





Imperial ENGINEER



**NEW FACULTY PRINCIPAL
NZ RUGBY REPORT
PRESIDENTS' VIEWS**

ISSUE ONE *AUTUMN 2004*

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



ISSUE ONE *AUTUMN 2004*

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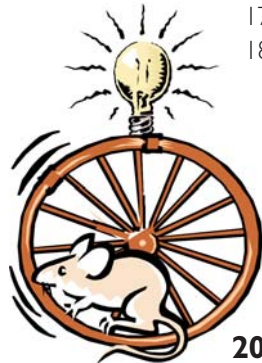
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COVER PICTURE: Bo and Clem, CGCA and RSMA's mascots, parked in unison outside Clem's garage.

Imperial ENGINEER

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DEADLINE FOR THE NEXT ISSUE IS 11 FEBRUARY

The editorial board of *Imperial Engineer* reserves the right to edit copy for style and length.

Into the future together

CGCA and RSMA secretaries Bill McAuley
and Paul Holmes introduce a joint venture



WELCOME to this inaugural edition of *Imperial Engineer*. This is the first collaborative enterprise between CGCA and RSMA and has been inspired, as many of you know, by the amalgamation of Guilds and RSM into the Imperial College Faculty of Engineering.

In developing our content, we have been guided by some basic principles. We are aiming for material of broad appeal to our members by balancing technical articles, old student information and material of general interest, but always remembering the role for which the college prepared us.

For the last 500 years, science has shaped technology and technology has shaped society. Our RCS colleagues are educated to do the science bit and we have been educated to do the technology.

Even if we now make a living farming turtles or running unit trusts, none of us ever forgets this,

particularly in a world where the fruits of technology abound amid a spectacular public ignorance of how things actually work.

So, if *Imperial Engineer* has a theme, it is to try to connect technology to its wider context and to help the associations play their part in promoting technical education and careers and in improving scientific literacy in general.

Additionally, one of our primary aims for this publication is to maintain the news content that both *Update* and *Imperial College Engineer* provided its readership. We hope that we have achieved this. We also hope that members of each association will enjoy the other's input.

This is the first cooperation between CGCA and RSMA. It will not be the last. As IC has amalgamated its engineering and technical activities, so we, in the two alumni organisations, will seek common ways to promote our common interests.



Paul (left) and Bill at a recent drink to the future.

Chapter will foster strong links

Representatives of all stakeholders were present on 9 June at the launch reception in the Senior Common Room

'THE FACULTY OF ENGINEERING, and Imperial as a whole, places a high value on maintaining and, indeed, enhancing its relationship with our alumni', Sir Richard Sykes said at the formal launch of the Engineering Chapter.



The Chapter is a partnership of the Faculty of Engineering, City and Guilds College Association (CGCA), Royal School of Mines Association (RSMA) and the Faculty students' union. It draws together the expertise and membership of its associations in providing alumni, students and staff with information, publications, events and networking opportunities.

The aim of the Chapter is to foster the existing and planned activities of CGCA and RSMA. The emerging external relations' strategy of the Faculty emphasises the importance of fostering and maintaining strong links with alumni, Sir Richard continued.

'It identifies a number of important objectives in which alumni can play a key role in helping to attain. CGCA and RSMA can provide significant support in achieving these objectives.

'I am sure this exciting venture will be a lasting legacy in developing the

relationship between staff, students and alumni, to the benefit of all.'

Bernie Pryor, who spoke on behalf of the RSMA, talked about how the Chapter was conceived, initially from talks with CGCA, Colin Terry and then John Perkins as head of Faculty. They had agreed that there seemed to be synergies which could benefit the students. It was a long time in gestation but a good start had been made.

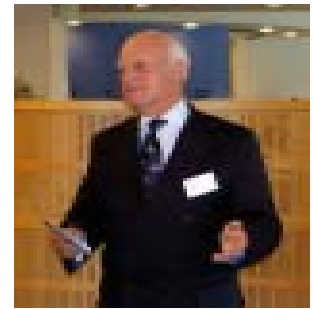
'There had been a lot of concern about whether there was another agenda happening but gladly that was not the case', commented Bernie. 'The RSMA will retain its traditions and identity and we look forward to creating a better structure for students and alumni.'

On behalf of CGCA, Sir Colin Terry said the launch was singularly important in the ongoing excellent relationship between the

associations and Imperial. In this regard, he paid particular tribute to the Rector for his encouragement to achieve this result.

In addition, Sir Colin said that one of the main driving forces behind the Chapter was, of course, Professor John Perkins, who was always very supportive of the work of the Associations. He wished him luck in his new post at Manchester University.

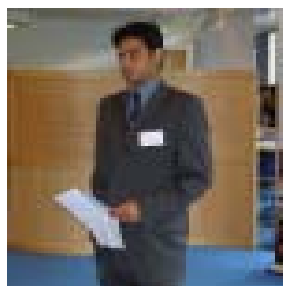
However, all in the College should not forget the important groundwork of his predecessor as president – Professor Peter Hills. Moreover, it was clear that Professor Bob Schroter had been very active in publicising the already excellent work of the Associations and of CGCA in particular. He also thanked Engineering Faculty Administrator Alison Bowen for smoothing the way for its formation.



Last but not least, Barry Brooks had been so hard-working, in resolving several of the issues facing the Faculty and the Office of Alumni Development (OAD), that Sir Colin could not thank him enough for the very long hours and travelling time he had put in.

Sir Colin said he was sad that, having been so involved with the setting up of the Chapter, in conjunction with so many within the College and Association, that he himself had come to the end of his tenure as President of the CGCA.

He thanked all those involved and wished the Chapter well for the future. He was sure that this was the right decision and that both the College and the associations would thrive.



AT THE CHAPTER LAUNCH: Top right, Sir Colin Terry. Above left, Bernie Pryor. Above, the launch in the Senior Common Room. Left: Shrenik Patel, 2003-4 president of CGCU.

A role model for women engineers

Colleen Richardson talked to Julia King as she prepared to take over as the new Principal of the Faculty of Engineering

A FELLOW of seven societies and institutions and the recipient of 14 awards and honours, Julia King is a Fellow of the Royal Academy of Engineering and received a CBE for services to materials engineering in 1999.

She gained a first in natural sciences, in metallurgy, at New Hall, Cambridge and completed her PhD on fracture mechanics.

After 16 years as a researcher and lecturer – including seven at Nottingham University and a return to Cambridge – Julia joined Rolls-Royce Aerospace as Head of Materials.

'... I like to see something emerging that makes a difference'

'When I went to Rolls-Royce (which had to be one of the UK's most exciting companies), I not only had the chance to work in aerospace, energy and marine, but as an engineer in an operational role.

I enjoyed it most when I ran the fan system business. We were responsible for designing, manufacturing and delivering the front part of the engine. There's nothing more exciting than seeing the design develop, the factory turn it into a product, our part of the product become part of the whole engine and then seeing it run. I don't get that buzz from pure science. I'm a practical person – I like to see something emerging that makes a difference.

'Another reason I moved to Rolls-Royce was because much of the research was of high quality and very clever.

But it was a solution looking for a problem', she said.

'There's a strong move now to get a better integration of human sciences in designing engineering products for people to use. Too often we don't take human behaviour considerations into account until too late in the design process.

'I certainly feel this is an area that we should tackle in the future. I also think it's an aspect that might well attract more girls into engineering.'

Julia is a strong advocate of encouraging more youngsters, particularly women, to enter science and engineering, as Sir Colin Terry said when introducing her talk to this year's CGCA AGM.

As she says, women form 52% of the population yet there are too few in science and engineering. For example, only 2.8% of chartered engineers are women, although 15% of people with engineering degrees are women. Only 11% of engineering companies' managers and 1.5% of the Royal Academy of Engineering fellows are women.

'But', says Julia, 'research shows women work better in teams and the best team is one of seven women. We listen better, interrupt less than men and find it easier to deal with people issues'.

During her AGM talk, *Alice in academia and industry: shrinking, growing and learning*, Julia said that, as a child, her favourite book was *Alice in Wonderland*. 'She was a great role model

for little girls. One of my favourite quotes is: "I've a right to think". If we brought children up with that in mind, it would be rather good.

'During my academic career, I had a wonderful time with relatively little teaching and plenty of time for research. But, indeed, the time I spent



teaching was hugely enjoyable. It's a fantastic honour to be part of people's development. I think that everyone should teach for some period of their life. In industry, it seems to make them such good members of research teams.

Since 2002, Julia has been Chief Executive at The Institute of Physics, a rather special charity and professional institution with 37,000 members. It spends about £4 million a year promoting science in schools and is a lobbying organisation for physical science.

Julia admits to being 'a terrible squirrel' although organised, methodical and with a very good memory. 'I'm a great writer of lists and like to tick them off as things get done', she says.

Explaining her energy and optimism, she says she's been lucky enough to have been given good educational opportunities. 'I've never really had to do anything I didn't want to do. I believe that you make your own luck to a degree, but you have to be given a good kick start.'

I asked Julie what made her decide to take the job at Imperial.

'Well, it's a job I really couldn't resist. Although I trained as a scientist, I've always worked as an engineer. Sometimes I find pure science a bit frustrating. As a child I liked taking things apart and finding out how they worked. So when the sewing machine broke, I had to mend it. I hugely enjoy seeing something I've done, in action.

'Another area of real opportunity is developments that will lead to the strengthening of the UK medical equipment industry. Smaller and smaller electronic devices, in flexible materials and with improved compatibility with the body, offer many new opportunities to "repair" people.'

'...it's a job I really couldn't resist'

'So reason one was the engineering and medical opportunities. Two was the possibilities of interaction with the developing business school. Third was Richard Sykes's approach. I think it's very refreshing and dynamic to see what he seems to be doing to Imperial. He is pragmatic and brings a strong sense of direction, ambition and urgency to the place. That's exciting.'

£16,000 spent by OC on students

DURING the year to June 2004, the Old Centralians' Trust distributed a little over £16,000.

Student hardship has first call on the Trust's resources and two cases arose this year, leading to grants totalling £2,200. One of these was made within the mechanical engineering department and was, therefore, partially supported from the Peter Moore Memorial Fund.

Four student accommoda-

tion bursaries, each valued at £700, have been awarded. These bursaries are aimed at students who are active in college affairs, whether in sport or in student societies, and are intended to ease the cost of living nearer to college to facilitate a high level of involvement.

Nominations have recently been received and accepted for no less than 13 such bursaries during the 2004-05 academic year.

Four John Elliott bursaries – totalling £1,800 – have been made to key officers of the

City & Guilds College Union. These awards are intended to support the officers in meeting the general personal costs of maintaining an active role.

The Peter Moore Memorial Award, taking the form of an engraved tankard, was presented at the CGCA annual dinner to the current driver of Boanerges, the Engineering and Motor Club mascot.

No award was made this year of the Holbein Memorial Award. However, it is understood that a nomination for this Union-nominated sportsman/woman of the

year will be forthcoming for the award due in Spring 2005.

The Trust allocated £1,500 in support of the IC Rugby Club 2004 tour to New Zealand, and £1,250 towards the 2004 expedition to El Salvador. A grant of £750 was made towards the Civil Engineering Society's visit to Barcelona.

As in previous years, the OC Trust has supported the 'Pimlico Connection' student mentoring scheme by providing the sum of £1,350 towards running and incidental expenses. CHRIS LUMB, Chairman, Old Centralians' Trust Fund Board.

RSMA date change

RSMA'S annual dinner has changed its regular slot of the second Thursday in November because that is Remembrance Day this year. Instead, it will be on Thursday 18 November at the Polish Club.

Join decade lunch?

CGCA IS continuing its popular 'decade reunion lunches', with this year's taking place on Saturday 24 November in the senior common room.

Anyone who graduated in a year ending in four is welcome to attend, including RSMA members, says CGCA secretary Bill McAuley.

NOTE: There are booking forms for both these events on the carrier sheet which delivered this issue of Imperial Engineer.

CGCA annual dinner

ENGINEERING in the information age is the theme of Motorola Chairman, Sir David Brown's talk at the next CGCA annual dinner. The date is Tuesday March 3 at the Saddlers' Livery Hall.

From his twin perspectives of a career in the fast-moving, global electronics' industry, and presidency of one of the world's largest professional engineering institutions, IEE, Sir David will discuss engineering today and the opportunities it offers to today's professional.

Making a good but long recovery

READERS of *Update* will know that, in March 2003, RSMA's senior vice-president Charles Hutson suffered very severe head injuries when he tried to stop a robbery at his local jeweller in Highgate, London. He was deliberately thrown off the bonnet of the speeding getaway car.

Charles is making a good recovery but after 18 months has still more progress to make. He's expected to be at home full-time by now, having had part of his skull replaced with a titanium plate.

Charles's recovery has been aided by superb specialist medical and rehabilitation facilities but above all by the loving and patient support of his wife Cathy and their two young children, Rollo and Tally.

Using a network of emails Cathy, a financial journalist, has kept Charles's many friends, colleagues and other well-wishers regularly informed of his progress.

She reports that 'he's in good spirits and his wicked sense of humour is alive and well, as the nurses have discovered'.



Charles (left) enjoys a joke at an annual dinner.

At the time of his accident, Charles was in partnership running a financial investment boutique, having previously specialised in mining investment with Credit Suisse First Boston in London. He started his career mining in South Africa and was recently President of the South of England section of the IMM (now IMMM).

We are looking forward to the time when Charles Hutson is fully able to resume work and his involvement in RSMA. Meantime, Charles and Cathy are expected to come to the November annual dinner.

Log on for IE

THIS FIRST edition of *Imperial Engineer* will also be available on the Chapter, CGCA and RSMA websites in due course.

Although all CGCA and RSMA members are receiving a printed copy this time, it's hoped to beat snail mail and save some money by those with an internet connection receiving it that way in the future.

Essay on Amazon oil wins prize

THIS YEAR'S winner of RSMa Trust's essay competition was Marcella Feilhaber, a fourth year MEng student in the petroleum engineering department.

This traditional competition was revived four years ago with a silver medal and a premium of £200 as the prize.

The subject matter has to link concern for the environment with any aspect of the RSM curricula. The specified length is around 2,000 words.

As it has become apparent that most modern schools no longer teach the essay format successfully, this year's remit was specifically widened to 'the



Marcella received her medal from Professor John Monhemius (left). With them is Bernie Pryor.

best piece of writing'. Adaptations of coursework or vacation reports was, therefore, acceptable. The 2004 competition attracted 11 entries, several, in fact, in essay style.

The judging panel of three (non-academic) members each drew up a different shortlist, which was a tribute to the standard of entries. They were,

however, unanimous in their choice of winner.

Marcella, a Brazilian educated in Europe and fluent in several languages, wrote about the Urucu gas and oil development in the environmentally sensitive Amazon.

An edited version of her essay will be published in the next issue of *Imperial Engineer*.

UROP

OC bursaries increase at CGC

RESEARCH experience for CGC undergraduates has been supported during the last academic year through the provision of 12 half-bursaries, averaging £450 each. These were to students participating in the UROP scheme during the Summer vacation.

A decision has been taken to increase the number of UROP half-bursaries to 15 next year.

Once again, the Old Centralians' Trust will sponsor a reception for students undertaking UROP assignments under the Delaware exchange scheme.

RSMA funds summer research

RSMA bursaries, under the Undergraduate Research Opportunities Programme (UROp) were awarded this summer to Louisa Preston and Alex Gibson.

Louisa, from the Department of Earth Science and Engineering, worked on the

characterisation of Antarctic micrometeorites, supervised by Dr Matt Genge.

Alex, from the Materials Department, worked with Dr David McPhail on ways of arresting the decay of Venetian glass objects.

Take a trip back

FIND OUT what's happening back at your old college by logging on to two new websites for De La Beche (geology society) and MatSoc, says John Sykes.

Both are very interactive and contain loads of information. Addresses are www.delabeche.co.uk and www.union.ic.ac.uk/rsm/matsoc.

RSMA Trust spreads load

THE RSMA TRUST Chairman's report for the year ending 31 December 2003 was presented at the Association AGM, in June, by Professor Rees Rawlings.

Key points were:

- The Trust's assets, comprising cash balances and student loans, were £44,583. Most of these are held on deposit.
- Three loans, amounting to £2,400, were granted, and repayments of £2,900 were received, leaving a balance of £500 outstanding at the year end.
- The Dean's discretionary fund is proving successful and grants of £970 were awarded.
- Subsequent to the year-end, one grant of £200 and two loans, amounting to £1,250, were made.

DIARY

Saturday October 16

CGCA Walk with a Past President

Thursday 18 November

RSMA annual dinner, Polish Club

Wednesday 24 November

Networking reception for graduating students, Polish Club

Saturday 27 November

Decade reunion lunch, senior common room

Saturday 4 December

CGCA Walk with a Past President – City markets

Thursday 16 December

CGCA Christmas lunch seminar, Speaker Vice Admiral Sir Jeremy Blackham, 170 Queens Gate

2005

Wednesday 5 January

House of Lords' business seminar with Lord Tim Garden

Thursday 3 March

CGCA annual dinner, speaker Sir David Brown, Saddlers' Livery Hall

Wednesday 18 May

CGCA AGM and President's evening. Read Theatre and SCR

June TBA

RSMA AGM/Final year dinner

For more information about any of these events, contact Teresa Sergot (see page two)

A way of increasing services

RSMA President Giles Baynham emailed this message from British Columbia about the new relationship between RSMA and CGCA



GILES BAYNHAM, above, who started his second year as RSMA president this summer, graduated with an MEng in mining engineering in 1995.

Having joined Rio Tinto as a graduate engineer from college, he moved in 1996 to NM Rothschild where he worked for nearly five years, arranging mining finance for projects round the world. This was followed by two and a half years at the Industrial Bank of Japan, focusing on oil and gas and the Middle East. He's now working back in mining finance for Endeavour Financial, based in Vancouver, although he is often in London.

What's in a name?

AVID READERS will have noticed that the students' union has been variously referred to as City & Guilds College Union (CGCU), Imperial College Engineering Students Union (ICESU) and Faculty of Engineering Students Union (FoESU). The Royal School of Mines Union (RSMU) is not mentioned. What is happening?

With the formation of the faculties, the City & Guilds College and Royal School of Mines were, effectively, integrated into the new Faculty of Engineering. Within this new body, there is one engineering students' union, combining the original CGCU and the ex-RSM students. The

students have determined, by ballot, to retain the name CGCU for this new arrangement. With CGCU, the RSM Clubs' and Societies' Committee continues to advocate the Miners' interests. However, all students are represented by the CGCU executive, which has engineers and miners as elected members. For instance, at the Chapter Board, students' representatives are CGCU President, John Collins and Union Academic Affairs Officer, ESE student Ili Afifuddin.

Where union matters are being discussed in the wider context of Imperial, the generic name, Imperial College Engineering Students' Union is used.

I SHOULD LIKE to welcome members to the new joint publication of the CGCA and RSMA.

The move to publish a joint effort is also in line with the moves we have made as an Association to reflect the new structure of Imperial College. I look forward to collaborating on *Imperial Engineer* as well as with events like the networking reception.

We very much hope that *Update's* incorporation into the new publication will increase the services provided, allowing more news of events, both RSM and College, and more news of our membership and the student body. There will also be some technical articles highlighting the world-class research and teaching taking place within RSM and the

Faculty of Engineering.

While this first edition is being distributed in hardcopy, future editions (and now even this one) will be available in electronic format, as *Update* was.

It is also expected to reduce our publication costs, allowing RSMA to put its funds to other uses, especially helping students.

I should also appreciate feedback from the membership, either to myself, the committee executive or through the Chapter office and Teresa Sergot.

Finally, I should like to thank those involved in producing this first joint effort. I look forward to seeing some of you at coming events, like RSMA's annual dinner in November. Peace and love to you all –

El Presidente

LET US KNOW WHAT YOU THINK

'Give me something I've got time to read', we were told. Have we lived up to that request?

The editorial board would be grateful for

- ★ **your comments on this first issue's length and format;**
- ★ **your news and stories (editorial assistance provided!).**

Incidentally, did you have as much fun when you were a student as the current ones did in New Zealand? Write and let us know. Contact is Teresa Sergot (address on page two).

**DEADLINE FOR NEXT ISSUE IS
FRIDAY 11 FEBRUARY**

ON COURSE

Barry Brooks,
President of CGCA 2004-2005
writes about the mission to make it the
association of first choice

GUILDSMEN AND WOMEN will recall Sir Colin Terry's letter and last winter's *Imperial College Engineer* in which we described how we need to evolve CGCA if we are to survive.

Prospective members will ask: 'what is in it for me?' and, if we can't meet the needs of today's young engineers, who are under pressure from other suppliers of social, networking and career support, they will go elsewhere.

That would, in my view, be a sad waste of the time and effort invested in making our engineering graduates special in the world. If we can capture the enthusiasm of more young and mid-career alumni to contribute just a little time and commitment, we could not only double our membership in three years, but turn CGCA into THE association to which people will want to belong for its vibrant society, global networking opportunities and its members' willingness to help successors. But, is that vision shared by others?

The CGCA committee is seeking to identify the range and scale of services and activities that will be attractive to existing and potential members. Where does CGCA wish to be in, say, three years' time? To help in identifying the answer, our draft business plan has the following initial ideas.

Vision for 2007

That we are the alumni association of first choice to all students, staff and alumni of ex-City & Guilds College and those parts of the Faculty of Engineering not covered by RSMA.

Mission to deliver that vision

To develop a range of services and activities in support of:

- **Helping current students.**
Alumni to assist FoE students to prepare

themselves for life after college, by developing their networking skills, building contacts with alumni and obtaining jobs

- **Facilitating member networking.** To create opportunities for members to socialise with each other via an extensive CGCA network

- **Providing information and services.** To provide links to information about college, the Faculty, industry, CGCA and alumni news and access to exclusive services (eg careers' advice)

- **Provide financial assistance to students.** CGCA and alumni to provide financial help to students in need, and to support certain student activities, via OCs' Trust.

One metric for our success will be growth in members. But, how do we grow when we are limited by today's resources in trying to provide more services so as to attract and retain members? We would like to know what member services are wanted by current and prospective members.

To tease out some answers, the Recruitment Working Party, under Oliver Pell, is targeting segments of students, young, mid-career and retired alumni. The Careers' Advice WP, under John Simpson, is considering how best to provide better support for students and alumni through a possible joint programme with Imperial's Ca-

reers' Advisory Service. Programme Manager Frank Brown is developing a range of new events including informal social gatherings. These latter events depend on the level of interest amongst members, so if you want to arrange something, or to form a local group closer to where you work or live (not just in London), tell Frank.

In parallel, Neil Madhvani's e-Business WP is exploring how we can exploit internet technology to improve our administration (a web-accessible membership database) and

communications (again, encouraging greater use of the website and email). For us to speed information flow and keep costs down, please make sure Teresa, our Chapter Manager, is kept up to date with your email address and other details. By working closely with RSMA, CGCU (aka the Imperial College Engineering Students' Union) and the Faculty of Engineering as partners in the Chapter, we hope to find other ways to enlarge the programme of activities and services.

To use a naval analogy, the ship is on course, the crew is busy, who wants to be a passenger?

BARRY BROOKS, far right, at the clothing of new liverymen of the Worshipful Company of Engineers. CGCA Past President Sir Colin Terry (second left) is next to the Master, Sir 'Den' Davies.



Senior service

BARRY BROOKS (FCGI CEng FIEE FIMarEST) read elec eng from 1968-71, sponsored by the Royal Navy. His subsequent naval career included service as a nuclear propulsion engineer and weapons engineer in submarines, R&D, procurement and logistics and a post in the Cabinet Office.

Through the 1990s, Barry worked in MoD Whitehall in several major change programmes,

including Smart Acquisition, revamping project management processes and organisations, and forming the Defence Logistics Organisation.

Retiring as a commodore, Barry worked for IBM and is now director of his own interim management and consultancy company.

About 12 years ago, Joe Fernley, then IC Engineer Editor, re-recruited him to CGCA's committee.

Grant broadens scope at ESE

by Professor John Monhemius, Dean of RSM

RSM'S DEPARTMENT of Earth Sciences and Engineering (ESE), created three years ago as a result of the reorganisation of Imperial, covers the teaching and research interests of geology and mineral resources engineering

It has an extremely broad portfolio of research. Seven research groups range from petroleum reservoir physics to planetary science; from mine restoration to palaeontology.

Discontinua

ESE has recently won a major research grant from the Engineering and Physical Sciences Research Council for research into the modelling of the behaviour of packs of solid particles (discontinua). The structure and emergent properties of complex packs of particles can be predicted by modelling the individual particle interactions. A recently developed

mathematical technique, called the combined finite discrete element method, is used to simulate realistic particle interactions and particle deformation responses.

It is now possible to analyse and visualise the interaction behaviour of dynamic collisions and flows of irregular-shaped bodies typical of rock fragments. In recent years, the group's key developments have enabled simple systems approaching one billion particles and large systems of complex shaped particles to be simulated with greater accuracy. This work has the potential to benefit all seven research groups.

Stable isotope analysis

ESE has developed a centre for isotope analysis with the Natural History Museum's Department of Mineralogy. This mass spectrometry laboratory, which has a Micromass IsoProbe multicollector-ICPMS

and a VG PQ3 quadrupole ICPMS with laser ablation, is located within the museum's new analytical laboratory facilities. It is supported by sample preparation and clean laboratory facilities in the Museum and at Imperial.

The isotope research group has successfully developed sample preparation methods for a wide variety of materials to separate Cu, Zn, Fe, Pb, Cd and V from various complex matrices. Analytical measurement protocols for these elements have been developed to enable isotope ratio measurements for these elements with high precision. These isotope systems are of immediate interest to present and planned ESE research studying geological, environmental and planetary processes, as well as environmental health studies.

Recent research projects carried out in the isotope analysis facility include the use of element isotope compositions; elemental ratios and refractory metal patterns to monitor the sources and pathways of pollutants released during mining, and zinc isotope fractionation in hydrothermal ore deposits.

Materials expands portfolio into new areas

by Dr Richard Dashwood, Materials Senior Lecturer and Director of Undergraduate Studies

MATERIALS Department, the other half of RSM, has a research portfolio that ranges from traditional material science to the modern areas of tissue engineering and nanomaterials.

The electron microscopy suite has benefited from new state-of-the-art electron microscopes and a partnership agreement, signed with the Zwick Roell Group, has resulting in a fully-equipped suite of mechanical testing facilities for teaching and research. Within the processing area a 500-ton hydraulic press has been refurbished and equipment acquired for hot isostatic pressing and plane strain compression testing. One new technique to the department is x-ray tomography. In combination with three-dimensional image analysis, it can be used to develop three dimensional structural images with a resolution of less than 1 μ m.

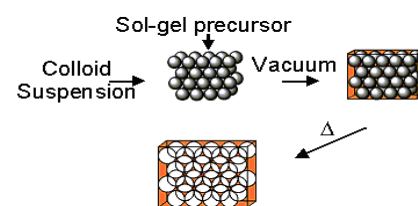
While the department maintains its strong international reputation in the traditional areas of metals, ceramics and glasses, its research portfolio has expanded, as a result of recent academic appointments, to include areas such as tissue engineering and nanotechnology.

The department now has regenerative medicine activities which include the directed differentiation of stem cells, the design of novel bioactive scaffolds and new approaches towards tissue regeneration. Nanomaterials are a hot topic at present. Those which have excited great research interest in recent years are three-dimensionally ordered macroporous (3-DOM) materials. They have a potential for use in a diverse range of applications, including optoelectronics, sensor technology and lithium ion battery materials.

Research is focused on engineering the nanospaces in 3-DOM solids to develop an entirely new class of designer multifunctional porous nanostructures. The



SEM image of "free-standing" 3-DOM material formed from TiO₂.



Schematic illustration of the formation of 'inverse' opal by vacuum-assisted infiltration of a 'normal' opal template using a sol-gel precursor

figure, top right, shows a template-directed route to form these materials where the template normally consists of a close-packed array of mono-disperse polymer spheres. The interstices of the template are filled with a precursor to form a composite structure. This is subsequently heated to convert the precursor to the desired solid compound and simultaneously remove the template.

These are examples of research in its infancy. The more mature areas are also booming. For example, a spin out company CeresPower Ltd has been established to exploit the ceria-based intermediate temperature solid oxide fuel cells developed in the department. It now employs 25 people in purpose-built premises in Crawley.

Water management wins Jean an OBE

Career achievements help raise belief in women's ability

THIS YEAR Jean Venables (Civil Eng 1966-9, 1973-74) was awarded an OBE for services to flood defence, having been Chairman of the Thames Region Flood Defence Committee (RFDC) for nine years. Her service to the wider civil engineering profession was recognised with an MBE in 1997, and she was honoured in 2001 with the award of the Garth Watson Medal by the Institution of Civil Engineers, where she is now a Vice President.

Following her MSc in public health engineering, Jean has had a long involvement with flood risk management, water and wastewater engineering, waste management and other water resources issues. She has done much to promote flood awareness and care of the environment – with an emphasis on sustainability – to politicians and the public.

CEEQUAL

'What I'm really pleased about is the launch of CEEQUAL – the Civil Engineering Environmental Quality Assessment and Award Scheme. Roger (Jean's husband and fellow CGC student) and I had the idea. With the support of ICE, we developed it with many collaborators.'

CEEQUAL's aim is to make civil engineering more environmentally friendly. The award recognises high environmental performance in which clients, designers and contractors go beyond the legal minimum on civil engineering projects. (See www.ceequal.com for details.)

To place emphasis on the fact that she is a woman Vice President of the ICE is, Jean believes, a distraction.

'Ever since I graduated, I've been actively contributing to the development of the profession, including making sure that women are included on committees and working parties. But I've never considered myself as a "woman engineer". What I have been trying to do is to establish role models. I was the first woman to be chairman of the Thames RFDC and now there are more appointed. However, if a woman does badly, people hesitate to appoint a woman again.



Jean after receiving her OBE this year.

'Just after my MSc, I worked on the Thames Barrier Project – on aspects of operating the Barrier – so it was quite a twist of fate I ended up as Chairman of the RFDC.

While bringing up her two sons, Jean lectured at Kingston Polytechnic as well as being on the Thames RFDC. Now she and Roger (one of CGCA's executive) run the Venables Consultancy and Crane Environmental.

At Crane, Jean is principally concerned with liaising with clients and within her own areas of expertise, especially flood risk and waste management.

Through Venables Consultancy, she runs courses and provides consultancy on the professional development of civil engineers and other construction professionals

Construction waste

Jean spent three years on the ICE's Waste Management Board and two years chairing the joint ICE/Institute of Waste Management's Working Party on Construction Waste. This has addressed issues of waste classification and minimalisation and the need to stimulate markets for materials made from recycled waste.

She is now a Member of the ICE's Environment and Sustainability Board, and a Member of the Chartered Institute of Arbitrators. Not by chance, Jean's professional and private interests

coincide – she is a member of RSPB and other bird groups, the Royal Horticultural Society, cycle charity Sustrans and the Global Network for Environmental Science and Technology.

Speaking about the changes in one of her major areas of concern, flood risk management, Jean pointed out that today we are much more concerned with issues of the environment.

'Providing habitat for water-borne species means that we are looking for channels that are much more natural, with reed beds and islands.

Environmental awareness

More powerful computers can now model different solutions and people have become far more aware of ecology and environmental aspects.

'We have to look at what a project contributes to habitats so that it's good for butterflies, dragonflies and birds as well as providing the engineering solution. And there's the social aspect. People don't want a wall to protect them but that blocks their river view. For example, outside Tate Modern, the flood defence line runs along the back of the walkway.

'There are some people still critical of the environmental features we are providing. But water quality has changed for the better the last 50 years. Factory discharges have reduced and the water quality from sewage treatment works is a great deal better.'

Jean has also been involved in Imperial College and CGCA affairs over the years, as a member of CGCA committees as well as attending many CGCA events. Recently she led two CGCA walks, and is a member of the IC Court.

This November Jean, as a Vice President, is taking responsibility for professional development at ICE. This includes the examination systems for qualification to become a member. In addition, she is a Vice-Chairman of the Institution's Benevolent Fund Management Committee – a part of the broader role of the Institution that is dear to her heart – as well as a member of the Institution's Ethics Committee. It all fits well with her full-time career.

FUTURE PERFECT?

Three prominent students talk about their plans for the future – both in and after Imperial – to Bill McAuley and Lynn Penfold



JOHN COLLINS

President, CGCU/ICESU

HOWEVER 'cheesy' (to use his word) it might sound, John Collins's ultimate goal is to promote engineering by going into politics or the civil service. But not before gaining some practical experience after completing his degree in civil engineering.

'I chose the course because I'm interested in the environment and infrastructure in general. As a child, I was always building towers and rail tracks. I've had work experience in transport and I'm likely to pursue a career along those lines', John says.

With a father in the army, John has travelled widely since birth in Belfast. His secondary education was also unusual, starting with Rudolf Steiner and finishing with a Quaker school.

With an Irish engineering background (two grandfathers were engineers), John's interests seem an ideal balance of arts and science. Personal passions include community involvement and the outdoors and mountaineering. In contrast, he's very musical and has considerable experience acting and stage managing.

'Wearing my President's hat, I'm committed to serving and widening all FoE students' participation in our Union. This means fully involving all students, especially those from RSM, who may feel overlooked since college restructuring', John concludes. LP

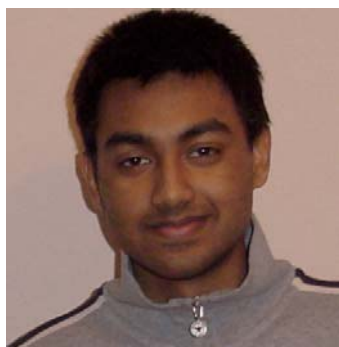
MUNIR HASAN

Union Alumni
Liaison Officer

MUNIR HASAN became a cosmopolitan at an early age, having been born in Bangladesh into an academic family. At the age of one, he moved to Boston(Mass) as his father enrolled in the postgraduate economics programme at Northeastern University. A move to the UK took place when he was eight and his family is now settled in Sheffield, where his father is a senior economics lecturer at Sheffield Hallam University. Munir assures us that he now feels completely anglicised but has still has traces of a mid-atlantic accent!

Vocationally, he is committed to a career in electrical and electronic engineering, believing that this is the cutting edge of the engineering disciplines. He considers his greatest achievement has been getting into IC and is labouring mightily to be a credit to the institution. That said, he is active in the social affairs of the college (he is Industrial Liaison Officer for the Electrical Engineering Society for example) and is very conscious of the need to publicise the role of the engineering professions in society.

In the near term, however, he is focused on learning his craft. This past summer's internship at LSI Logic has advanced this goal. WMcA



JOHN SYKES

President,
RSM Clubs' and Societies'
Committee



JOHN SYKES is a man with a mission – in fact several – but the most immediate is to lead RSMCSC out of a trough. It's in financial trouble and in John's judgement has an image problem. As the new President he intends to change this, and with his Yorkshire determination backed by an exceptionally capable and motivated committee, will certainly succeed. In John's belief his team is more than equal to the task.

John is a 'loiner' (from Leeds if you didn't know). His family is West Riding with a leavening of Empire (one grandmother grew up in India until independence brought the Raj to a close). He is now the scion of a family firm making mattresses and similar accoutrements (bouncy castles perhaps ?), but he's no immediate plans to follow in the business. His interests lie further underground.

His interest in geology was ignited in the sixth form by some inspiring teachers (who also turned him on to history which in some senses is geology's most recent chapter).

Imperial was NOT his first choice- though it certainly is now! That he arrived here is due to circumstances too embarrassing to recall in this profile, although John says he will be happy to give details to any readers curious enough to enquire.

In addition to his professional interests, John's passions are rugby, rock (the musical sort) and redheads (who knows in which order!) Regarding his immediate career, he would like a role related to sustainable development in the mining industries, but in the future a political life may beckon. If so, having had a real job first will be a major advantage! WMcA

A tour of two halves?

Early this year CGCA and RSMA contributed modest sums to support the Rugby Club's summer tour of New Zealand. RSMA insisted that submitting a report should be a condition of the grant. This was written by John Sykes in the form of a very full diary, extracts from which are below. They played six matches, winning three and losing three. What happened off the field was just as memorable as on it. Now read on...!

Wednesday 30 June

Three days of plane and coach travel began at Harlington with a mammoth 12-a-side game of football. Overall the standard didn't live up to Harlington's other famous sporting residents (the score was 16-15 to one of the teams). After, coach Joycey, who sadly couldn't tour, bought us a good luck drink.

Thursday 1 July

We lost most of the day due to time zones – confusing.

Friday 2 July

At Auckland airport customs, some people had issues. Rob was of interest to security and, bizarrely, some film crews in his dress, I caused a 'security risk' by leaving my coat and wallet in the airport toilets and part of the tour's French

contingent (Raph) had serious problems with 'sniffer dachshunds' resulting in detainment and strip searching! The entire team nearly lost their boots to the Ministry of Agriculture & Fisheries. It appears they don't like foreign mud in New Zealand. Oh and apples too – they even have specific apple sniffing dogs.

Our final stage of the journey was a four hour coach ride to Paihia – it was now 6pm Friday and everyone was well and truly disorientated. This meant one thing – drink beer!

Not all players went straight home that night, Doug went swimming in the sea alone and Rich Aung was found in a bakery by the owners at 4am. They were kind enough to give him a free croissant and a lift back to the hostel. Club captain and ladies man, Andy T, returned the next morning (no extra detail needed).

Saturday 3 July

'Sergeant Bootcamp' Neil booted us out of bed at 8 for light training – we were a sorry state! A fried breakfast was the order of the morning. After training, we watched a New Zealand league game – more or less what we expected – physical, plenty of boshing, plenty of shoeing, little technique, little organisation. We figured tomorrow's game would be brutal but we were told that Keri Keri wasn't too strong an opposition, so we were confident – error!

Unlike many Saturday nights with the Rugby Club, this one was a quiet affair, jet lag, Fri-

day night and the up coming match were all taking their toll. Most people opted for early bed. This was despite the lure of a club next door apparently full of hot women.



Sunday 4 July

What an eventful day! A lazy breakfast before proceeding to Keri Keri for a 'warm-up' match. Unfortunately it appears that Keri Keri didn't think this was a warm up match: we were 17-5 down at half time. Fortunately, in the second half, we woke up and fought back to win 20-17 in the last minute with tries coming from RSM's 2004 Bottle Match-winning captain Mike Hicks, part of the French contingent Le John Spencer, myself (a rarity) and the winner from RSM Rugby captain 2004 Rob Robinson. In good spirits, with food in our stomachs, we sang our way back to Paihia ready for a big night out. Once again the boys were on fire and Paihia provided two desperate women for the lads to play with – for decency's sake I'll say no more.

Monday 5 July

Today was an activity day. Ed opted for quad biking, where Sach very near killed himself, and did wipe out one of New Zealand's many trees. Two groups went deep sea fishing,

where Alex F did catch a four foot reef shark. He got to keep the head. A group of us went kayaking and claimed some new territories for the motherland. Naked Dave was on top form and some more scenes were shot for his calendar (out soon).

It was Rob Robinson's 21st birthday – a foolish time to have a birthday, on a rugby tour, so he was bought many an interesting drink.

Tuesday 6 July

We set off on a seven hour drive, stopping to pick up a trailer for the coach. Arriving at Hamilton, the team trained ready for the big match the next day. Some of Club's qualified coaches, including myself, coached at a local club, running a training session for 9-12 year olds which was very successful. NZ coaches were very impressed. (We got free beer).

Wednesday 7 July

Our first big game – against Waikato University Hellcats (their varsity second team – the college not only has 10 or so but a pro club team as well!). We picked our best team knowing this match wouldn't be easy and that we had an inexperienced backline. So when, 15 minutes before the game, what seemed like a storm of tropical proportions blew over soaking the pitch, it played right into our hands (or shall we say our forwards' hands). Suffice to say we found ourselves behind at half-time. We weren't playing badly, there was just no fire. This was remedied in the second half with tries from Le

THE TOURING team, including 18 Guildsmen, six Minesmen and eight from RCS – Conor Aleman, Quincy Allan, Sachin Amin, Rich Aung, Mantaj Bansal, Rich Bishop, Charles and Nathan Davidson, Neil Davies, Raphael Diguisto, Mickeal Drozd, Stu East, Dave Evans, Alex Fergusson, Jon Freedman, Dave Griffiths, Howard Harris, Michael Hicks, Doug Higgins, Dan Lindsley, Alex Newman, Ed Poulding, Tim Praill, Steve Propsting, Rich Roberts, Rob Robinson, Duncan Rutherford, Joe Sanders, Jon Spencer, John Sykes, Andy Towers, Rich Williams and Dom Wilson

SPORTS' REPORT

John Spencer, RSM's Rob Robinson and rounded off with an audacious drop goal from Le Jonny Wilkinson (Spencer). Final score 18-12.

Partying ensued. After a poor showing in the boat race (some silly Kiwi version with tiny little glasses – it didn't test your drinking abilities – they bottled out of one with pints!), we showed them how to party ICURFC style and invented the naked bar!

Thursday 8 July

We were rudely awoken early to travel to Rotorua but not before training with some of Waikato uni's top coaches who introduced us to Kiwi training methods including beating each other with sticks, the All-Black blitz defence method and typical Kiwi methods of cheating in the ruck.

Tired and hungover after a four hour journey to Rotorua those with energy and enthusiasm went for a run. Those who didn't went to a bar.

Friday 9 July

It's worth pointing out that Rotorua smells – it's a volcanically active area with many hot springs, so stinks of sulphur – and no, you don't get used to it! For the geologically-minded, Rotorua town and Lake Rotorua sit in a large caldera formed in a huge eruption 220,000 years ago. The area is still active, with many hot springs, mud pools and a sulphur lake, so there are over 150 hot water wells.



Another activities day. Those with driving licences went sprint karting which apparently was good fun – only one car was damaged severely. This, however, didn't stop the nakedness, with Naked Dave completing laps on foot and in the kart. He was joined by Naked

Tim 'Prowler' Praill. Typically the fastest time was taken by the youngest member, Charlie Davidson (Nathan's younger brother who hopes to come to IC in October and was chosen for his skills as a hooker). The other activity was 'zorb'ing'. This



involves rolling down a hill in a large inflatable ball filled with water – again obviously nakedness ensued with Stoo East zorb'ing naked.

The evening marked the change over in first team captain from 'Prowler' Praill to Mike 'Hixxy' Hicks. The night was a big one, starting with a trip to Liquorsave and into town to the Lava Bar and Grumpy Mole.

Saturday 10 July

Up early, hungover, for training ready for Sunday's match against local club Kahkoura. We watched their U21s, who we were playing the next day. They didn't seem that good so we decided to field an experimental, more inexperienced, team. After training it's rumoured a couple of the RSMs' geologists visited Rotorua's Thermal Gardens to look at the hot springs, fumaroles and mud pools – Peter Allison take note.

The evening was supposed to be a more gentle affair, meeting at Kahkoura to watch the NZ vs Pacific Islands match. A brave few then went out after (though drinking was kept to a minimum as we are all highly-trained athletes nowadays).

Sunday 11 July

Our first defeat! We just weren't firing on all cylinders and despite two tries in the last 10 minutes, it was too little, too late with the final score 15-29 to Kahkoura.

Our tries came from Rich 'Poo Bear' Williams, and another from Michael Drozd. We were bitterly disappointed. The match was analysed, positives and negatives taken and promises made to redouble our efforts in training. On a cultural note, Kahkoura taught us the local haka and made us perform it. It was without doubt the least intimidating haka ever done. As part of the cultural exchange, we showed them a rousing chorus of Sylvia.

About 5.30 we began the journey to our next destination; Taupo, with a quick stop at the Liquorsave first obviously. About 90 minutes later we arrived at Taupo after settling in and finding food we decided to hit the town – within half an hour several members were banned from the two clubs, which would only accept passports as ID not UK driving licences and humourously not French passports. It appeared the Maori bouncers were a bit bitter about the last world cup.

Monday 12 July

Bruce, our legendary bus driver, got those capable enough up early to go see the Lady Knox geyser eruption – once again it was worth noting full geology student presence at the event.

Some people felt they needed more adrenalin in the afternoon and went skydiving. However, due to the queue (you wouldn't believe how many people want to jump out of a plane) in the end only about 6 people got to go, so we booked to do it again early the next morning before leaving.

Tuesday 13 July

After missing out yesterday Bruce woke up a group of 12 including myself early to go skydiving. Lads jumped from either 12,000ft or 15,000ft in a tandem skydive – many dance moves were done in freefall (along with a few terrified expressions on my behalf) all recorded on video. Other than that, most of the day was devoted to the long journey from Taupo to Wellington. Thankfully, due to a break down we were

delayed sufficiently to avoid training that day. With a match the next day we had a quiet night starting with a team pasta dinner at a restaurant, later people relaxed in the hostel, catching up on some much needed beauty sleep or going to the cinema to see *Shrek II* or *Spiderman II*.

Wednesday 14 July

Wellington Old Boys: a mixed team of U18s, U21s and 'social players' – apparently they were all under 85kgs too but that must have been just a rumour or else the scales in Wellington were not calibrated properly. After training all morning, once again we started slowly and found ourselves 15 points behind after 10 minutes with too much to do against a fairly capable team, despite tries from Howard and Le John.

We eventually lost by 26-15. A special mention for Rich B's suicidal tackle, which knocked him out – when he came round Neil kindly told him where he was and what he was doing – he was in Middle Earth trying to get the ring to Mordor.

However on the plus side, it was a marked improvement on



Saturday's performance at Kahkoura. The loss however did not stop us that night and with Wellington being one of the few cities visited on tour, this was obviously capitalised on!

Thursday 15 July

Journey to South Island. After last night's heavy drinking, once on the ferry most players hit the deck (literally) and fell asleep. Later some lads found a bar that sold \$3 beers, so a brave group

of just seven of us set off with the intention of drinking just a few of these. As it turned out the bar wasn't very busy: just seven rugby players and about 30 drunk American girls (memories of South Ken) – bad luck for the lads who chose to stay in!



Friday 16 July

Today Neil had booked for white water rafting on some of the best waters in the world. Everyone got wet, everyone got cold and everyone had a good time. The highlight revolved around the 10m jump off a rock face into the river (a nice warm 4°C).

Bearing in mind the height jumped from and the temperature of the water most people opted for the sensible option of a pencil jump. But 'one man fashion disaster' Alex Fergusson opted for the double somersault, with twist option, and completed a perfect one and a half somersault with huge bellyflop and super-wedgie. It was probably one of the tours funniest moments.

Saturday 17 July

We lost to a bunch of school boys! Admittedly the best college team on the South Island, who's Fijian International centre made nice work of our drift defence. Once again we picked up in the second half, again to win it, but it wasn't enough to win the game. The final score was 27 - 19 – quite high despite the appalling conditions. Our tries came from Rob Robinson, Howard and Le John. This loss meant our last match against Canterbury University was a 'must win to gain a draw overall on tour. The loss however didn't dampen our spirits too much and we had a good

WINNERS The team that won in Keri Keri

time in Nelson. Again yet more social crimes were committed.

Sunday 18 July

A very hungover attempt to move to Kaokoura – a quiet coastal village – for rest and relaxation before Wednesday's big last game. Neil's secret plan was to take us where there's nothing to do and surely we'd rest and train hard. Kaokoura attracts tourists in the summer to go whale, dolphin and seal watching – in the winter it attracts no one! The words 'backend' and 'nowhere' spring to mind. Most people got an early night but a few brave souls (the same usual few to be honest) went out and had a few at the bar next door. Suffice to say we provided enough entertainment for the barman that he was happy to welcome us back the next night.

Monday 19 July

A gentle morning's training followed by a trip to a seal colony kindly organised by our legendary driver; Bruce. Rich was surprised to be outpaced by one seal. At a more numerous colony, it was a seal that was surprised to find Dom climbing up a rock behind it. Equally, Dom was surprised to find a large bull seal on top of the rock. This time Dom was not outpaced by the seal. In the evening French master chef Michael Drozd knocked up a pasta carbonara to die for with his team of chefs. Nicely full, everybody was ready for the Rohan Invitational Pool Competition. I think again the idea of the tournament was to control the drinking – nice idea but what do you do when you are eliminated?

Tuesday 20 July

The long journeys would come thick and fast now, starting today just a few hours down the coast from Christchurch, the venue for our final and deciding game against the University of Canterbury Varsity Team. It was also the day we lost three of our tour members (don't



worry it was supposed to happen). Just because they were leaving didn't mean they'd escape punishment for their tour crimes (of which there were many). A special kangaroo court was held for them. Dave Evans was unfortunate enough to be turning 20 that day as well.

Nathan and Steve will be sadly missed. Charles will no doubt be the first fresher to join the club



next year – though when he tells his parents some of the tour stories, whether they'll be as enthusiastic is not certain.

Wednesday 21 July

The big final game!. Despite our coach breaking down before leaving, the team got itself fired up and played an awesome game. Everyone in the squad wanted to play including the ones with broken fingers, dislocated shoulders, manky toes or recovering from back operations. Unlike previous games, we went ahead in the first half, before Canterbury made a comeback to leave us just behind at half-time.

An inspiring team talk led to further points from the boot with the final score being 21-20 with tries from Michael Drozd, Rich

'Pooh Bear' Williams and Jon Spencer. In true English fashion the difference was with the boot, Le Jon getting all three conversions whilst Canterbury scored four unconverted tries.

Suffice to say the squad (especially Neil) was delighted and the champagne flowed. The tour was drawn at 3-3 which to us was a victory (we were the away team). To have overcome the difficulties on the playing field mid-tour and a minor injury crisis to win our last match was like winning our very own cup final. We fancied ourselves as one of the more successful English touring sides in New Zealand this summer. The future of ICURFC and its constituent college teams looks rosy.

(Editor's note: The tourists then had a good time around Queenstown for the next two days.)

Sunday 25 July

Sadly the trip home, the end of tour, the end of what I'm certain was an interesting, indescribable chapter in all the tour members lives. The players leaving that year were seen off in style, the rest of the club bonded and ready to go for it next year and we even had a new recruit, as well as many new memories, drinking games, stories and club catch phrases.

I know I had the time of my life; I'm sure everyone else did. Once again, on behalf of the club, we would like to say a massive thank you to Neil Davies for organising the tour (and everyone else involved in the organisation, all the people, rugby clubs, bars, hostels and activities we met, played, drank in, stayed in or tried).

Sylvia forever!

Union faces up to latest challenges

Shrenik Patel, previously President of City & Guilds' Student Union, recalls the last academic year

CITY & GUILDS' UNION (or ICESU as it's also called) continues to prosper, despite the fair share of challenges that have been faced this year.

The Union's welfare programme, the Buddies Scheme, was run successfully across all the departments of the Faculty for the first time. Bio-engineering was the latest addition to the scheme, welcoming its second intake of undergraduate freshers since its inception.

The aim of the scheme is to pair up continuing students with new arrivals, enabling them to adjust to college life more easily. Most of the buddies and freshers met each other at specially organised Buddies Lunches (or dinner in one case). To ensure regular contact between freshers and buddies, a number of continuity events were organised throughout the year.

The second week saw C&GCU's biggest ever Freshers' Ball, attracting over 400 students. The evening started with a black tie dinner, followed by entertainments featuring live bands, a casino, two dance floors and a bouncy castle. This unfortunately succumbed after it was swamped by too many merry students!

The Union once again entered the Lord Mayor's Show, celebrating its close ties to the Corporation of London and the livery companies which founded the former City & Guilds College. Unfortunately, due to sponsorship problems, the float was constructed on a shoestring budget using recycled material from previous shows. It was constructed in record time.

The Internship Centre has continued to perform extremely well. The statistics are impressive yet again: approximately 5,000 visits from nearly 1,500 students. A new programme of careers' talks was unveiled at the beginning of the year where speakers from different industries attracted large numbers of students.

This year also saw the introduction of international internships through our alumni associations. The Centre now offers placements in cities like New

York and San José with further expansion in Europe and Asia being planned.

The inter-departmental football tournament was as popular as ever, attracting teams from all departments, ICU societies and even some research groups. The Annual Egg Race took place in March and was largely successful. It involves the design and construction of an aircraft that can carry an egg from the Queen's Tower without it breaking. There were some excellent entries and, as a contrast to last year, the C&G executive committee team managed to produce a contraption that flew the furthest to clinch the title for an unprecedented first time. Some were unlucky, managing to turn around and fly back. Others plummeted, smashing their eggs.

Rag Week saw the return of the notorious hit squad with cans of whipped cream and super-soakers targeting students for donations. Despite being banned from the buildings, they managed to raise a substantial amount. The Barbershop Quartet sang across the whole college and, during Valentine's day, managed to serenade the Rector and the ICU sabbaticals. The slave auction was a huge success with Union celebrities offering themselves for sale.

Elections were held during spring and turnout increased compared to the previous year, despite the ICU elections descending into a farce once again!

The Union also took the opportunity to invite Professor John Perkins, the outgoing Faculty Principal, and bestowed honorary life membership in recognition of the great amount of support he has given.

The Union's new structure contin-

ues to work very well for both departmental society committees and academic representation and there has been increased communication with the Royal School of Mines' Clubs' and Societies' Committee. This year also saw the launch of the Engineering Chapter.

The Union is thrilled to be a key stakeholder in this initiative and looks forward to working with both alumni associations and the Engineering Faculty for the benefit of the students.

The Union also launched the Sabbatical Appeal this year after



Key Union personnel at the CGCA annual dinner with fellow students

recognising that maintaining our current level of activity is becoming increasingly difficult. The workload taken on by our officers is extraordinary - many of whom are dedicating five to 10 hours a day to keep the Union running as well as pursuing a full-time engineering degree. The response has been encouraging and we would like to thank all our alumni for their donations. More information about the Sabbatical Appeal can be found at <http://www.cgcu.net/sabbatical/>

You can also keep up-to-date by reading our online publication, *Live!* Updated practically every day, it's the most widely read student publication in the University of London. See <http://live.cgcu.net>.

Colleen Richardson
reports on the CGCA
annual dinner

AFTER AN EXCELLENT annual dinner of English beef in March at the Haberdashers' Hall, nearly 140 members of the CGCA, guests, staff and 26 students sat back to sip their 1970 Warre port (thoughtfully laid down by the Association) and listen to guest speaker Professor Kel Fidler.

Vice-Chancellor of Northumbria University since 2001, Professor Fidler has replaced its faculty-based system with 11 new schools and is working to enhance Northumbria's profile. These days, a vice-chancellor has to be a businessman as well as an academic, said president Sir Colin Terry.

'Kel is Head of Electronics Discipline at the Open University, representative of the IEE on the Board of the Engineering Council (UK) and Chair of their engineer Registration Standards Committee', said Sir Colin.

As a sometime motor biker, and one used to fast cars, Kel Fidler began by thanking CGCA for giving him 'the extraordinary experience of coming

Communication conflict

here in Bo. In all my other vehicular experiences, I've never before felt the frisson I experienced tonight. I think it was to do with the tension as to whether we would make it from one traffic light to the next.'

'As the 16th largest university in the country with 24,000 students and the largest contingent of Chinese students, Northumbria has a turnover of about £140 million, despite a very low research base', he said. 'Northumbria University is a large teaching business.

'The interesting point is, how do you communicate with your 3,500 staff, 24,000 students and all the others who look to the university for all sorts of things? So I want to talk about communication.

'It's generally so poor that people feel they're being kept in the dark and all sorts of things are poured on top of them. Communication never seems to work and, believe me, I have tried. I've tried 'cascading'. Tell the deans what's going on and they tell their staff. No! It doesn't work. Let's try a newsletter: they don't read it. I tried

blanket emails and I tried the web and still someone will tell me that they haven't got the message.

'It's this scant information that some people rely on that leads to misinterpretation, which turns into rumour, which becomes conspiracy-theory and, before you know what's happening, morale is plunging. I've no solution; I'm simply sharing a problem. If you have a solution, please let me know.'

After thanking Kel for his thought-provoking talk, Sir Colin thanked many present: Julia Justesen, wife of the late Peter Justesen; the master of the Haberdashers' Hall; Bernie Pryor for working with two associations to get the Chapter working smoothly; Alison Bowen for smoothing the way for its formation and Professor John Perkins for his support. In conclusion, Sir Colin said that the number of students present indicates that engineering is alive and well in the UK.

The evening ended with the chandeliers shaking to the sound of the CGC chant, *Boomalaka*.

AT THE AGM and President's Evening in May, Sir Colin Terry recalled what an eventful year it had been in the CGCA's evolution. He reminded those present of their mortality with the deaths of Peter Hills, Peter Justesen and Brian Locke.

He said how grateful he was to Peter Chase and Bill McAuley for taking on the offices of Honorary Treasurer and Secretary at such short notice.

Service thanks

Changes in the Office of Alumni Development's (OAD) policy towards funding alumni associations had resulted in Adrian Winchester's post ending. Sir Colin thanked him for all he had done for the CGCA over 15 years by making him an honorary member. He also welcomed new Chapter Manager Dr Teresa Sergot.

Reviewing the year, Sir Colin highlighted the range of senior speakers at events – John Oughton, Chief Executive of the Office of Government Commerce on Change; Rear Admiral Mike Wood on logistic and engineering support for the Iraq war; Prof Ian Poll on the growing

application of technology to uninhabited aerial vehicles; Prof Kel Fidler on difficulties in communicating, and Prof Rod Smith on the future of Britain's railways.

Other events also remained popular: Decade Reunion; In & Out Dinner for CGCU officers; Networking Reception; Annual Dinner, and David Hattersley's hugely popular Walks with a Past President. He reminded members that such a comprehensive programme depended on volunteers to organise events; with more volunteers, we could achieve more.

The accounts, presented by Peter Chase, were in good order after Peter Justesen's stewarding, and were adopted by the meeting. After Sir Colin's nomination - 'I have no hesitation in handing over the presidency of the Association to Barry Brooks' - Barry was duly elected.

He spoke about how the Association needs to continue to evolve. He suggested that members could be doubled,

from 4,500 to 9,000 within five years. But, to do so, CGCA needs to make itself more attractive and to answer the 'what is in it for me?' question of today's students and working and retired alumni.

Vice-president

As part of the officers' *en bloc* election, the President supported Professor Ian Poll's nomination as vice-president. Ian is now Director of Cranfield College of Aeronautics and Professor of aerospace engineering. He has served on numerous government, academic and industrial bodies, was President of the RAeS in 2001 and awarded the OBE in 2002.

Before introducing guest speaker, Dr Julia King, to give her talk *Alice in academia and industry: shrinking, growing and learning*, the President completed the formal part of the meeting by leading applause for 17 student being awarded CGCU colours.

New president elected

Giles confirmed for second year

DURING RSMA's annual general meeting, Hon Treasurer Paul Atherton reported that, in the year to 31 March 2004, total income of £8,225 exceeded expenditure by £100.

Expenditure had included £3,600 on *Update*, £980 on UROP bursaries, a total of £1,350 to support traditional 'union' activities such as the Mines' Ball, Bottle Match and Fresher's Dinner, and a grant of £500 towards the NZ rugby tour.

Giles Baynham was confirmed as President for a second year and Paul Holmes took over from John Bramley, who had been Hon Secretary for nine years. Sam Corfield (née Grubb) retired from the committee after even longer service.

RSMA's committee for 2004/5

Giles Baynham..... President
 Charles Hutson .Senior Vice-President
 Roger Clegg Junior Vice-President
 Paul Holmes Hon Secretary
 Paul Atherton Hon Treasurer
 Richard Dashwood . College Secretary

Highlights from RSMA's President's annual report

IT HAS been an eventful year for the RSMA, but one that sees us move forward with a new structure of co-operation with both College (and more specifically the Faculty of Engineering, of which RSM is now a part) and the City & Guilds College Association.

Considerable discussion and negotiation provides a basis for RSMA's traditional activities and expands the scope of its student welfare, career development and membership.

One downside of the restructuring at College generally has been the loss of direct funding for the RSMU and its activities. RSMA has always supported the more traditional events and we are working with the union to see where RSMA can be of further assistance.

I must congratulate the students, including the President Ben Kotrc and his executive for doing a great job in what have been quite difficult circumstances, maintaining the spirit and traditional activities of the RSM. I trust that incoming President John

Sykes, Vice-President Mike Seager and Secretary Katy Tsesmelis will rise to the task in similar fashion.

Another splendid Bottle Match win, taking the tally to eight in a row, was the result of the weekend, with the football team earning a hard-fought draw and CSM taking the consolation prize of hockey and squash games.

The Annual Dinner, again at the Polish Club, was an excellent evening. Attendance has been increasing, but the one downside is that we are rapidly running out of room at the Polish Club.

Strong student attendance is an important part in encouraging graduates to join and make use of the RSMA and we have been working towards some new events aimed specifically at growing the number of undergraduate and young members.

In addition, we will be joining forces with CGCA and the Faculty in organising the annual reception for graduating students to help them prepare for life beyond college.

More students attend final year dinner

ALTHOUGH final year students outnumbered alumni by three to two, once again, following RSMA's tradition, all the student meal tickets were sponsored by individual Association members. The committee is always grateful to those members who sponsor a student or two, even though they are unable to attend themselves, says new Hon Sec Paul Holmes.

Following tradition, the joint hosts are the RSM student union President and the President of the Association. As there is no longer, strictly speaking, an RSM Union the student host was the President of the RSM 'club society committee', Ben Kotrc. Giles Baynham, RSMA President, could not get away from Vancouver so his place was taken by Bernie

TOP TABLE AT FYD:
 From left, John Sykes, Bernie Pryor, Rees Rawlings, Ben Kotrc, Paul Holmes and Paul Atherton



Pryor. Ben Kotrc's successor John Sykes was also on top table with Trust Chairman Prof Rees Rawlings, Paul Holmes and Treasurer Paul Atherton.

Most of the members present were the usual culprits, led by stalwarts Pete Harding, John Sharpley, Brian Wallace and Ian Chaston.

The occasion was informal and there were no guest speakers, but Bernie Pryor rose to say a few well chosen words of encouragement to

those students now about to earn their living, reminding them of the benefits to be gained from RSMA membership.

Ben Kotrc's only duty was to stand to lead the singing of the *Mines' Song*, which was rendered by all with the customary vigour. The only other piece of business was the presentation of the essay prize to Marcella Feilharber (page seven). It's understood celebrations continued long into the night.

DURING the interregnum between the departure of John Perkins and the appointment of Julia King, Professor Frank Leppington took the Engineering Faculty under his wing. This was in addition to his responsibilities as principal of the Faculty of Physical Sciences that he took over from Professor Pendry in April 2002.

Closely related

Interviewed by Colleen Richardson, Professor Leppington said he had known and taught mathematics in many of the engineering departments for a long time. He had been at Imperial for 40 years and his own research area, applied mathematics, is closely related to engineering.

He thinks that the Engineering Faculty is a 'fantastic' set of departments, incredibly successful, with very high ratings, both in teaching and research.

He is very pleased about Dr Julia King's appointment as Principal,

Into the breach

bringing both an academic and industrial background to the Faculty.

Ask what he thought of the change from City and Guilds College and Royal School of Mines to the Faculty of Engineering, Professor Leppington said that he thought it meant that things could be done on a bigger scale, not only across departments but also across the faculties. Multi-disciplinary lines of work are easier with a faculty structure and there is now an increased opportunity for this.

Just after taking over as acting Principal he had to deal with a very important planning exercise. Each department had to submit its five-year plan for how many undergraduate and postgraduate students it wants, how much research contract work they plan to do, plans for new staff – with

financial projections that follow from these things.

He said that these plans are very forward looking, taking teaching very seriously as well as research. Regarding the latter, all Imperial departments are preparing to face the universities' research assessment exercise (ARE) that takes place in 2007-8.

Star challenge

At the last RAE in 2001, all the engineering departments were rated in the top grades, either five or five-star. It is a challenge to all staff maintain this level.

Professor Leppington wished to thank the Faculty's support team, led by Faculty administrator Alison Bowen, for making it possible to take on such a large organisation at such short notice.

Britain's railways: atrophy or renaissance?

Professor Rod Smith's food for thought at Guilds' Christmas lunchtime seminar

IN RECENT years, Rod, Head of Mechanical Engineering at Imperial College, has been deeply involved in railway engineering. He is particularly well acquainted with the Japanese railway industry.

Beginning his talk, he quoted historian Trevelyan who said that railways were England's gift to the world. Earlier, John Bright had said: 'Railways have rendered more services and received less gratitude than any other institution in this country'.

The contribution of railways to the first and second world wars was immense, he said, but the combination of the two, with depression in between, left Britain's railways in a very poor state.

Particulate pollution

He produced pictures of particulates diesel engines are pumping into the atmosphere. They left a thick haze over the mainline stations. 'If something isn't done soon', he said, 'this will go on for the next 40 years'.

The government has run out of patience with the railways, said Rod. The whole idea of privatisation was to remove the railways from the Treasury's pocket so that it operated without state assistance – but this didn't happen. State assistance now represents about 60% of the railways' running cost.

Out-of-date

Rod asked rhetorically, after producing pictures showing the run-down and out-of-date look of our railways: 'Are we content to have our railways like this for the future?'

'My Japanese experience is that they run a very successful railway. Their fully-automatic trains leave every four minutes from Tokyo to Osaka. That's like travelling from London to Edinburgh. Their maintenance takes place between midnight and 6am.'

In December, a train using the same principle, developed in Imperial College by Prof Eric Laithwaite, achieved a speed of 360 miles per

hour. It was fantastic to ride, he said.

Displaying a map with red lines representing high-speed railways in service now across Europe, Rod pointed out Britain's small contribution. It reaches only halfway to London from the Channel.

'In 20 years time most of Europe will have connections for high-speed trains, but we will be sitting on the outside', he said. 'Maybe that's what we want – to sit aloof from the development. But the engine of our economy, our transport, will stall by 2020.'

Future capacity

'It takes a long time to build infrastructure and we need to think seriously, in order to plan and cope for the capacity needed over the next 50 years. We are in a mess now and, believe me, we will be in a greater mess in 10 to 20 years time. We need to marry the new railways with the car.'

Rod ended: 'Some people think they are Napoleon and some people think they can sort out the railways'.

Are we running out of oil?

Some thoughts on an emotive subject by Peter Gaffney

The short answer to this question is 'yes'. It is a non-renewable resource, at least in everything but geological time, and we are consuming at an increasing rate what we believe is likely to be there. However, the short answer probably doesn't deal with the background question 'should we be concerned?' And that is like asking your doctor if you are eventually going to pass on!

As Mark Twain said: 'Get your facts first, and then you can distort them as much as you please', so let's try and look at some of the facts we are dealing with.

Current situation

Current world oil production is about 80 million barrels a day. The International Energy Agency (IEA) has suggested this demand could significantly exceed 100 million barrels a day in the next 10 or 15 years; particularly if the large growing economies of India and China continue to develop so successfully and the overall world economy continues to grow.

Tight market coming

So there is a general belief that with the current growth in demand, the market could start to get quite tight some time in the next five to 10 years. At the same time, we also need to recognise that much of the spare potential capacity lies in the Middle East and the FSU, regions perceived to be subject to significant political and some project and financing uncertainties – so who knows when it might happen! What is fairly clear is that we are now less likely to find another Middle East or even the odd North Sea.

Presenting the latest in solid fuel car design



Oil availability: a function of price for many years to come

We also need to recognise that the amount of oil ultimately available is in the end very much a function of price. Overall recovery using our conventional techniques is probably still less on average than 40% of the oil that we have already found. If there is a significant rise in oil prices then over time, and time is a key issue, there will be a move to recover a higher proportion of the oil already found, using what we call 'enhanced oil recovery techniques'. However, recovery using such techniques has historically required more energy, with the result that the incremental oil is very expensive. This gives us something of a Catch 22 situation, not dissimilar to that presented by one of the discussions for wind energy. This argues that the total energy invested in making, installing and maintaining a windmill is unlikely to be recovered by the energy generated over the windmill's life.

However, with this in mind it is interesting to note that the current or more recent high oil prices have not caused anything like the rekindling of interest in enhanced recovery and alternative energy supplies, such as were caused by similar circumstances back in the late 70s and early 80s. Plans by the US motor industry to supply millions of diesel cars into the USA became still born when the price of oil rapidly dropped back to the low teen's per barrel level in the mid 80s. Such plans have not returned.

While prices may appear relatively high at present, the average variation in price has over the years been significant. The more significant these variations the less likely it is that companies will be willing to make long term commitments to projects which need to sell oil at a high price to make them economically viable.

Are there alternatives

Given time to improve our efficiency, we do have many alternatives both in the supply and demand areas; the

question is, 'are we likely to use them?' In view of our track record to date, one has to say that it seems unlikely. The green group and others would suggest that we should give up our cars; but as many have pointed out the car has been the single most significant aspect of personal freedom to occur in the last 100 years. It is difficult to imagine that anyone who enjoys the freedoms which owning a car bring to everyday life, will agree to forego those freedoms and pass their car up lightly.

Furthermore, given that the two most populous nations on earth (*ie* China and India) currently have less than 50 passenger cars per 1000 people, there is a potential for huge growth in global car ownership.

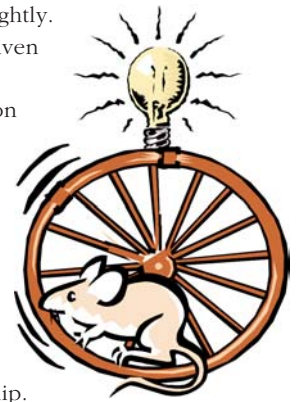
By comparison, the figures for the US are 500 per 1000 people. It is therefore not unreasonable to believe that we are much more likely to see a growth in car ownership rather than a decline!

Coal alternative

Of course a major alternative could be coal and there is and has been a technique to generate oil from coal using the Fischer Tropsch process developed in the 1920's and commercialized during the 1940's; indeed the South African company Sasol produces some 180,000 barrels a day of coal derived oil products. In addition, further potential coal conversion projects are under consideration in Australia and China where there are vast coal reserves. There are also technologies available which produce oil directly from gas but these too are still relatively expensive.

Tar sands and oil shales

Further significant resources of petroleum exist in extra heavy oil sands & tar sands such as in Venezuela, Athabasca in Canada and in various oil shale deposits. Meaningful production



is already coming from some of these sources but again these tend to be relatively expensive sources; nevertheless, if the pressure is on we can be sure that these sources will be developed even further and over time will produce more significant quantities of petroleum. Indeed, a recent Energy Information Administration report suggested that if Canada's oil sands were included, Canada would be second only to Saudi Arabia in terms of proven oil reserves.

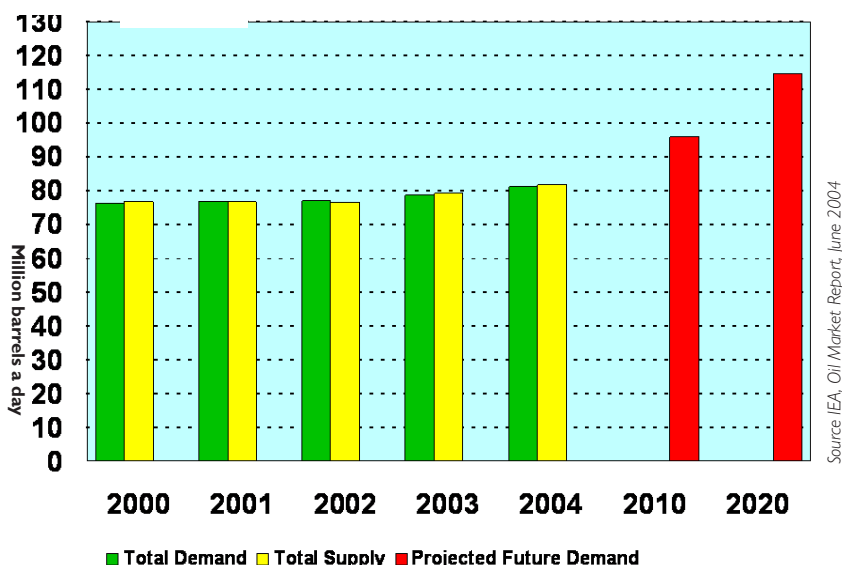
Where does gas fit in?

There has been a significant increase in the use of gas over recent years, particularly for power generation, even for running cars and transport vehicles, and one would expect this to continue. Yet while there are extensive volumes of gas available internationally, the cost of shipping this gas, liquefying it or compressing it and then transmitting it via pipelines means that it is not necessarily a cheap fuel either. And we can expect gas to be priced pretty close to the same market equivalent as oil on a thermal basis.

While gas may take up some of the slack in the increased demand and may replace some of the requirements for oil derivative products, it is unlikely that gas itself will stem the ultimate tide of shortage. Mind you, if you do feel inclined to have a compressed natural gas powered car, the modification is minor. On the other hand there are very few places you can fill up and a tank load doesn't take you very far.

Expectations, choice and relative use

However, one of the issues that is sometimes out there, is not the consumption of the individual car or truck, but how many one passenger vehicles there are driving to work; and this is really an issue about our freedoms. While drivers of Sports Utility Vehicles face the challenge for guzzling their way through 40-60 gallons a month we might well discover that the challenging lobby includes the small car driver, burning a hundred gallons a month to drive to work, when perhaps public transport is an option. So perceptions and reality and expectations come in to this equation. And indeed how do you go about identifying the easy fixes, if indeed such things exist. Depending on



the motivations of the individual or body reporting the statistics a certain amount of spin can be put on data.

How about petrol rationing?

Of course petrol rationing would solve many of these issues, but who wants to go back there; let us not forget the fuel strike of two years ago and the more recent rumblings on price! However, some temporary restriction may not be that far away, and rationing petrol to x many gallons per person or family will still allow the ultimate choice of the individuals concerned, which is how to use the fuel - whether to fuel a gas guzzler or otherwise. After all, as we know and hear everyday, we live in a world where we are to be given 'continuous and ultimate choice'.

Fuel cell

The much-vaunted fuel cell may well come into its own in due course. However, in many of the early fuel cell cases, the requirements for the fuel ended up being methanol which is a petroleum derivative, in any case, coming for the most part from gas; although it could be made from some agricultural products.

A medical ending and further health warning

So, to conclude, we might draw an analogy with the medical profession, which like the petroleum industry is eager to cover the range of possible outcomes and unforeseen circumstances as a result of the procedure to fix the problem or your broken leg for instance. And then later, like the doctor, we can come back and say we

have carried out the required procedure. Of course, we still don't actually know what is going to happen in the future and while there are some dangers, it has gone relatively well. But you probably will get some arthritis at one point or another and should take things slowly. In other words, be sensible how you use oil and gas, encourage our auto makers, in particular, to improve efficiency, and encourage sensible economic alternatives as they come along. The industry, aka the doctor, will continue to look for improvements in efficiency, getting out more of the old oil that was left behind; hopefully doing it without the need for the price to go sky high - (especially with Imperial College across the board research assistance!).

So should we be concerned? - yes, but we have some time to organise ourselves and we can take some heart from the fact that, historically, man has continued to find another energy source to replace that disappearing or becoming too expensive. However we should not be complacent as, this time, there just could be the odd hiccup in between.

Perhaps in years to come we will be able to watch Jeremy Clarkson testing the best of the wood burning hatchbacks.

Peter Gaffney (OilTech 54-7) is senior



partner at Gaffney, Cline & Associates. He was the first Briton to be appointed President of The Society of Petroleum Engineers

A legend in his lifetime

ERIC POPPLEWELL, the doyen of the RSMA in SA and known universally as 'Pops', died peacefully on Easter Monday in his 98th year.

He studied metallurgy at RSM from 1922–1925 and started work in 1926 at Crown Mines, Johannesburg. Between graduation and then, there's no official record of what Eric was doing, but in a trunk of archives Ian (Eric's son) has donated, there's a field notebook, dated March – May 1926, recording Eric's survey of Tywarnhale Mine – maybe the metallurgist became a miner!

In 1930, Eric moved north to the rapidly developing Zambian Copperbelt before joining Don Squirrell, a contemporary of his at RSM, to form Squirrell & Popplewell. Surprisingly this was a diamond drilling company. But it was very successful and became a living legend in Central and Southern Africa –

When he married his secretary,

ERIC POPPLEWELL

Peggy, in 1938, they bought a house in Linksfield which was the base for the rest of his life. Base, is a relative term as not only are diamond drillers notoriously itinerant, as Ian recalls, some of the family's happiest memories came from the holiday home in Plettenberg Bay, on the Cape South Coast.

Around 1970, Eric and Don sold their company to one of the copperbelt majors and I have personal memories, as a very junior geologist in the mid-1970s, of listening to my superiors reminiscing nostalgically about the service that Squirrell & Popplewell had provided, comparing it, possibly unfairly, with the service that they were getting from Eric's successors.

Eric was an active member of the RSMA in SA for more years than anyone here cares to remember and

was Chairman for several years during the 70s. He was also active in the IMM and the SAIMM. He was quite prepared to "lend out" his house in Linksfield for social functions and even converted part of it, albeit temporarily, to a mock up of an underground mine as part of one of the CMMI congresses.

My favourite memory of Eric comes from the lunch the RSMA organised to celebrate his 90th birthday. In his reply to the many laudatory speeches, Eric commented that he'd completed his weekly round of golf the day before, with his regular fourball. As he was the third youngest member' he didn't understand 'all this fuss' about his 90th.

At that point my neighbour said, in a very conspiratorial manner, 'Dave, I don't know how good a golfer you are, but don't get involved with that fourball – they'll fleece you!'

DAVE PROCTOR, *chairman, RSMA SA*

JOHN PATTISSON

JOHN PATTISSON, Managing Director of John Pattison Associates, died on 13 August in a car accident in France, write his fellow civil engineering students from 1968-9, Jean and Roger Venables and Rollo Malcolm-Green. He was 57.

'Our earliest memories of John are when he enthusiastically shared with us his brother Rodney's gold medal for sailing at the 1968 Olympics, a sport in which John excelled too. He also introduced us to his friend Gillian from Kenya, who was soon to become Jean's bridesmaid and John's adored wife and mother of his two sons.

'Cheerfulness and enthusiasm for whatever he did, plus his decisiveness, are one's abiding memories of John. In addition, his employers and clients appreciated his commitment, skill and innovation, and his determination to deliver excellent projects.

'Not only a tragic loss as husband, father and friend to many, John's untimely death is a big loss to the profession of civil engineering

After 15 years working with prominent construction companies like Taylor

A loss to civil engineering



John, right, sailing just a few days before his death.

Woodrow, John set up his own marine consulting practice, specialising in the design and construction of commercial and leisure facilities for coastal, port, river and inland waterways.

'One of John's projects that caught professional and public imagination was the 'marine transfer facility' to move completed wind turbine rotor blades from the Isle of Wight to Southampton Docks, for export around the world.

The project was awarded a high commendation in the British Construction Industry Awards 2001 in the Small Projects Category and was recognised with John's Royal Town Planning Institute Award 2002 for Business and the Environment.

'John designed the entire system. It epitomised the great traditions of civil engineering, and demonstrates John's ingenuity, resourcefulness and skill in the fields of structural, environmental, transportation and marine engineering.

'Outside his professional commitments, John's main interests were his family and sailing. He was an outstanding helmsman and won many trophies in Flying Fifteens, 505 dinghies and keelboats, besides being a member of the 1967 British Universities' team.'

JONATHAN PARKHOUSE

Sad early loss

JON PARKHOUSE (MinTech '75) died, aged 50 on 25 August, after a long illness. He was General Manager/ Director of Glebe Mines, Derbyshire.

Jon's career started at Roan Consolidated (Zambia) and, in 1982 he moved to Emperor Goldmines in Fiji. In 1988, he returned to the UK, since when he has worked for companies in flourspar extraction.

An engineer with style

Rod Rhys Jones remembers BRIAN LOCKE, who died peacefully on 23 April, a month before his 80th birthday.

BRIAN LOCKE WAS A MAINSTAY OF the City and Guilds College Association as far back as I remember - certainly he was writing in *The Central* (forerunner of *IC Engineer*) in the mid-60s.

Brian was passionate about engineering and its role in society and saw that the association could help at Imperial College by bringing together past and current alumni to promote what he described as 'international camaraderie'.

Before he was honorary secretary from 1982 to 1990, Brian served on CGCA committees. He became president in 1991.

Something of a renaissance engineer with a wide spread of interests crossing disciplinary and national boundaries, Brian had a thirst for knowledge, new places and new ideas. He built up a vast network of friends and professional contacts.

He was passionate about the commercialisation of new ideas and their application throughout the less developed world. He believed engineering held the key to many of the problems besetting humanity.

Brian's broad view of world affairs and his perception of their dependence on engineering meant it was almost inevitable that he became a founder member of the Club of Rome. He was President of the British association of the club. At the time of his death was UK representative.

Founder member

He was also one of 500 fellows of the World Academy of Art and Science, and was appointed a Companion of the Commonwealth Partnership for Technology Management in 2002 for the work he did in its formation.

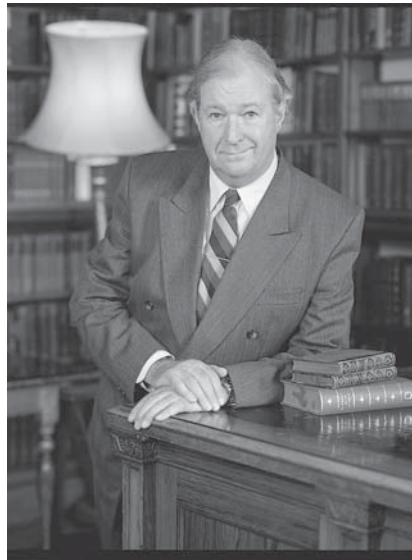
More conventionally Brian was a Fellow of the Institution of Chemical Engineers and other engineering institutes including Energy and the Gas Engineers. He was a freeman of the City of London, and, eminently clubbable, a member of the Athenaeum.

A governor of a number of educational establishments, in 2002 he was appointed visiting professor in the Faculty of Computer Sciences and Engineering at de Montfort University. In that year he also became President of the Design and Industries Association.

Throughout his life, he was concerned

with the transfer and application of technology for efficient power production and energy efficiency. He was expert in fluidised-bed combustion, energy efficiency and small-scale hydro-electric schemes which he promoted in many parts of the world, like India and China.

A reflection of his international approach and his life-long commitment to improving the status of the engineer in society was his adoption of the title *Eur Ing* as soon as it was



introduced in the UK. He saw it not so much as a personal title, but as a flag to wave about the importance of engineering.

He was a keen supporter of the relationship between the City and Guilds of London Institute and Imperial College, helping to ensure that fellowships were awarded to the most prominent alumni.

Coming from a Quaker background, Brian served in the Friends Ambulance Unit until 1946 when he returned to college. Unfortunately, rheumatic fever forced him to spend three days a week in hospital, making study particularly difficult. Without completing his degree, Brian launched himself into industry. He took his examinations for the Institution of Chemical Engineers in 1948.

During the first half of the 1950s, Brian worked for the Ministry of Power driving around with a van full of instruments helping companies with their energy problems. With a typical wryness he claimed not to be doing anything different from others at the time, 'but

the meters, thermocouples and other equipment helped persuade company boards'.

In 1965, he joined the Industrial Chemistry Group of the National Research Development Corporation (now BTG). In 1971, he was asked to lead special projects responsible for nurturing innovative ideas. His team became involved in setting up major developments in fluidised combustion of coal and making blast furnace coke.

Wide publication

Brian was a director of a number of companies which exploited technology, such as Electrolysis Energy Ltd and Chem Plant Stainless Ltd. He formed his own company - Cadogan Consultants (named after the London street where he lived) - on leaving NRDC in 1977.

He lectured widely and wrote many articles and contributed to books on subjects such as managing innovation, energy, the Hovercraft, trade with India, forecasting and development and an early history of events leading up to the creation of Imperial College.

He had the ability to see things differently and was recognised for it. He asked the awkward question with a gentle inquiring air that defied disapproval so that half the audience at an international conference craned to see 'who asked that?' As contemporary Dr John Waller put it, 'In many ways he was the embodiment of lateral thinking'.

Brian also had two characteristics that distinguish all real engineers - he was precise and he got things done. While he was CGCA secretary, he prepared notes outlining the president and secretary tasks. They are still used today.

In Bisley, where he had turned a barn into his home, Cadogan Grange, he was viewed as somewhat eccentric, dashing around wearing one of his many hats and raising it enthusiastically to passing villagers. Above all he was interested in people and was always bringing people together or helping them.

Roderick Wilkie, currently managing director of Cadogan Consultants, said of Brian: 'His network of contacts was legendary and maintained by a tremendous appetite for travelling, meeting and corresponding with people the world over. I think he invented the concept of networking'. I would agree with that.

RSMA AUSTRALIA

Minesmen needed Downunder

WORK – well, real work – for a miner is rarely in the big city, and many live in remote mining towns, so although there's a significant number in Australia, it's always been a tough job getting them together for a dinner or even a few beers! We are also an ageing community with few young graduates arriving to maintain the RSM ethos.

In Sydney, it's four or five years since we had a reunion so we keep in touch through casual meeting at industry functions.

I'm retired and enjoying life some miles out of Sydney. There are a few RSM alumni in the Southern Highlands. **Bernard Fisk** (Met 51-4) divides his time between garden, golf and bridge. Another gardener is **Gerry Govett** (Geochem PhD 55-8).

Andy Rutherford (Min 70-3) is very busy in the east coast coal industry as a longwall consultant. He wonders why there are not more skilled professional miners joining the industry. Contact him on tomcat@acenet.com.au. He would like to contact old

SHEFFIELD UK

IN JULY, **David**

Hattersley, Past President of CGCA and now Master of the Worshipful Company of Constructors, led members of his company and their wives on an outing to Sheffield. He invited his contemporary, **Trevor Brown** (Civil 51-4) and **John Bramley** (MinTech 53-9) to join them for a splendid dinner in Sheffield's Cutlers Hall.

colleague **Toyoshi**

Takakuwa (Min Tech 76-7).

Robin Rankin (Min Res Mgmt 87-8)

(robin.rankin@smgc.com.au) has been an ore resource consultant with Surpac-Minex for 15 years and recently did a stint in Saudi Arabia on a project for a Minesman, **Ali Al Amri**, with the Saudi Arabian Mining Co.

I have been struggling to maintain a listing of Minesmen in Australia, but many entries are sadly now out of date.

Update me at rbutler@acenet.com.au. **RON BUTLER** (Met 49-2)

RSMA WEST AUSTRALIA

Party time

WE HAVE our normal Sundowners on the first Friday of the month at the Celtic Club (5.30pm) which are normally

well attended with 10 to 15 Minesmen. This month we were joined by **Peter Moxall** (Min Eng 61-4) and wife Marlyse, who were on holiday from South Africa. A few stayed on to enjoy a meal. **Alan Dickson** (Min Eng 65-8)



Enjoying good health

DAVID BAKER (E 51-54) reports that *four electrical engineers got together for the 2004 CGCA Dinner to celebrate 50 years (or thereabouts) since graduating. The photograph shows Colin Edwards (E 51) and John Payne (E 50) (left of the picture with David Baker (E 51), his son Huw and Brian Lavery (E 51). All have clocked up three score plus 10 (or more) and are enjoying good health.*

David made contact with Dr Donald Macdonald (E 51), former Guilds' lecturer who offered a tour of the engineering department. Also contacted was Don Bartho (E 51), resident in Australia, but hoping to visit the UK soon and Eddie Davies (E 51). At the age of 70, he still runs his industrial control systems company and, until recently, was still playing squash. Eddie had hoped to attend the dinner but at the last moment had to visit a customer in Portugal.

Peter Bowler (E 51) missed the dinner as he was called as an expert witness. Retired from UMIST, he no longer cross country runs, but still undertakes electronics' consultancy work and indulges his passion for growing orchids.

OLD STUDENT NOTES

by John Gardiner

OCs OVERSEAS

After eight years since he was my best man, **Sandy Eames** (E67-0) arrived from New York. We spent time with my alpacas, explored a tiny bit of Mt Hood, sampled the beer and food including wines both conventionally (Ponzi) and biodynamically (Cooper Mountain) grown, visited the Oregon Trail Interpretation Center, wandered an Oregon festival of music, food and drink and tried several brews in The Elusive Trout in Sandy. The years melted away and the air rang with phrases from the *Goon Show* via *Round the Horn to Monty Python*.

DELAYED MAIL

I was delighted to receive 2003's New Year card from **Peter Spiro** (M36-9) – again a four-page affair, showing 'Strasse in Amalfi', painted by his father Eugene in 1956. Inside were paintings made in 2002 by Peter and daughter Elizabeth of the Amalfi coastline.

This year, Elizabeth's 'Church in Cassis' adorned the front. Inside are two pairs of pictures by Peter and Eugene, showing Cassis. A Eugene Spiro exhibition was held this year at the London Jewish Cultural Centre, with paintings loaned by the Centre Pompidou, German museums and London collections.

You can contact John at johnpgardiner@cs.com Or send your news to Teresa Sergot at the address on page two

MORE ALUMNI NEWS ON PAGE 27

IN 1969, the Tarmac Process Division secured a turnkey lumpsum contract for the supply of a specialist grease plant to Omsk. The lithium-based grease, using 12-hydroxy stearic acid, had an extremely stringent specification as it was required to be effective at temperatures as low as -40°C. (It's a sobering thought that when driving a vehicle in those conditions, even if the engine was running, it would be impossible to move if the road wheels were frozen solid!)

Vital

As part of the rather rigid Russian procedure, a team of five technical experts was required to visit our London HO to review the final design documents in detail, before any equipment was ordered. The approval of the final design would trigger the release of a substantial stage payment, so the visit was important.

The technical experts, all based in Kiev, visited in early '70 but as we were to learn, working with our Russian friends took a wee bit longer than scheduled!

We had to entertain them on weekends, partly out of genuine hospitality and partly to ensure they were all in a good mood when they renewed examining our work on the Monday.

First weekend it was the usual tour of London. The following entailed a similar cultural tour of museums and other points of interest.

The third we managed a first class football match and a pub crawl. By the fourth we were a little desperate, until I noticed London Welsh had a scheduled match against Llanelli! A few telephone calls ensured 10 reserved seats in the London Welsh stand and the organisation of two large

The Russian Visitation

John (WTJ) Davis (M45-8)

shares some memories in the latest of his occasional articles

black limos to take them, my wife Mary and me to the game.

The delegation leader, a very competent chemical engineer, by the name of Bilkov, spoke reasonable English, but the remainder of the team, were really struggling. They followed the game well enough as it was becoming popular in Russia, and I can even remember the score – an 11-11 draw. The Old Deer Park pavillion was in the course of a major renovation, but the visitors were soon ensconced inside and were thoroughly appreciating the (free) beer.

With their genuine aptitude for languages they had mastered a few essential phrases like *unwaith eto* (same again) *mae cwrw yn da iawn* (the beer is very good) and with their rather Celtic appearances I had the greatest difficulty in persuading my friends they were Russians.

High point

The high point of the evening came when a visiting Llanelli supporter stood on a table and conducted the assembly in very good harmonious rendering of old favourites, including *Myfanwy and Crimond*. 'Bolshoi spazebo, ve ave zongs like zees in Rwsia', declared our guests. I didn't tell them they were contributing their marvellous bass voices to some Welsh hymns!

As we poured our visitors into the limos Mary interjected: 'You must visit us at home next weekend'. 'Da pashoosta. Ve vil com to your dacha no?' 'No', I responded, not our dacha,

but to our dom'. Mary and I wondered what we had let ourselves in for!!

Commuters

I decided our visitors should travel from our London office in New Cavendish street, in the way I normally commuted; from town to Orpington! Bus to Charing Cross, train to Orpington, and car to the 'dom'; let them see what it was like! In a moment of what was for me an inspiration, I had advised Mary that the team would probably not be allowed to come on their own but would have a KGB 'minder' with them.

And so it turned out. On the Friday afternoon, who should invade my office but my old adversary Vealosoof, the commercial manager from Moscow, who definitely qualified as a professional minder.

After the normal one and a half hour's journey, we arrived at Starts Close. The technical boys all carried identical briefcases, whereas the minder kept his hands free!

A suitable welcome with drinks awaited our guests, although my wife wondered why they always went to the toilet in twos. Never as individuals, odd!

The reason for the briefcases now became apparent! The technical team were in a huddle. 'On behalf of the delegation we would like to present you with this', said Bilkov. 'How nice of you, I do like Russian vodka', said Mary. 'No No No', was the reply, 'Ukrainean vodka'.

'Plis accept this', volunteered Sauer, the electrical

engineer, offering a long playing record. 'Oh that's nice', replied our hostess, 'we can play these Russian folk tunes after our meal'. 'No No No No', declaimed Sauer, 'eet is Ukrainean tune. Similarly a tin of caviar was branded as Ukrainean caviar. All this with our KGB friend and minder sitting tightlipped in the corner.

At the conclusion of a rather splendid meal, we gathered around the piano for some spirited renderings of some of 'dos songs ve ad in da Rugbi club', but all the time our minder disassociated himself from the crowd to play chess with my son!

Incidentally this was the same character who, in a break from our negotiations in Moscow the previous year, had challenged me to a game of chess. But as he said, to make it more interesting 'we will play it in the mind, without the board, da?' I who could just about remember one or two of the standard opening moves. Fat chance!

Translation

Later in the evening, Mary, who was by now feeling the strain, was unable to suppress a yawn. One extremely observant guest saw Mary and whispered to Bilkov who immediately said 'Ve have enjoyed the evening, but ve ave ad enough'. It only shows how misunderstandings can arise. However, his concern was understood; we laughed and I replied that they had to enjoy further hospitality and some Scotch whisky because their taxis were not due until midnight!

Links Club – tradition trend-setter

I WONDER how long the famous Links Chain, held in this photograph below is now. In 1984, I believe it measured some 30 yards. Each Club member is represented by a link bearing his name, date of election and nickname. Names of the founding members are on the four large links. Nicknames were used because in those days most people were called by their surnames.

Robbie Robinson (Mech 1935-??) tells me that Links Club membership required the wearing of the Club tie on Thursdays, wherever in the world you happened to be. If you dared to forget you had to buy a drink for all present. Robbie also mentioned the Loving Cup also part of the Links tradition. After dinner, one always drank back-to-back out of it to guard against enemies!

Robbie's photograph of the Links Club was taken in 1937, on the steps up to the Albert Hall. If anyone recognises the people not named, we would love to hear who they are. Theo Marx (Mech 1937-??) says he has a similar photograph, taken in 1940.

The Links Club was started in 1926 by four young men'– CG 'RIP' Mayer, FJ 'John M' Millard, GHN 'Bobbie' Mayes and JG 'Percy' Shelley. They came from the electrical, civil, electrical and mechanical departments respectively. On December 10 they elected a further eight members and held their first meeting at Soho's Mars Restaurant.

The purpose of Links Club was to contribute to the social life of the City & Guilds College when it was largely a day college. Most students went home or into digs so there was very little organised social or sporting activity.

The Links Club started a new way for college life that was badly needed.

A 1950 photograph belonging to George Carr (Civ 47-50) inspired Rod Rhys Jones to look at the history of Links Club and what is happening now.

Indeed, the Guilds and the IC unions flourished rapidly after an injection from the Links Club. They owed the four young men a great debt, for pushing them along.

The traditions of the Club being at the heart of student activities, organising events and raising funds, have somewhat changed over the years. More recently it has earned a reputa-

line with Imperial College Union policies.

Change began when a number of Links worked over two years to raise money to manufacture links for the chain. It had not been updated for more than 10 years. Each silver link is inscribed with the name, nickname and date of initiation.

It was a major achievement (tried before with no success) and needed the combined efforts of Robbie Robinson, Bob Lloyd, Rod Rhys Jones, Jeffrey Mace, Robert Richards and many more. Email made the job relatively easy once a list had been created and money was donated from all corners of the globe. A special mention goes to David 'Yogi' Bishop, our CGCA contact in Melbourne. Having been charged with obtaining a special carved teak box



LINKS CLUB 1950 : From left, front row, holding the famous Links Chain, Spud, Roy, Alan I, Pip, Pierre, Derek, Paul, Ted, George and Dig. Middle row (seated) Tash, Dai, Useless, Gerry, Petell, Pete I and Alan II. Back row, Joe, Geoff, Felix, Ken and Jumbo.

tion for being somewhat over boisterous in the pursuit of its pleasure.

Membership is by election and, therefore, tends to be self-perpetuating. Some in college have charged the club with elitism. However, members claim that it is no more elite than the college or the first XV. The first selects its students on the basis of quality and the latter for skill. For selection for Links Club you need the quality of a 'sportsman' as defined by college members.

Last year's College Links, however, have been reviewing the club's rules and activities. Members are planning to make changes which will seek to return the club to the ethos of its founders and change its rules to bring it more in

from Bali to keep the Links Chain, he delivered it a gathering in South Kensington.

The Club is looking at inaugurating a College-wide sports award with the excess funds raised and plans to continue fundraising to sustain the award.

We certainly haven't heard the last of this enduring club yet.

CALLING all Links and Chaps

**Write and tell Imperial Engineer
of your stories and memories
of the clubs.**

**Do you think they still
have a rôle to play in the
students' unions?**



LINKS 1938: Front row left is Cecil Fry with Robby Robinson just behind him. Centre back is John Nicholson with the pipe. Centre front is ? Hills. Let us know if you can supply his first name or the names of any of the others. **LINKS RIGHT:** The modern scene with the Links in the new box.



CHAPS CALL!

RSM'S equivalent of the Links is the Chaps Club, founded in May 1921. RCS have the 22 Club, founded in that year. Ex-IC Union president Peter Harding (Metallurgy '37-'40 and '45-'47), who is a member of all three tie clubs, has loaned a bundle of old club booklets to Imperial Engineer. It is hoped to be able to use these as the basis of a future article. Unfortunately, none of these booklets throw much light on the early history of the Chaps Club. Other Chaps members who can help with this are invited to contact johnbramley@onetel.com

RSMA SOUTH AFRICA

Tempting targets

TEMPTING targets are a feature of just about any sporting code but these ones did cause your correspondent some concern! The annual cricket match between the RSMA and CSMA in SA was held in May at the Country Club, Johannesburg.

Simultaneously the Rolls Royce Club of SA was holding a lunch and had been

given permission to park a collection of 60 veteran and vintage cars on the clubhouse lawns. But the lawns are situated beside the cricket field that a bunch of couth (and not so couth) miners were using. Fortunately the 'Please mister, can we have our ball back?' routine wasn't required, although I'm still not sure whether that was due to good sportsmanship or poor sporting prowess!

Anyway, RSMA batted first and were given a flying start by Chris Rule

and Mark Button who put on 50 in next to no time. Thereafter things slowed down, despite Alistair Forbes' spirited knock of 23. RSMA totalled 126 in its allotted 20 overs. The RSMA's opening bowlers gave CSMA a torrid start (they were 35 for 7 at one stage) but the tail wagged – with a vengeance – and CSMA finished with a total of 108.

This was the fourth victory in a row for the RSMA.

CGCA SOUTH AFRICA

Moveable feast?

IN JOHANNESBURG, we continue to meet on the third Thursday each month. As we've decided to rotate venues, anyone wanting to join us should call me on 0862-654-6476 or Charles Lewis on 082-557-5074. Anyone in transit will also be welcome.

We had a very friendly joint Dinner with the RSMA at Sunnyside Park Hotel on June 26. This was our usual antipodean Christmas fare. The attendance was down due to seasonal bugs and unusual unseasonal travel bugs! The annual dinner will be in mid-November. My best regards to everyone. Richard Gundersen (chairman).

High Thai times



Triodes at a Thai restaurant. From left, Julie and Peter Adams, Peter Wright, Peter Cheung, John Harding, Martyn Hart (standing), Richard Lewis, Phil Harris and Sid Seth.

ONCE AGAIN we've had communication from Triodes, 31 years on from their escape from Elec Eng, about their annual January gathering. The traditional place is The George at the top of Fleet Street. They will be there next 7 January at 7pm, so come and join them, says Arch-Triode Martyn Hart.

For the first time in years they welcomed Peter Cheung. He is professor of Elec Eng, deputy department head, director of undergraduate studies and head of circuits and systems research group. That means he never escaped! He promise to buy any Triode lunch, so contact him on 0207 594 6200 or p.cheung@imperial.ac.uk.