minimise waste;
- * more energy from more diverse sources;
- * cleaner and safer energy – we all must strive to find energies that are both safer and cleaner to produce and to use.

Delivering on any one of these three elements is a test in itself, but the new energy future demands that we tackle all three of them simultaneously. Technology will be vital to unlocking hydrocarbons and delivering solutions. We need to harness technology from all quarters if we are to address the energy challenges ahead.

A recent re-structuring in Shell saw the founding of a new division

– Projects and Technology – to work in tandem with our upstream and downstream businesses and manage delivery of Shell's major projects, as well as driving the research and innovation to create technology solutions. For the first time we have one organisation with single point accountability for all R&D linking upstream and downstream technologies, as well as projects and engineering capability across the same span of activity.

Must invest

All the situations we work in present technical requirements and challenges of one kind or another, ranging from the Arctic Ocean to desert conditions; from remote deep-water oil and gas fields, to the roadside and the home. Our future depends on having the best solutions – so we must invest. In terms of rewards, technology can have a direct impact on our bottom-line performance.

The projects we deliver speak for themselves. When fully complete later this year, Shell Eastern Petrochemicals Complex (SEPC) project in Singapore will be Shell's largest fully-integrated refinery and petrochemicals hub. The project includes an 800,000 tonnes a year ethylene cracker and butadiene extraction unit on Bukom Island and a 750,000 tonnes a year mono-ethylene glycol (MEG) plant and a butadiene plant on neighbouring Jurong Island. We are modifying our existing refinery at Bukom to enable it to produce feedstock for the new ethylene cracker.

Asia currently accounts for around 70% of global MEG consumption and much of the new capacity is destined for China where demand continues to grow for use, for example, as a raw material in textiles and packaging production.

Shell has developed award-winning OMEGA processing technology for ethylene oxide/MEG conversion



ED DANIELS became executive vice president of Global Solutions Downstream with-in Shell's Projects and Technology

business last July. He is responsible for technology support to Shell's downstream assets and products, as well as all commercial activities spanning technology, catalysts, consulting services and implementation support to customers in the

oil and gas, petrochemical and other processing industries. After a masters in Chem Eng from Imperial in 1988 Ed joined Shell to work in refining. After an MBA, Ed's career with Shell has been in sales and marketing in the UK, Europe and across Asia Pacific. Ed was then general manager for Shell's Global Lubricants Base Oil activities before re-locating to Houston, Texas as president of Shell's global catalyst business CRI/Criterion Inc. e.daniels@shell.com



which is incorporated in the plant on Jurong Island. The OMEGA process combines a high selectivity catalyst for the conversion of ethylene to ethylene oxide (EO) with a catalytic process to convert EO to ethylene glycol. The technology gives the highest commercial yields of MEG from ethylene and capital and production costs are lower. OMEGA plants consume less steam and produce less waste water than traditional MEG plants.

In the Middle East, at Pearl GTL (gas to liquid) in Qatar, we are developing what will be the world's largest plant converting natural gas into 140,000 barrels per day of high quality liquid transport fuels, base oils for lubricants and chemical feedstocks, with technology innovation spanning the upstream and downstream. The project will also produce 120,000 barrels of oil equivalent per day of natural gas liquids and ethane. The largest construction site in the oil and gas industry worldwide today, the project has involved the import of some two million tonnes of equipment and materials.

Proprietary processes

Shell has been researching GTL technology for more than 35 years, filing more than 3,500 patents in all phases of the process. That experience also includes 15 years operating the world's first commercial-scale low-temperature Fischer-Tropsch GTL plant in Bintulu, Malaysia. Production at Pearl GTL will

be based on Shell's proprietary middle distillate synthesis process, using advanced catalysts which will reduce unit capital expenditure, allow faster processing and should enable Shell to produce greater volumes of fuel and other products.

The design of the project also aims to help limit environmental impact – the facility is designed to re-use water and heat from the process itself, so that no water is drawn from Qatar's scarce water resources. The plant is designed to be capable of zero discharge of water. The industrial water processing plant will be the world's largest, with the capacity to recover, treat and re-use up to 280,000 barrels a day of water – comparable to the water consumption of a city of 140,000 people.

Deep water is another challenging environment and Shell's ability to conquer it is providing access to the oil and gas that lies deeper, often in dispersed reservoirs and difficult to produce. Thousands of technologies are needed to meet these challenges – from large, complex production systems to smart chemical treatments to help the oil and gas flow.

Shell's newest deep water projects such as at the Perdido development in the Gulf of Mexico (at 2,400m the world's deepest spar), and Parque das Conchas (also known as BC-10) off Brazil are pushing boundaries in subsea technology. At both fields, we had to face the same challenges: low

reservoir pressure which makes it difficult to bring the hydrocarbons to the surface. But by employing subsea oil and gas separation and boosting technology and the new deep water tree system (EVDT), which allows oil from several wells to be sent to a common production facility, these fields can be economically viable.

In terms of addressing the world's carbon challenge across the globe, from California in the USA to Alberta in Canada to Germany, the UK, and the Netherlands, to Norway, we are working to find solutions to efficiently and effectively sequester CO₂ in deep reservoirs and saline aquifers. We are also busy in Qatar, where we are working with Imperial College and Qatar Petroleum to find the right techniques for storing CO₂ in the reservoirs typically found in the Middle East: fractured, porous, calcium carbonate rock.

With a long-term view on future mobility combining a market for hybrid and full-electric cars for urban environments and short distances, with one for hybrid and internal combustion vehicles using liquid fuels for longer distance, we are aggressively developing low-carbon fuel options. These will help our customers to use less energy and emit less CO₂ through fuel economy formulations for our petrol and through high-efficiency lubricants.

Increased volume

We have started introducing fuels such as Shell Fuel Save in Europe and Asia enabling motorists to save up to one litre on a 50 litre tank of petrol. The product has been so popular with consumers that it has won us more volume, showing that helping customers use less fuel can be commercially successful.

The multitude of exciting technology developments which are ongoing or will be introduced create great opportunities for individuals to play a part in meeting the global energy challenge. To make these and all our other efforts succeed we depend – above all – on having a continuous stream of educated, motivated, and committed people. People who demonstrate excellence, who push back the boundaries of what's possible with technology, who are aware of the challenges ahead, and have the urge to do something about them: people who work well in teams and partnerships and who have vision and leadership capabilities.

Cheshire village shows the way

WHEN Sir David King and Lord Oxburgh joined forces in calling for immediate action to stem climate change at the 2005 Hay Festival – and got a standing ovation – I realised that ordinary people were very concerned about the issue. I left the meeting wondering how I could ‘do my bit for society’, especially as a public health engineering graduate. That’s when I decided to see if I could persuade the inhabitants of Ashton Hayes to try to become carbon neutral.

Free advice

I delved into the internet and discovered that we had a local office of the Energy Saving Trust (EST) that offered free advice on energy efficiency matters. They told me that no other English villages had tried to become carbon neutral and commented, ‘if you decide to go for it we’ll give you our full support – the Government has asked us to look out for grass roots projects involving climate change.’

If the project was to stand any chance of getting off the ground it would need the backing of the local Parish Council. This not only represents the local population but could also legitimately accept any donations we might receive from business and community supporters. I asked the Parish Council to allocate me a half hour speaking slot at the November 2005 meeting. I knew that asking them to embrace the idea of ‘*Aiming to become England’s first carbon neutral village*’ would raise a few eyebrows on the Council. But they voted to give it a go and asked me to convene a public meeting.

Encouraging people to leave the fireside and attend a village climate change event on a freezing January night was not going to be easy. So I asked local businesses if they would fund the signage we needed and cover the costs of offering attendees free English ‘bubbly’ (a positive spin off from climate change

Five years ago Imperial alumnus Garry Charnock (Civils 79) persuaded Ashton Hayes to become England’s first carbon neutral village. Since then the residents of Ashton Hayes have been on a remarkable journey and have already cut their carbon emissions by 10%. The village has received a grant of £500,000 from the Department for Energy and Climate Change to help them build a community-owned renewable energy microgrid. H

as the Kent vineyards are enjoying the warmer weather!). In the space of a week we had cheques for £3,500. The village primary school also offered its support by providing the school hall for the venue.

Having a background in technical communications proved useful in the lead up to the meeting. With the help of local people, we posted mail shots to houses and sent out invitations. We also erected banners and made road signs for the village

The response from newspapers, TV and radio was immediate. The *Cheshire Chronicle* announced the event and promised coverage on the night, local TV networks sent along news reporters the day before, and the *BBC World Service* radio sent a reporter and broadcast the event to 60 million listeners.

There is no doubt that this media coverage encouraged over 400 people



Around 75% of the village adults and many children turned up for the launch meeting on a freezing night in January 2006. The event was broadcast worldwide by the BBC.

announcing our intentions. Local designer, Steve Holland, produced an eye-catching project logo for free.

(75% of the adult population) to turn up at the meeting. The response from the audience was impressive. Many people were very concerned about climate change but did not know what to do and felt that they might be labelled as cranks if they added renewable energy devices to their houses. But community action appealed to them.

We issued guidance and advice to people on what they could do in the lead up to the six-week student survey in May. This would give us the data we needed to compute our footprint. True to its promise, the University of Chester arranged for five



GARRY CHARNOCK’S environmental sciences degree from East Anglia University was followed by an MSc in public health engineering at Imperial. He retrained as a technical

writer/journalist, became ‘water’ writer for New Civil Engineer and was volunteer editor of The Central - C&G’s then alumni magazine – for about three years. He won the John Deere International Civil Engineering Journalist of the Year award during this time.

Garry and wife Anne spent a year as freelance writers in Africa, reporting on development projects and third world issues. Back in UK, he was technical editor of World Water before joining Schlumberger Oilfield Services as technical communications consultant in the Middle East.

In 1988, Garry started communications company, Technical Editing Services (tes), in Ashton Hayes. He took a sabbatical in 2005 and started the Ashton Hayes Going Carbon Neutral Project. RSK Group acquired tes and he remains a director.

Way to tackle climate change

suaded his local community to try to...
ts of Ashton Hayes near Chester have
missions by 23% through behavioural
ment of Energy and Climate Change to
d. Here's Garry's firsthand account.



students to carry out a door-to-door survey using a lifestyle questionnaire that had been jointly developed with help from the UEA's CRed team - carbon reduction experts. This survey has since been repeated every year, with the next one due this May.

By summer 2006 we had computed our footprint to be just under 5000 tonnes/CO₂ a year. In the following year the community reduced its carbon footprint by 20%. Other communities were beginning to take notice and we were inundated with requests for advice after members of the project team were interviewed by Graham Norton at the Live Earth Rock Concert in 2007.

Active volunteers

The project now has about 40 active volunteers and many people have been helped to install insulation, switch appliances off and use energy saving bulbs. Ten houses have fitted solar thermal panels, a new low carbon house has been built and several families have retrofitted older properties with renewables. Many have opted for more efficient boilers and some have reduced their number of cars and asked their employers for permission to work from home a few days a week. The Golden Lion village pub has joined in by trying to become England's first carbon neutral hostelry!

Grant aid has been forthcoming and in 2006 we received a £26,500 grant under DEFRA's *Tomorrows Climate, Today's Challenge* that we used to provide communications and talks to like-minded communities. Supported by local business, we made a short film entitled 'Our Footprint, Our Journey' that went on to win the IVCA3 Clarion Award 2007 for best climate change communications. Since then we have sent 1200 copies of this DVD to communities around the world. The movies have also found their way onto YouTube where they have had over 5000 views.

Ashton Hayes residents have also benefited from support provided by the local council (now Cheshire West and Cheshire

- CWaC) that stumped up the money to build a 500m-long 'low carbon' footpath (above) for safe access to the nearby railway station.

In the past couple of years, we also won funding to develop a technical and business model to examine how any community might harness its own renewable energy sources. This report was completed in 2009 with support from local firm EA Technology, the university team and companies such as Scottish Power and United Utilities. We have also had invaluable pro-bono help from Carbon Leapfrog, the new charity that channels legal, accounting and environmental advice to help climate change projects overcome obstacles to success.

Recently, we have also been given a boost by DECC that has selected us as a Low Carbon Community and is providing funds and skills to help us take the next steps in our journey. We aim to develop a showcase 'low carbon' village that others can come and see. Our aim is to inspire people into taking individual and community action to stem climate change and show everyone that it can be fun and help to cement relationships across your community, no matter where you live.

See www.goingcarbonneutral.co.uk.



ABOVE: The local council spent £75,000 building a safe footpath to the nearby railway station, in support of the carbon neutral project.

BELOW: January 2006, Prof Roy Alexander helps to install road signs telling passers by of the village's low carbon intentions.

BELOW LEFT: Children in the village have been interviewed for TV and radio. Here they speak to Swedish radio.



INTO THE FUTURE

In the past five years over 65% of the population of Ashton Hayes has taken part in the Going Carbon Neutral Project. With a pub, school, two churches and a community shop, the village is typical of communities across rural England. Over 1,000 like-minded communities across the UK are now taking action to lead more sustainable lives.



ABOVE: Bolt-bearer Andrew McFadyen.

BELOW: Jess Poore, this year's winner of the Holbein Memorial Award for Sportsman of the Year.



CGCA stylish dinner

(Continued from page 5)

After dinner it was time for the speakers. Dr Paul Golby, CEO of E.ON UK, spoke of his journey in Boanerges and the future of cleaner energy sources. Professor David MacKay, chief scientific advisor to the Department of Energy and Climate Change, delivered an entertaining speech outlining how many windmills are needed to replace a nuclear plant and how wide a grass verge would have to be to produce enough bio-fuel to power the cars running alongside it!

The evening was wrapped up with a Boomalaka – the infamous chant of the CGCU. The mascot bearers thrust Spanner and Bolt (each weighing 68lbs) into the air repeatedly as the crowd chanted. It was one of the most surreal sights I've ever seen.

However, that could be said of the whole evening – surreal. Where, other than Imperial, could a student spend an evening drinking 1985 vintage port, rubbing shoulders with leading members of the scientific and engineering community, eat such fine food and be involved in such an odd kind of ceremony?

I, for one, am glad that the CGCA holds on to its traditions and I hope that this event continues for many years to come.

Alternative energy demo with floating turbine

Tim Crome of Technip writes about its involvement in the Hywind project for Norwegian state company StatoilHydro

IN MAY 2008, Technip was awarded the contract for engineering, procurement, construction and installation (EPCI) of the substructure of the Hywind demo turbine – the first, full-scale, offshore, floating wind turbine.

In the short period of time between May 2008 and June 2009 the Hywind project went from concept to reality. Since then the offshore floating turbine has been connected to the on-shore grid, commissioned and subjected to a test programme to document the performance of the turbine when attached to a floating foundation.

At the time of writing, the various key elements of the turbine, the substructure from Technip plus the standard 2,3MW turbine from Siemens

Wind Power, have been in operation since late summer last year. They were assembled together in the fjord outside Stavanger ready for tow-out and installation about 10km west of offshore Karmøy, Norway.

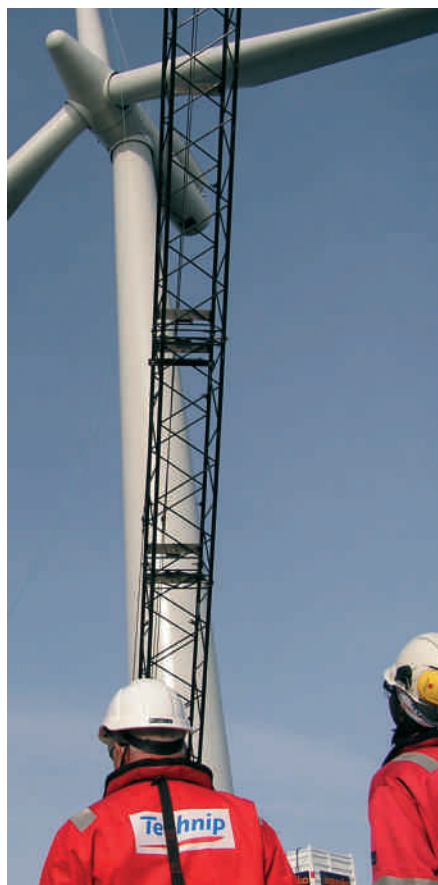
One of Technip's key products for the offshore platform market is the spar platform, used for several developments in the Gulf of Mexico. The Hywind substructure has many similarities to a spar, however, while the dimensions of the Hywind demo turbine are small, compared to a normal spar production platform, it is still a significant structure. The nacelle at the top of the tower is 65m above sealevel, with the blades having a diameter of 80m. What cannot be seen is that the substructure extends more than 100m below the waves.

The main objective with Statoil's Hywind demo project is to investigate the operation of a floating wind turbine assembly in an offshore environment. The advantage of the offshore location is access to stronger, steadier wind.

Good location

Experience so far has shown that this location, as expected, is a very good site for wind power generation. According to Sjur Bratland, 'owner' of Hywind technology within Statoil, the operational experience so far has been very good. After more than 1 million kWhrs of operation, including one 24-hour period with production close to the theoretical maximum, the best-ever recorded according to Siemens Wind Power, Statoil is more than happy with Hywind's performance. The movements of the turbine structure due





to wind and waves, both static and dynamic, have also been less than expected demonstrating that the spar type foundation works extremely well.

This unique project has attracted far more media and political attention than any oil and gas project in recent history. During the assembly phase, in the fjord outside Stavanger, an armada of small boats visited the site, including one carrying Prince Albert of Monaco, on his official visit, and Norwegian Minister for the Environment Erik Solheim, plus not infrequent helicopter trips for the media and others with special interests.

The project featured on Norway's popular scientific programme, *Schrodingers Katt*, and the animation of the tow and assembly operation on YouTube has had many thousand hits.

That the project has managed to meet this exacting schedule would not have been possible without the active involvement and support of the StatoilHydro team and the dedication shown by the Technip teams in Oslo and Finland.

Prior to award of this contract, StatoilHydro was basing the development of Hywind on the use of a concrete spar column supporting a steel transition piece and the standard Siemens turbine. During the tendering process

Technip investigated the possibility of using their yard in Pori, Finland, to provide a steel substructure. This was presented to the client as an alternative technical proposal in the formal tender.

The Pori yard has many years of experience with the detailed design and fabrication of large cylindrical steel structures for the offshore market. The yard has delivered a total of 14 spar platforms for installation in the Gulf of Mexico, where it is regarded as an extremely stable platform for oil and gas production, fully capable of withstanding the harsh conditions associated with the hurricanes that pass through this offshore domain each year. The adaptation of the spar technology to Hywind for the North Sea was a natural development. This also allowed the integration of the transition piece into the substructure and the elimination of a complex bolted joint below the waterline.

Contract scope

Technip's scope within the project includes the detail engineering, design and fabrication of the approximately

Hywind Demo FACT FILE

Turbine size: 2.3 MW
 Turbine weight: 138 tons
 Turbine height: 65m
 Rotor diameter: 82.4m
 Draft hull: 100m
 Displacement: 5300m³
 Diameter at water line: 6m
 Diameter substructure: 8.3m
 Substructure steel weight: 1200 T
 Solid ballast weight: 2500 T
 Water depths: 120-700m
 Mooring: three lines

117m long substructure, final design and procurement of the three-point mooring system, including the drag anchors; responsibility for the execution of the in-shore operations, ie upending of the spar and assembly of all the turbine elements onto this, plus planning and execution of the marine operations. These include pre-installation of the mooring system and the final tow-out and connection of the turbine, in a vertical configuration, in addition to the five day tow of the substructure from Finland.

TIM CROME graduated from Imperial in 1980 with a BSc in civil engineering. He started work with offshore pipelines for JPKenny in London. They sent him to Norway in 1984 and he never came back. Subsequently, he worked for Det Norske Veritas and Norsk Hydro before joining Coflexip Stena Offshore in 1996. It became part of Technip in 2001. Tim is currently sales and business development manager for Norway. Prior to that he had six years as engineering manager.



Technip Norge employs 350 people and has a turnover of around £300m a year, mostly from offshore construction projects – pipelaying, delivery and installation of flexible risers and marine operations. Email: TCrome@technip.com. Web: www.technip.com

Update on Scottish sea generation

IN LAST autumn's *Imperial Engineer*, Louise Smith (Civils 85) reported on progress with the UK's first commercial sea bed leasing round for wave and tidal energy. The focus of attention is the Pentland Firth, including the waters around the Orkney Islands. This March, six wave and four tidal sites were announced, totalling 1.2 GW maximum capacity.

As well as heralding the start of significant economic opportunities for the marine energy industry, it marked the successful end of Louise's temporary post as the Pentland Firth Marine

Energy Project manager. She has now established a consultancy, Caithness Renewables, working for developers and supply chain companies (specialising in project development, funding and other applications), and stakeholder consultation.

Her current focus includes the new leasing round for the Inner Sound between Caithness and the island of Stromo where the Crown Estate hopes to establish a 200MW tidal project. For more information contact Louise on 01847 893832 or louise.smith@caithnessrenewables.co.uk,

Tony Brewis, editor of *Mining Magazine* from 1979 to 1996, looks back at the magazine's long connection with the Royal School of Mines

Here's to the next 100 years!

TECHNICAL monthly *Mining Magazine* (*MM*) serving the mining industry world-wide, celebrated its centenary in 2009, a milestone achievement for any publication. It was celebrated by a gathering of former editors at the Reform Club.

Over the years, *MM*'s links with the RSM have been close. Its original editor, who launched the publication in September 1909, was the respected and successful consulting engineer Thomas Arthur Rickard, who had graduated in metallurgy in 1885. TA, as he was always called, ran the publication until 1915. In the first issue, he described Bleriot's flight across the Channel, commenting that although flying might seem to have little to do with mining, he felt one day it would play a major role, thus setting an example of forward looking to the application of newest technology. Editors have followed this belief ever since.

MM was owned by Mining Publications Ltd, a company set up by London-based American consulting mining engineer Herbert Hoover.

For a time from 1915, *MM*'s links with the RSM were not so strong, although St John Shepherd, who qualified ARSM, DIC in metallurgy in 1923, became a director of Mining Publications in 1925, a post he held until the 1960s, when he was also the advertisement manager.

Links were strengthened in 1928 when Frank Higham joined *MM* as assistant editor. He had qualified from the RSM in mining geology in 1923, gaining practical experience in Africa until being gored by a buffalo forced him to return to the UK. In 1938, he became editor, a position he held until his death in 1966.

Michael West (Min 54), who had initially worked on the Copperbelt with particular responsibility for mine ventilation, came to London and joined the weekly publication *Mining Journal* (*MJ*) at the end of 1960. In 1963, he helped negotiate the take-over of *MM* by MJ Ltd, later becoming chairman and owner. He edited *MM* for a time in 1967-68, taking over from John Spooner (Min 55).

The next *MM* editor Brian Lord

(1968-72) had a coal mining background and before coming to *MM* had spent three years at *Colliery Guardian*. With him on *MM* as assistant editor was Alan Kennedy, who had spent a postgraduate year at the RSM in 1965-66. Alan, later managing editor, worked on *MM* for many years, afterwards also editing *Geodrilling*, another publication launched by the company to cover exploration drilling equipment and its applications.

Next editor of *MM* from 1972-77 was Lawrie Williams (Min 66) who had



Present and past Mining Magazine editors at the reunion lunch. Standing, from left, Chris Hinde, Alan Kennedy, Tony Brewis, Adriana Potts, Lawrie Williams and John Chadwick. Seated, Paul Moore and Michael West.

worked in South Africa and Zambia before becoming financial editor for MJ in 1970. Subsequently, Lawrie became marketing director, then managing editor and publisher and later MD of MJ Ltd.

Another RSM graduate (Min 73) who worked on *MM* in the 1970s was Mark Wellesley-Wood. Following Lawrie William's move John Spooner again held the fort, being editor of both *Journal* and *Magazine* in 1978-79.

I joined as editor in 1979, a post I held for 17 years. My background included tunnelling in Gibraltar and in UK coal mines, underground copper mining in India followed by a year at the RSM for a DIC in mineral technology. Ore testing was followed by four years at an iron ore mine in Sierra Leone. This was followed by 12 years with consultants WS Atkins assessing mining projects, including in Mexico.

Of significant help to me as editor was the input from Geoff Pearse, who

graduated from the RSM in mining in 1948, after his time at university had been broken by six wartime years in the RAF. After qualifying, Geoff had worked at ICI's Billingham anhydrite mine, becoming manager, then on gold mines in South Africa. Returning to the UK, he sank the shafts at Boulby Potash mine, was manager there for a time and then joined MJ Ltd as technical projects editor, writing many informative articles on the applications of new equipment.

David Bird (Min 79), after working in South Africa, was an assistant editor in 1987, later working for some years in MJ's Research Services.

When I reached retirement in 1996, the editorship of *MM* passed to Des Clifford, a metallurgist who had spent some years with Anglo American. He joined MJ Ltd in 1989 as a research assistant, later becoming deputy editor on the weekly *MJ* before transferring to the *MM*.

He moved from *MM* to contribute to another MJ Ltd publication, *World Gold*.

Adriana Potts, a Venezuelan with a degree in industrial relations and married to an English mining engineer, was the first and only female editor of *MM* from 2001. She had worked in a state-run gold mine and, before *MM*, had been deputy editor of *World Mining Equipment*.

After Adriana's departure in 2004, *MM* was edited for a year by John Chadwick, who was editorial director at MJ Ltd. When he left in 2005 to restart *International Mining* the editorship was taken on for a year by Chris Hinde.

MM now belongs to Aspermont Ltd, and Chris Hinde is still on board.

Current *MM* editor Paul Moore's appointment in 2006 re-established links to the RSM. He topped up a degree in geological sciences with an MSc in mineral exploration from the RSM. He rose through the ranks of Metal Bulletin Group's *Industrial Minerals* magazine. Under Paul's capable editorship, *MM* continues to flourish, and it is good to see its links with the RSM continue.

Here's to the next 100 years for both of them!

Alumnus invents portable, cost-effective tool for screening

KHOSROW Bakhtar has invented a screening device based on 'forced-resonance' which defines a new rapid and cost-effective approach for diagnostic imaging.

Bakhtar Medical Imaging (BMI) uses the ability of tissue anomaly to absorb RF energy in certain frequency



From a degree at the RSM in 1976, Khosrow Bakhtar continued his postgrad work in the US at Penn State, Princeton, Berkeley and Utah universities

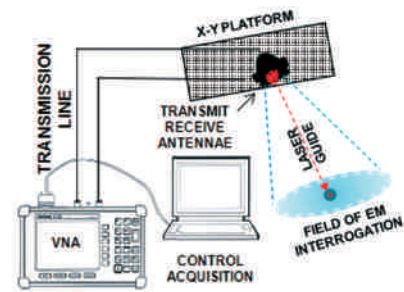
in the USA. He often talks about the two years he spent working in underground coal mines in South Derbyshire, Leicestershire and Yorkshire. Since then Khosrow's experience has been in applied science and electronic instrumentation, with emphasis on low-power RF sensor design and development.

bands – quantum emission bands – as a means of determining its presence. It is an extremely low-power, portable, medical screening device with capability to reconstruct 3-D images from anomalies or use the absorbed energy to differentiate between healthy and diseased tissue in humans or animals.

BMI is a by-product of Khosrow working in nuclear weapons research for the US Department of Defense.

BMI can swiftly and safely interrogate the body and locate and characterise embedded anomalies, with higher resolution than other available devices (better than ± 0.5 -mm). Screening is done by moving the sensor head at 20cm over the part of the body to be interrogated. Movement speed is controlled at about 1 to 30mm/sec.

Californian investors are providing \$8M to build the prototype in 24 months



– initially for screening and diagnosis of breast cancer. However, it has applications in other areas such as cardiology, oncology, orthopaedics and neurology.

Khosrow initiated 'near-field' radar research in early 1990. He developed the 'emission spectral band detection' concept for transmission of electromagnetic energy at powers well below cellular telephones for realisation of embedded anomalies and narrow band detection for human screening.

According to experts, the BMI can significantly reduce the cost of healthcare and provide a unique and cost-effective tool for human screening that every doctor can afford.

Historical tale of Crown-owned riches beneath our feet

In a fascinating paper from 1989, senior lecturer Allan Grierson wrote about his time as mineral agent to the Crown Estate. Here, Geoff Coyle (Mining 59), who submitted the article to *Imperial Engineer*, summarises the history behind the role. It forms the basis of a chapter in his book *Riches Beneath our Feet* (publisher OUP, ISBN-10 0199551294) due for publication in June. Geoff's story of mining will be reviewed in the

THE ROLE of the Crown as an owner began in 1066, when William the Conqueror declared that he owned all land and minerals. It was the point of the *Domesday Book* in 1086 to work out what he did actually own.

Over the next centuries, he and his successors rewarded powerful subjects with grants of land, though not always with the mineral rights. Some of those grants were later sold to others.

In general, anyone who mined anything had to pay a royalty to the king until the Mines Royal were abolished in 1689 as a revolt against a hated tax of the Stuart kings. However, all gold and silver mines were retained by the Crown and are still known as Mines Royal.

Nowadays, Mines Royal are part of the Crown Estate which comprises about 250,000 acres of agricultural land, property in London and elsewhere, and another million acres

where the Crown owns the mineral rights, but not the surface. The Estate includes about 1,000 miles of the shore between high water and the 12 mile territorial limit so that mining under the sea, as at Boulby Potash, is of financial interest to the Estate. The Crown also has the right to the mineral resources of the UK continental shelf with royalties having to be paid to the Estate for any mineral mined.

A licence is required by anyone wishing to explore for gold and silver anywhere in England and Wales, even on their own land and an annual rental plus a royalty on the output have to be paid. A licence is also required for leisure panning for gold, as well as permission from the landowner.

The administration of all this complexity is the role of the Crown Estate mineral agent. Given the connection between the Royal School of Mines and

Prince Albert, the agent was usually an RSM engineer, like Allan, but nowadays he is a partner in a firm of consulting mining engineers.

The considerable revenues from the Estate's agriculture, property and mining go to the Exchequer in exchange for the Civil List that pays the monarch's expenses and supports senior members of the Royal family. The Exchequer gets much the best part of the deal!

Perhaps oddly, the Crown Estate belongs neither to the Government nor to the monarch as a person but is part of the hereditary possessions of the sovereign 'in right of the Crown'. This complicated, but effective, system of operating the Crown Estate has evolved over the last 900 years from the Norman conquest to the present day in the usual, pragmatic, common-sense, British way. Scotland has its own legal system so the position there is somewhat different.

THE PREFERRED, suggested Severn Tidal Power scheme, involving a barrage from Lavernock Point just seawards of Cardiff to Brean Down, near Weston-super-Mare, would provide about 5% of the total electricity demand of this country, and so would contribute a significant proportion of the targeted reduction in carbon dioxide output. But it would affect the tides, water levels, water quality, amenity and the local natural environment.

Most of these likely effects were established during studies for the Severn Barrage Committee, under Sir Herman Bondi, around the 1980s and still apply today.

The current debate about renewables and how they would fit into the future generating capacity of the country needs to be based on facts rather than opinions or prejudices, of course, and there have been a number of comments in the press and technical journals that have been based on some misunderstanding of what might or might not happen should such a barrage be built.

The peak output from a tidal scheme would be seven times the peak output of our largest nuclear station, Sizewell B. It is of course cyclical, because there are times of the tide cycle when the scheme will be refilling rather than generating. Not only that, the tidal range in the Severn during spring is almost double that at neaps. Even they vary between the equinoxes and solstices. Taking this variation into account, the annual output would be 17000 GWh.

The CEBG at the time of the Bondi committee had a model of the whole of the country's generating system. They were able, once the optimum scheme had been established, to incorporate the Severn output into the model. They found the variation in output to be acceptable to the system as it then was, even though it sometimes produced its maximum when demand was low. There was no need for additional or dedicated storage to balance out the load. This has been confirmed in recent studies. This is despite the fact that the highest spring tide output would indeed be during the night when demand is low. (A little thought will show that because tides are the combined effect of sun and moon,

The Severn Barrage - can we build something - finally?

they occur at times of the day with a six hours shift between mid-spring tides and mid-neap tides.)

The modelling carried out for the Bondi Committee showed just how the tides, both upstream and downstream of the barrage would be changed - on the seaward side very little; on the

virtually a closed system, in that the fine material (mud) in the system is not fed in from in the sea and there are trivial supplies from upstream sources. Currents are high enough to resuspend the mud that settles out during the previous slack period, and bring it up through the water column. Then it settles out once more as current speeds drop to form

Peter Ackers (Civils 44, MechEng 57) has tried to separate fact from opinion in the hope that the on-going debate can be based on rational analysis rather than misinformation. It should be borne in mind in any cost comparisons that a tidal power project has a life in excess of 100 years - perhaps three times the length of most alternatives.

landward side high water would be slightly reduced but low water would be significantly higher. The most noticeable visual effect therefore would be that the tide would not go out so far. Also the ebb would start an hour or two later and so would the flood. Spurious information on how the tides would be affected is sometimes quoted and, even in *New Civil Engineer*, it was said that the level would be held at its highest level upstream of the barrage until the time of low water, when in fact the duration of the ebb upstream would be broadly similar to that now, though rather later.

Flooding occurs fairly regularly from the tidal reaches of the Severn, Gloucester being particularly at risk if a severe fresh water flood occurs at the time of high spring tides, especially if there should be a tidal surge to increase it. The effect of the barrage would be to lower flood levels by around a metre at Gloucester and with a tidal surge by about a metre and a half. There is no doubt that the barrage will reduce the flood risk in the tidal Severn and probably upstream of the tidal limit too.

The Severn estuary is somewhat exceptional in its sediment regime. It is

a muddy layer at the bed. This may partly consolidate during neap tides but gets fully re-eroded during springs.

This was well established by the field work carried out (much of it by HR Wallingford) and no subsequent work seems to have called it into question. From that information it was possible to make a rough estimate of the total quantity of mobile material in the estuary. If this fine sediment were to spread uniformly over the area upstream of the barrage, it would form a layer just a few centimetres thick after consolidation. It is more probable, of course, that any permanent settlement would occur in the quieter zones, perhaps in the corners where the solid parts of the barrier engendered lower maximum currents. Sediment concentrations would drop significantly because of reduced peak currents but any suggestion that the estuary upstream of the barrage would rapidly fill up with sediment is quite unfounded. This almost unique sediment regime makes the Severn barrage project much more secure in this respect than any smaller scheme in other estuaries.

Studies of the impact on salinity and mixing showed that because exchange with sea water takes place twice a day, there would be virtually no change either in salinity or dissolved pollutants. The principal

effect would be greater water clarity because of the reduction in sediment concentration, and this in turn could be good or bad.

It is rather unusual in terms of its ecology: the very high sediment concentrations inhibit the ability of species to survive in the water column, but it is good for birds because of the mud that settles out, where they find their food. The clearer water post-barrage should therefore improve the overall productivity of the water body. The effect may well be positive rather than negative.

The problem with the use of this estuary is that the tidal currents are extremely high and the range is large: in combination these present serious hazards for pleasure boats and hence it is much less used than would otherwise be the case. The barrage would cure this.

Also holiday resorts such as Weston-super-Mare are left with a very wide stretch of rather muddy sand when the tide goes out and should become more attractive to visitors if the tide did not go out so far. One can also imagine that medium sized ferries and cruise boats would be able to ply their trade: Cardiff, Penarth, Weston-super-Mare, Avonmouth, Sharpness, and Bristol could all be connected by services. So there could well be appreciable advantages to the local tourist trade from the development of tidal power.

It may be difficult for engineers to fully appreciate the cause of the great concern that bird watchers and conservationists have about bird feeding, but there is no doubt about its strength or sincerity. At one extreme, there was a worry expressed recently based on a statement that, upstream of the barrage, the water levels would be held static at high water until the time of low water outside. How would birds feed during this period of about seven hours? In fact, high water would be held for an hour or two; low water would occur an hour or two later. Hence the duration of the ebb would be much the same as now. Another point of view is that any loss of area for feeding would be bad – yet the area permanently lost would be the lower part of the tidal range, some of which is rocky. Others aver that it is the perimeter of the water line that counts: birds find the best food there. If this is so, then the perimeter would be much the same, possibly increased over large parts of the

tidal cycle. The average perimeter may therefore change little. In terms of the availability of food for the birds, the increase in marine productivity could even prove to be an improvement.

Some environmentalists have stated that closing off the estuary, and thus excluding the tides for many years during the construction would be unacceptable – and so it would. That is one of the reasons that caissons are the preferred method of construction, both for the turbines and sluice gates. After floating each one into place, the passages through them would be opened so that the tides would continue to have access to the estuary upstream, right up to the time that the scheme was commissioned. Only then would the tidal regime change significantly.

If global warming and other factors increase sea level, the need for a tidal barrier in the Severn will increase irrespective of the need for renewable resources.

Apparently the Crown Estates require allowance to be made for removing any barrage, and this could add 40% to the generation cost. This requirement is so illogical as to be beyond belief. How could any government body decide to abandon Gloucester and its surroundings to a sudden considerable increase in flood risk?

The only indigenous energy resources we have are renewables and coal, once North Sea oil and gas from the British section are exhausted. With the increasing worldwide demand for oil and gas and the resultant increase in price, who can say how economics

might change during the very long life of a barrage in the Severn?

There is also the risk that fuel-supplying nations will see their assets as a useful political tool, and restrict supplies. As a nation we should be maximising the use of indigenous sources of energy. Tidal power is one of them. Can we really justify not using one of the largest such resources in the world?

The overall management of the Bondi Committee and final reporting were the responsibility of ETSU, the Energy Technology Support Unit, located at Harwell. One of their objectives over 25 years ago may well have been to ensure that no other technology would supplant nuclear – but this was, and still is, a mistaken concept. Tidal power and nuclear power have very different characteristics, and investment in one should not preclude the other. Renewables and nuclear need to be looked at on their own merits in terms of the UK's energy mix and environmental impact. Unfortunately, neither nuclear nor the renewables are flexible energy sources (though if we had a significant amount of hydropower from large dams on perennial rivers, that would be much more flexible). Each renewable source has to be supplemented by generating capacity that can be switched on and off to meet the significant diurnal variation in demand. Sadly perhaps, only fossil fuels seem able to provide that flexibility.



AFTER graduating in 1944 with a wartime degree, Peter Ackers spent several years in the aircraft industry working in research and then design. He then went into local government, working on the first motorway project and several housing developments. Having become particularly interested in hydraulics, he joined the Hydraulics Research Station, Wallingford, and rose to be assistant director. He completed his career as consultant to Binnie & Partners, working on many major projects. One of the major projects in this country was tidal power from the Severn at the time of the Bondi committee, Binnies being the lead consultants.

Peter's worldwide travels are described in his book *My World: the life and times of a civil engineer* (The Memoir Club; ISBN: 978 1 84104 173 5).

IN BRIEF**Singapore
'retirement'**

DR LEE HING YAN has stood down as ICAAS president after four years at the helm. Tan Hang Cheong (Computing 78) is now president. 'Thank you for the opportunity to serve. I hope that you will support the new president and Exco as much as you have done before,' writes Hing Yan.

Back in touch

VOLUME one of Parvez Kumar's (Aero 59,62) bio/auto-biography has been available for over a year. It covers his days at Imperial and with the Gliding and Rifle clubs

Details can be seen at www.trafford.com/08-0858
As Parvez says: 'A mention of it might get me back in touch with ex-colleagues.' Email him on parvezk@telus.net

**First meeting
in New York**

A FLEDGLING Imperial College New York chapter (ICinNY) met in February for the first time. Speaker was Imperial's archivist Anne Barrett who gave a fascinating insights into Imperial's history.

Sandy Eames (EE 70), convener of the new chapter, believes there are around 450 alumni within reasonable travel time of New York. If you are interested, email SandyEames@aol.com

**Estonia visit
confirms role**

RICHARD BURT (MinTech 63) was elected in October as president of the Tantalum-Niobium International Study Center for 2009-12 at the 50th general assembly, held in Tallinn, Estonia.

APOLOGIES...

...to David Baker (ElecEng 54). We attributed his obituary for John Oldfield in the last issue to David Baker (Min Eng 61).

**A L U M N I
NEWS & VIEWS**

Six pages of who's
doing what and where

Over 100 celebrate 60 years

JAMES (William Richards) TWYMAN recently celebrated 60 years of marriage to Jean with a gathering of over 100 people. They are pictured cutting the cake.

After secondary education at Dulwich College, in 1940 James went to Imperial College to study civil engineering before a working career as a lecturer at the City University. Outside work he has been heavily involved with sailing, especially the training side. He only recently put down his board pens after many years of teaching an evening class. Steve Davies (mailto:s@2321r.co.uk)

**South Africa
prepares to
welcome you**

IN PREPARATION for the World Cup, South Africa's CGCA president, Eric Arnot (Civils 44, MechEng 57), has made a concerted effort to track down and establish/restore contact with all local members.

A preliminary get-together has come up with ideas and dates for events. So the sooner you get in touch with your movements, the better they will be able to plan activities to suit. RSMA colleagues are also planning some events. Send your itinerary to either Richard Gundersen (gundersen@yebo.co.za, +27-82-654-6476) or Charles Lewis (pesuco@icon.co.za). They look forward to welcoming you.

**ICENAE
to reunite**

OVER 20 members of ICE-NAE (IC exiles North America east) have already signed up for their 35th reunion from November 4-7 in Niagara-On-The-Lake, Ontario. More are expected and, if you are interested in joining them, email SandyEames@aol.com. Sandy is this year's organiser.

Engineering speed date

TORRENTIAL rains paused briefly on January 23 to allow 33 stalwarts of the IC Alumni Association of Northern California to gather and reminisce. Hosts Angela Hey and her husband opened their home near Palo Alto for a potluck dinner of English dishes. Needless to say British brews and California wines ran well, although consumption was down!

After dinner, we were privileged to have Richard Jenkins (MechEng 00, pictured in blue jumper) describe his 10-year odyssey to break the wind powered land speed record. He did it with 126.2 mph on March 26 last year.



This is not only a story of outstanding engineering, but one of skill, dedication, vision, goal-setting, pragmatism and optimism. A saga that resonates well here in Silicon Valley!

Fabian Schmidt and the outgoing board were thanked

for their work in 2009, and Howard Wise and Jenny Wang were elected as president and secretary for 2010.

Howard Wise (ChemEng 63, 68). howard.wise@attglobal.net

ICU looking for lay trustees

'IT'S GOOD to see Imperial College Union prospering and constantly striving to offer the best possible facilities, events and environment for students,' says a current lay trustee Lewis Hands (MinEng 90).

To provide support to ICU and ensure good governance, the board of trustees makes suggestions and keeps an eye on accounts. To carry on this work, the board needs to appoint at least two new lay trustees this summer.

The ideal person is someone with a connection to IC/

ICU whether a graduate, post-graduate, present or past academic or administrative staff member or similar.

- Board of trustees details are
- meets four to six times a year in the early evening in ICU in Beit Quad;
 - meetings last one to two hours;
 - no minimum length of service but a maximum term of three years which is renewable once.

Apart from four lay trustees (including the chairman Professor Dame Julia Higgins),

regular attendees at meetings are the ICU president, four student trustees, ICU Court chairman and ICU Council chairman. Permanent observers for board meetings are the ICU deputy presidents, ICU operations manager and honorary senior treasurer.

Speaking about his three years, which ends this summer, Lewis says: 'The position has allowed me to provide some help and it has been rewarding to do so. And, of course, it's also nice to have an excuse to visit the Union bar afterwards.'

For more information contact – president@ICU.ac.uk, lewishands@handsomeip.com, or www.imperialcollegeunion.org/representation/governance/trustee-board/?lp=85

Olympics set enjoyable challenge

SINCE gaining a masters in engineering geology in 1982, Ian Deans' career and experience has been extensive and well-travelled, with work as far afield as Hong Kong, through the Middle East and Africa to Europe.

Now he's working in geo-environmental engineering and is on secondment within the delivery partnership working towards the London Olympics in 2012. 'I'm enjoying every second of this most interesting and challenging project,' says Ian.

Contact Ian on Ian.Deans@london2012.com or ian.deans@demrem.com



Robin Sham (Civils 82), AECOM's director of global long span and speciality bridges, receives the Institution of Civil Engineers' 2009 overseas prize from its 2009 president Jean Venables (Civils 69, 74).

The prize is awarded to the author of the best paper published during the year on a subject connected with engineering projects outside of the British Isles. Robin's paper highlights AECOM's pioneering and innovative achievements of the Stonecutters Bridge project in Hong Kong. It details the company's work in the erection of the steel-deck sections around the bridge towers.

Since the Stonecutters Bridge, the world's second longest cable-stayed bridge, opened to traffic last December, Robin is now working on Padma Bridge, a 6.15km long river crossing in Bangladesh. He's trying to make contact with any students or researchers who remember him from his civil engineering course which finished in 1982. Robin.Sham@aecom.com

WE NEED YOUR NEWS

Let us know your news and stories.

Or have you an idea for a feature?

Editorial assistance is available!

Contacts are Teresa or Rosie

t.sergot@imperial.ac.uk

rosemary.tipples@imperial.ac.uk

STORY IDEAS FOR NEXT ISSUE BY AUGUST 12.

FINAL COPY DEADLINE SEPTEMBER 10

Chem Eng alumni hear about students' need for view on working

THE ANNUAL gathering of 57- 60 Chem Eng group took place in the Union Bar in February over lunch with 11 braving the cold (but luckily snow-free) weather to eat, drink beer and reminisce.

The photo (from left) shows Jim Friend, Alan Nethercott, Malcolm Cross, Tony Davis, Alan Cleugh, Richard Lee (from Hong Kong), Paul Gallagher, Dave Martin (from Brussels), Mike Heath, Barry Daniels and Don Latimer.

We were joined by ICU president Ashley Brown and Emma Jones and Anna Codrea-Rado from the Office of Alumni and Development. As

usual all were in good spirits – and some are even still working!

Ashley Brown said the College is keen for greater involvement of alumni in College activities with a view to providing further background on post-college experience to current undergraduates. There was brief discussion around the possibility of a panel of alumni providing summary CVs in advance of an informal gathering.

The meeting for 2011 was agreed again for the second Wednesday of February at the same venue.

Tony Davis

ardavis@btinternet.com



THERE WERE around 60 students in the first year. For mathematics we were split into three ability groups. The subject was taught very well by Mr Talbot and Derek de G Allen in years one and two respectively.

Outstanding lecturers included Hugh Ford on strength of materials. Others who come to mind include Dyson, Heywood, Collins and Lewitt, while among the young team were Peter Grootenhuis, Peter Moore, Dr Tyler and Dick Ogorkiewicz. Three made their careers at C&G; the other I met later at English Electric.

Board members?

There were few printed handouts and I depended on my notes and recommended textbooks. Lecture theatres were furnished with rickety pew-like benches, unlike present day facilities. Assistant Professor Howard occasionally chaired a meeting of five or six students to review results of a major laboratory trial. He made us feel like members of a board.

The other joy in those days was the massive testing equipment. For example when a test specimen ruptured in the tensile test machine, the floor shook. What a contrast with the tiny test specimens viewed from behind a Perspex screen of today.

Each department had two or three professors. Our professor, Owen Saunders (later knighted), was dean of the C & G and co-author with Dr Maggie Fishenden of a textbook on heat transfer. The other professor was the young Hugh Ford, who was later knighted.

Eminent figures

Civil Engineering had professors Pippard and Baker, co-authors of a textbook on structures. Prof Willis Jackson headed the Electrical Engineering Department. He held a course of first year lectures for all engineering students. Some years later he was engineering director of giant engineering company AEI (I believe). In those days it provided openings for dozens of graduates. Prof Sir Alfred Egerton headed Chemical Engineering, supported by professors Newitt and Finch.

Mechanical engineer remembers C&G in 1949

Ernest Grossman looks back on the years that, as he says, provided an excellent springboard for his career

Arriving in the UK in 1946 from his native Czechoslovakia where he matriculated two months earlier, Ernest started to pursue his plan to study mechanical engineering. First he passed London University's Special Entrance Examination in four subjects in just four months.

However, priority was given to returning ex-servicemen, and he failed to gain a place at Imperial until 1949. In the meantime, he passed the intermediate course at Northern Poly and then took the advice of C&G's registrar Johnnie Walker and spent a year in industry. 'He also put me in touch with Richard Glascodine, another applicant, to enable us to compare notes on available opportunities, writes Ernest. 'We met face to face for the first time in the locker queue in October 1949 and have remained lifelong friends.'



Ernest (right) with Derek Ward in 1950.



Ernest in 1985.

The latter was among the first climbers to experiment with oxygen on Everest in 1923.

Students wore jackets and ties which, on reflection, was in harmony with the leather club chairs in the Union lounge. Many leant politically to the right of centre. The two females in our first year were not short of assistance in the drawing office. Tragically, one was killed while witnessing a trial in Norway.

There was a high failure rate at the end of year one. Our only car owner failed because he never attended a drawing class.

I built on workshop and practical experience acquired in earlier years by following a six week structured programme with an industrial firm, and by working in a research

laboratory during the two long vacations respectively.

Year three allowed a lot of options. I took the opportunity to attend lectures at the LSE, two half days a week. It was quite a contrast with my experience of looking at the lecturer's back while he was busy at the blackboard. Prof Arnold Plant addressed an audience of some 150 students on economics and industrial administration. I also enjoyed lectures designed for engineers dealing with law and industrial history.

Sporting colours

Team sports were held at Harlington and there were locally-based opportunities for squash, fencing, boxing and badminton. Two tennis courts, in the Union

Quad, were used for matches.

I gained my IC Full Colours for tennis when we won the University of London Cup in 1951 and I have a tankard to remind me of winning the IC singles in 1950. In 1952 I reached the final again, only to be beaten by an outstanding squash player, Jeff Kenyon (ChemEng). I also collected C&G Full Colours for tennis and athletics.

With the exception of Alan Swanson, whom I have met several times at College, where he became professor of Bio-Engineering, I lost touch with most of my colleagues.

After College, I was secretary of the Old Centralians Midland Branch while in the water turbine department of English Electric in Rugby. There, the highlight was my involvement in the design of a new type of reversible pump-turbine for Niagara Falls. The six sets were still running when I visited some 12 years ago.

Atomic job

I next spent over two years in the glass industry, before over eight years in English Electric's atomic power division. Here I was involved in the design and project management of Sizewell A and Wylfa Nuclear Power Stations.

In 1966, I joined the steel industry pre-nationalisation, retiring from a prospering privatised British Steel in 1989, based in Sheffield as chief engineer and member of the management committee. As a member of British Steel's recruitment team, I visited IC and other leading universities.

I have been chairman of the North Midlands branch of the Institute of Mechanical Engineers and on the council. Post-retirement I worked with Sheffield Development Corporation. Then, after the velvet revolution in my homeland, the Foreign Office and Department of Employment sent me to Prague to encourage entrepreneurial activities, I have also done part-time lecturing.

eandigrossman@waitrose.com

To see a picture of all C&G final year students in 1952, go to www.imperial.ac.uk/engineering/about/alumni/

CGCA hon sec visits 'Far Flung'

WHILE on a private holiday trip to Australia and New Zealand last autumn, CGCA hon sec Chris Lumb (EE 61) and wife Gill met CGCA members and other alumni in Hong Kong, Sydney and Canberra.

In Hong Kong, they were entertained to a sumptuous dinner in the Royal Hong Kong Yacht Club by Barry Adcock (Civils 68), David Sorton (Civils 71) and six other alumni.

A few days later, in Sydney, Dr Bill Macmillan (CTEC 1958-62) and his wife Heather entertained Chris and Gill to a scenic tour of the north shore suburbs and beaches before meeting Jim Kehoe (Mech Eng 62) and his wife Muriel, at the Stella Blu restaurant in DeeWhy for a pleasant lunch



overlooking the beach. Many memories were exchanged.

While staying near Yass a week or so later, Gill and Chris drove to Canberra to meet Mike Colledge (EE63) Chris' fellow-oarsman from the Imperial College Second VIII in 1960-61.

ABOVE: In Hong Kong, standing from left David Sorton, Ian Livingston, Barry Adcock, Nick Walsh and Michael Chambers. Seated: Richard Lau, Gill and Chris, Peter Pun and Noel Preston.

LEFT: In Oz, from left Bill and Heather Macmillan, Chris and Jim and Muriel Kehoe.

It transpired that Mike had also shared a flat with Jim Kehoe while at college, but had not seen him for some time.

Dick honoured in Mexico

MINESMAN Dick Whittington, (ESE 74) president and CEO of Farallon Mining, recently received a special Governor of Canada Medal from the Queen's governor general Michaele Jean. It was presented during her state visit to Mexico.

The medal was for Dick's personal efforts in 'enhancing Canada-Mexico relations and for his strong commitment to corporate social responsibility in the Canadian mining sector in Mexico'.

Dick writes: 'It reflects well on the RSM, as it was at the RSM that the building blocks for my dealings in the mining world were instilled.' dickwhittington@farallonmining.com

Dick Whittington with the Governor General (centre) and his wife of 35 years, Gillian.



Dinner guest

DR GEOFF Nicholson (Chemistry 60, 63), known at 3M as 'father of the Post-It note programme' was speaker at a successful dinner organised by C&G alumni in Sydney.



ABOVE: Bill Macmillan with (left) Chris Doubae (ChemEng 79) and Les Russell (ChemEng 86).

70 year party

'ABOUT 30 gathered to wish Jim Kehoe well at his recent 70th birthday in Australia,' writes Bill Macmillan. 'In addition to family, there were ex-workmates from IBM and friends from the rugby fraternity.'

'I was the only other Guildsman present, and possibly, apart from Muriel, had known Jim the longest. Jim and I were contemporaries back in the 1950s and have been friends ever since. In his thank you speech, Jim dwelt at some length on his time at Guilds.'

Satyabir's latest work published

AFTER all the hard graft in background research and the writing of Metal Bulletin Research's 400-page reference book *The Indian Steel Industry*, Satyabir Bhattacharyya (Business School) has now completed *Creative Strategies for Global Steelmakers Post Economic Downturn*.

This 125-page guide has the subtitle 'A top management's handbook for driving competitiveness and sustainability'.

A 15-page extract, prepared by Metal Bulletin Research London, is on the website detailed on page two.

In 1987, Satyabir co-founded Accenture in India and was the founder managing partner and country leader for IBM Business Consulting and was senior partner at KPMG. satyabir@yahoo.com

Jo'burg lunch date

TONY WILLIAMS (DIC 53) has written to say how much he enjoyed a C&G lunch in Johannesburg. Richard Gundersen and Charles Lewis are trying to resuscitate such gatherings and another is planned for August. aabw@global.co.za

Obituaries

Burma star

VINCENT STEWART (Civils 34), who died earlier this year, was assistant executive engineer in the Federated Shan States Public Works Department and chief public works officer in the frontier areas PWD of Burma.

In 1942, he participated in the evacuation of British and Indian civilians from Burma. He was awarded the MBE in 1947 for his contribution to the reconstruction of Rangoon. He married Ma Saw Tin.

After Burma was granted independence, Vincent served as chief petroleum engineer in Pakistan and, in 1962, as technical manager of the £31,000,000 Oil India Pipeline Project. He was later consultant to the Ministry of Power in London.

In his journal, lodged in Imperial archives, Vincent notes that his years as a student, 1931-1934, were 'amongst the most enjoyable of my life'.

Lifetime interest in fracture mechanics

EMERITUS Professor Ted Turner, CBE FEng, passed away quietly on February 13. He had been on Mechanical Engineering's staff for over 50 years. All Ted's interests lay in engineering of one sort or another. He so enjoyed meeting all the old faces last November's Sir Hugh Ford 75 Years dinner.

Ted went to the Kirkaldy Testing Museum of engineering test machines on its work day in December and showed a number of people around, filled with enthusiasm for his subject.

I knew Ted for about 30 years and his fondness for, and interest in, the department and Imperial was always evident. Ted was especially generous with his time for students, post-docs and younger members of staff. He would readily engage in a debate on any aspect of fracture mechanics at any opportunity.

Tony Kinloch, head of Mechanical Engineering and Professor of Adhesion.

AIR VICE-MARSHAL Mike Hedgeland (EE 51), who died aged 87 on Christmas Day, did more to further the cause of airborne radar than anyone else. He played a significant part in the development and use of blind navigation and bombing aids for Bomber Command's Pathfinder Force and subsequently served as president of the Ordnance Board.

Mike was keen to be a pilot, but the RAF valued his inventive mind more greatly and he

Key player in blind bombing radar

was commissioned into the Technical Branch in 1942. He was selected to join a team led by Dr Bernard Lovell on the development of the H2S blind-bombing radar system at the Telecommunications Research Establishment (TRE).

A period of intense activity followed and the first operational set was ready by the end of the year when Mike

took a team of engineers to the Pathfinder airfield at Gravelly, Bedfordshire, to install the set in the Halifaxes of 35 Squadron. Mike remained at the base as the first squadron radar officer appointed in Bomber Command

By the end of the war, Mike was the RAF's most experienced engineer on airborne radars. Before going to Imperial

in 1948 to gain an honours degree in Electrical Engineering, he spent the next three years at the Central Bomber Establishment working on developing the wartime aids for the next generation of RAF bombers. He learned to fly with the University Air Squadron and back at work completed pilot training, later converting to the Meteor jet fighter.*

Meeting of minds in marriage

ANTON BROWN died suddenly on October 19 at the GSA meeting in Portland, Oregon. He obtained a BSc and MSc in MGE in 1953 and 54 before working as a geologist at Opemiska, a copper mine in northwest Quebec. He returned to do his PhD in structural geology at Queen's, Kingston, afterwards teaching at Queen's, McGill, Canada; in Athens, USA, and then under CIDA, the Canadian aid agency, in Salvador, Brazil.

Back in Canada, he joined Atomic Energy, initially in Ottawa, to set up the parameters for the underground storage of high-level nuclear waste, and then in Manitoba, supervising the sinking of the shaft for the Underground Research Laboratory.

When his wife Ann joined AECL to investigate possible microbial influences on the waste, their joint interest in geomicrobiology was established and initiated their research into the metabolic importance of minerals to biofilms.

Jim was always enthusiastic

JIM CHAPMAN (Civils 57) died suddenly on October 29 in Bahrain. Joe Modro, his school and Imperial friend remembers: 'We were both in the OTC and I remember many happy times. While a student he was very active in the IC Gliding Club and continued gliding in the years after. He will be remembered by all who knew him for his love of life and great enthusiasm for everything in which he became involved.'

Always found a creative solution

ON GRADUATION, John Bennett-Powell (MechEng 40), who died on January 29, was waiting to be called up into the Royal Engineers when he asked a friend at the Royal Aircraft



Gwen and John Bennett-Powell, eldest daughter Gay and Air Commodore Sir Frank Whittle.

Establishment, Farnborough for a temporary job. From there, he was loaned to Power Jets in Lutterworth, where Frank Whittle was developing his turbojet design. In fact, his call-up never came and he spent the war at Power Jets.

Four rigs were in constant use testing flame tubes, by now using atomisers on the fuel to give a constant fine spray. One of the secretaries typing up test results was Gwendoline Drage. Gwen and John's marriage lasted from 1947 until his death.

John joined the Bank of Eng-

land printing works in the early 50s but in 1955 moved to Lincoln, where Ruston and Hornsby used jet engine technology for civilian use and gas turbines.

With a colleague Derek Brindley, he created Hydrolincs in 1971, and for the next 25 years developed one-off hydraulic designs for pumps, drives and power units, for use in mining, textile manufacture, sugar production and horse training! At weekends he often worked with Remap which supplies one-off aids for disabled people.*

Jane Bennett-Powell

Richard Charles writes about his older brother Chris Charles who died last May 30

Well-respected within the MoD

CHRISTOPHER CHARLES devoted his working life to the pursuit of excellence in a niche area of mechanical engineering: high power, high speed gearboxes – primarily for ship's propulsion.

Working for one company that itself underwent changes of identity (from AEI to GEC to Alstom), Chris shared his exploits with a remarkably stable and loyal team. Together they grew the position of the company and established a national technological resource of

strategic value. Without seeking recognition Chris achieved an international reputation as an outstanding engineer and specialist. He became technical director.

Chris' total commitment to his company's cause nurtured a succession of home and export sales that secured the commercial viability of the business over a long period. The gearboxes were big, reliable, cost effective and aesthetically attractive, and imaginative design solutions addressed the

varied specifications (particularly complex in the days of dual steam turbine / gas turbine propulsion).

A master at trouble shooting the physical problems that arise in manufacture and operation, Chris also led progressive design innovations that tackled intractable issues such as gearbox noise (critical for stealthy naval applications). Current MoD projects benefit from his enlightened and sustained effort and he was well-respected in the Ministry.

Chris was born in 1938 and followed brother Michael (Chem Eng 57) to Imperial by winning a state scholarship. He obtained a first class degree in mechanical engineering in 1959.*

Peter Martin

WHILE working with consulting engineers, Peter Martin (Civils 50, DIC 51) took running water to Suffolk in 1952, going on to form BMMK with colleagues and working throughout the world. Peter was chairman in the 80s until retirement.

Finally, he was deputy chairman of Bingham Cotterell, which had merged with BMMK, and later consultant. Peter was a freeman of the City of London.*

Alan Doncaster

ALAN Doncaster completed a degree in civil engineering in 1956. He died last November.

More complete versions of obituaries, marked with an asterisk *, can be found on the website address given on page two.

Guildsman greatly missed

CARL (THEO) MARX, past president of the CGCA and chairman of the Association of Jewish Refugees, 1976-1994, died on January 6, aged 89. He was intelligent, cultured, inquisitive, witty and hard-working – and is a Guildsman who will be greatly missed.

Carl was quiet, unassuming, gentle and a very effective Guildsman. He always had a smile on his lips and shared his delight in the world generously. He never seemed hurried or harassed. He was meticulous and methodical, working long hours to achieve his objectives.

Carl was an enormously influential supporter of the City and Guilds College through his long service as a member of the committee of the CGCA, the Wine Committee and as the organiser for many years of the Annual Dinner. He was a committed member of the Links Club attending many dinners up until his last annual dinner in 2008. He was a keen mason and belonged to the Imperial College Lodge and three others, becoming master of two.

Small is good

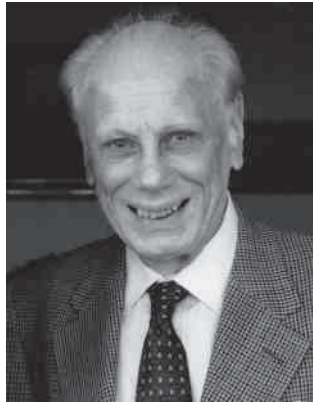
In 1977-78, Carl was president of the Old Centralians, now the CGCA. It was the first time the Association had a president who was head of a modest-sized family engineering business. As he said in his dinner address, 'one of those curious organisations...to which ministers pay lip-service and then ignore when formulating policy and yet which have

survived amongst the giants in unending variety.

Carl saw the importance to the nation of small enterprises and independent engineers. His chief guest that evening was from big engineering, Sir Monty Finniston. He had recently stepped down as chairman of British Steel and had been invited by the Government in the previous year to report on the state of British engineering.

In his speech Sir Monty railed against the failure of government, CBI and the TUC to understand the nature of engineering and manufacturing. His report, *The Finniston Report*, published in 1979, led to universities awarding engineering degrees (BEng), and the formation of Women in Science and Engineering (WISE). Carl Marx, typically, had taken an opportunity of the dinner to put over his views.

Carl Theodore Marx was born in 1920 in Frankfurt, the son of Erna and Erich Marx. His father, alert to the threat that Hitler posed, sent him to boarding school in England in 1934. The family did not follow for another three years. He became fluent in several languages at Mill Hill School in northwest London.



Called Theo by his family and his many friends, he was always known as Carl at College, at least in my hearing.

Internment

In 1938, he won a place to study mechanical engineering at City and Guilds College. In his second year he was elected secretary of the Guilds Union and in his third year, 1940, he was elected

president against the previous president's nominated candidate.

However, his tenure as president of the Union was short lived. Under Section 18b of the Emergency Powers Act 1939, Carl was interned with

many members of the German Jewish community on the Isle of Man at Camp Onchan. It is typical of Carl that he should start an 'English University' to teach English to fellow internees. His son Geoffrey recounts that many years later he would meet strangers in the street and at airports who would stop him and, sometimes, still with a heavy continental accent, tell him how much they appreciated his teaching!

Years later, too, Imperial College offered him the degree that was snatched away from him, but in typical fashion he

declined. As he was wont to say, he preferred the letters PM after his name: Plain Mister.

On his release from the Isle of Man, Carl worked for Napiers, a West London company manufacturing aircraft engines but shortly after joined his father who had set up an engineering company contributing to the war effort. Together they developed a new form of cable connector and their company Erma Limited flourished until it was sold in 1985.

During his engineering career he was an active member and treasurer of the British Electrotechnical and Allied Manufacturers Association and for many years was involved in committee work at the British Standards Institute.

Working for Jewry

Carl played an active role in organising events at the West London Synagogue (WLS) during the war and his gift of being able to connect people found expression through the junior membership group and its journal, *Focus*. It was through WLS, at a dance he had organised, that he met Anne Marie Kohnstamm, whom he married in 1948. It was a marriage enjoyed for 61 years.*

Roderick Rhys Jones

To read Rod's complete obituary which covers Carl (or Theo's) dedication to helping displaced Jews and his urge to collect and collate just about anything, go to the web address on page two.

A life-long enthusiast for Links

BARCLAY Humphrys (Civils 42) died on October 5, aged 87. An active sportsman, he rowed for the first VIII, competing in the annual boat race against Cambridge in 1942 when Oxford declined the challenge. He became a member of the Links Club and kept lots of photos, magazines and the like pertaining to the club. He valued his membership throughout his life.

On completion of his stud-

ies in 1942, Barclay joined the Royal Engineers. After surviving zero hour on Gold beach (demolishing anti-tank defences), he progressed through occupied France with further demolition on the way until he finally got to use his construction knowledge building river and canal crossings. Following VE day he served in India near the Afghanistan border, retiring as a captain.

Barclay secured a post with

Sir Robert McAlpine where he stayed until his retirement. He rose to be a senior project manager particularly enjoying a spell in Scotland overseeing the construction of concrete oil platforms at Ardyne Point in the 70s. At the time these were the largest floating artefacts in the world.

His retirement was equally full, being involved in local conservation, serving as a church warden and parish councillor.

Sir Norman Payne

SIR NORMAN PAYNE (Civils 49), who died on February 7 in Guernsey, was president of the CGCA during 1988-9. He was a distinguished chairman of BAA and was made an MBE.

Richard Whidbourne

JEAN Whidbourne has written that her husband Richard passed away peacefully on December 22. Richard gained a civil engineering degree in 1950.

