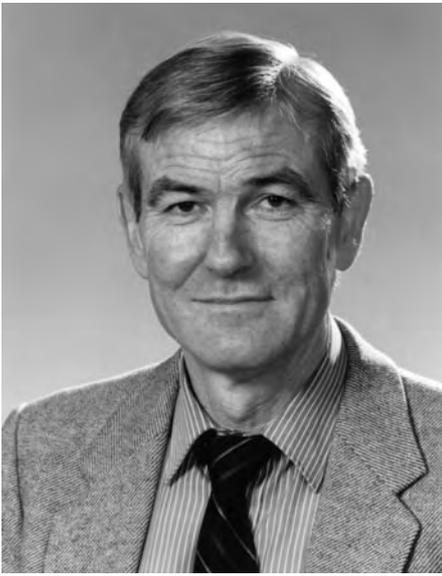


sCeNRe

Number 21
2008

08



Head of Department Message

Welcome to what would have been the 21st edition of CE News, but which has been renamed sCeNRE, to reflect the recent change in the name of the Department.

Civil Engineering has been taught at the University of Canterbury since 1888, one year after the establishment of the School of Engineering, and there has been a Department of Civil Engineering since 1929. Up until 2004, the Department was responsible for just one undergraduate degree, the BE (Civil).

In 2004, the Department also became responsible for the BE (Natural Resources) degree, which had previously been the responsibility of Lincoln University, in association with the School of Engineering. Since 2005, the Department has been reviewing and adjusting both degree programmes, to ensure efficient use of our teaching resources.

The Department had two Advisory Boards (one for each degree), which were consulted throughout the review and adjustment of the degree programmes. They were also consulted regarding the Department's name, and they both recommended that the name be changed, to reflect the broader range of teaching and research being done within the Department, and to emphasise the Department's ownership of, and commitment to, both BE degree programmes. The two BE degrees were reviewed by an IPENZ Accreditation Panel in 2007, with both retaining accreditation. The Accreditation Panel also recommended that the Department's name be changed.

There is an increasing demand for professional engineers who are aware of environmental and resource use issues, and who are able to design measures to mitigate adverse environmental impacts and ensure the efficient use of finite resources. The Department expects an increasing demand for teaching and research related to these matters, and wishes to signal to the community (including the profession and industry) that we are committed to the Natural Resources Engineering programme and the environmental parts of the Civil

Engineering programme, in addition to the more traditional parts of the Civil Engineering programme. In late 2007 the University agreed to the Department's recommendation that we become the "Department of Civil and Natural Resources Engineering".

During the last 12 months, two academics, Warren Walpole and George Mullenger, have retired, after 34 and 29 years of sterling service, respectively. Both were bid farewell by the Department in February 2008. In addition, Jason Le Masurier has remained in hospital, recovering from very serious head injuries received in an accident in January 2007.

Since the last newsletter, we have continued to face a strong demand for entry to the Department. This year we admitted 135 students to the 1st Professional year of the BE (Civil), compared with 117 in 2005, 127 in 2006 and 136 in 2007. We also admitted 24 students to the 1st Professional year of the BE (Natural Resources), compared with 25 in 2005, 29 in 2006 and 29 in 2007.

The large number of students means the staff is having to work hard to maintain the quality of our degrees, and some of our undergraduate teaching facilities have been under considerable strain. This situation has been exacerbated by delays in appointing new staff. Hence, it seems that the long predicted world-wide shortage of academics, along with the surge in demand for graduates in 'Civil' Engineering, is having a major effect on our ability to recruit enough top-notch people. Further to this, we were deeply saddened at the sudden death in 2007 of Mark Emerson, a promising young academic who was (along with Jane Jerram, a graduate of the Department) caught in a storm on Mont Blanc in France. We were looking forward to having Mark as a replacement for John Berrill, who retired in 2006.

2007 also brought about the latest Tertiary Education Commission review of research, known as the PBRF round. It was very pleasing to learn that this review of the research prowess of NZ academics resulted in our again being the top-ranked 'Civil Engineering' Department. The Department's average Quality Score is 5.1, increasing from 4.7 during the three years since the previous review, compared to 4.1 for the second-ranked department. This is a great reward for the Department's academics, who work very hard to undertake excellent research, despite the increase in teaching and administration loads associated with the increase in class sizes over recent years.

While being a research-led Department, we regard teaching as being of crucial importance. Excellent teaching provides the necessary foundation for students to pursue postgraduate research or become professional engineers. The Department has some excellent teachers, with one (Pedro Lee) being the UCSA Lecturer of the Year in 2007, retaining the title he won in 2006.

An important part of teaching is designing a coherent programme of courses, so that students are as well prepared as possible for the future. This year has seen a number of changes, such as the new Hydrology and Engineering Geology course in 1st Pro. This has facilitated further changes to the 2nd and 3rd Pro years of both the Civil Engineering and Natural Resources Engineering programmes, so our graduates are better prepared to meet the challenges associated with achieving a sustainable community. Further changes in course content are expected in the near future.

Finally, if you have any suggestions or wish to comment upon the above-mentioned developments, please do not hesitate to contact me. I would appreciate hearing from you.

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sCeNRE

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sCeNRE is an annual publication by the University of Canterbury Department of Civil and Natural Resources Engineering. It is for staff, students, alumni, friends and industry. Views expressed are those of the contributors, not necessarily the University.

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Student Prizes

The department would like to extend congratulations to all the students who won prizes for their excellent work in 2007. These prizes are made possible by the generous support of industry sponsors.

Civil Engineering Prize

Eu Ving Au

Concrete and Cement Association NZ Prize

2nd Pro : Jennifer Griffin

3rd Pro : Thomas Mander

Environment Canterbury Prize in Natural Resources Engineering 2

Jane Hutchinson

Mitek Award

1st : Drew Griffin, James Morris, Paul Denmead, Kenneth Jo, Glen Spooner

2nd : Hayden Young, Toby Cuthbert-Ashmore, Zhibo Chen, Matthew Hargood, Timothy Smith

3rd : Marlo Bromley, Ashley Millar, Pike Poff, Rob Verbakel, Drew Williamson

MWH NZ Ltd/Jim McFarlane Memorial Prize

Doug Latham

Natural Resources Engineering Prize

Michael Carroll

NZ AA Prize in Traffic Engineering

Toni Berridge

Roading NZ Prize in Pavement Engineering

Daniel Langford, Simon Fairbrother

RW Morris Prize for Coastal and Ocean Engineering

Peter Holden (Hydrology),
Michael Carroll (Hydraulics)

Pattle Delamore Partners Prize in Ecological Engineering

Michael Carroll

Tonkin & Taylor Prize in Geomechanics

Eu Ving Au

Tonkin & Taylor Prize in Hydrology

Eu Ving Au

Traffic Design Group Prizes

2nd Pro : Chris Morahan

3rd Pro : Thomas Small

For information on how you can be a prize sponsor please contact Alan Nicholson, Head of Department.
alan.nicholson@canterbury.ac.nz



Associate Editors in Department

Three academic staff members currently serve as associate editors for international research journals: Mark Davidson for Journal of Hydro-Environment, Rajesh Dhakal for ASCE Journal of Structural Engineering, and Mark Milke for Waste Management. Associate editors are assigned research manuscripts by the Editor-in-Chief, and then select peers as reviewers, evaluate the reviews, oversee manuscript changes, and judge the suitability for publication. As the pressure for publication in top research journals increases, the pressure on editors to ensure quality publications of long-term value also has increased. Rajesh observes that "serving as associate editor provides international recognition for academics and the Department. It also provides a unique opportunity to read the latest research from around the world."

ACENZ Best Practical Report Award

Eu Ving Au, a 3rd Professional Civil Engineering student, was presented with an award for ACENZ Best Practical Report 2007. His report was on work carried out at Tonkin & Taylor Ltd, Wellington.



International Recognition for Research in Environmental Hydraulics

Associate Professors Mark Davidson and Roger Nokes along with Gustaaf Kikkert (former PhD student) received the American Society of Civil Engineers Karl Emil Hilgard Award for 2008 for their paper "Inclined Negatively Buoyant Discharges", which was published in the Journal of Hydraulic Engineering. This award was first established by the society in 1939 and is awarded annually. The paper describes research relevant to the discharge of hypersaline effluents from desalination facilities. These facilities, while not directly relevant to New Zealand, are of increasing international importance because of the need to improve security of water supply, particularly in regions where climate change is having dramatic impacts on historical sources of water. Drs Davidson and Nokes have also received a substantial grant from the Middle East Desalination Research Centre, based on Oman, to continue this work and Dr Davidson is working with groups in Italy and Iran on related research. The capacity of the Hydraulics Laboratory to support this type of research has recently been expanded, with the development of a new 150m² dark room at the western end of the laboratory. Blackout conditions are essential for the effective operation of the optical measuring systems, which are the basis for modern experimental research in the field.

ACENZ (Association of Consulting Engineers of NZ) believe that good communication skills are very necessary, in particular, when dealing with clients. Therefore, this award's focus is on the report's presentation and the writer's ability to explain what was observed in the workplace, to describe what was done and comment on what was learned from the experience. The judges advised that they enjoyed reading the reports this year and stated all were of a very high standard.

Mr Andrew Read of Pedersen Read (on left), Consulting Engineers in Christchurch, presented a certificate and cheque for \$1500 to Eu Ving on behalf of ACENZ.

Recognition abounds

'Village Idiot' wins National Research Medal

Pedro Lee has been awarded the G.N. ALEXANDER MEDAL from the National Committee on Water Engineering (IEAust) for the paper entitled "Leak Location in Pipelines Using Transient Reflections". The paper was selected as best paper in hydrology and/or water resources published in an Institution publication over the past 18 months, which includes over 400 papers. The Award is presented at the Hydrology and Water Resources Symposium, currently being held in Adelaide, Australia.

<http://www.arr.org.au/awards/index.html>



NZSEE Conference Awards

Our department was well represented again in the awards presented at the 2008 NZSEE conference in April.

The prestigious Ivan Skinner Award was presented to Associate Professor Misko Cubrinovski.

The Otto Glogau Award was to Rajesh Dhakal, John Mander and Naoto Mashiko.

The Research Scholarship was awarded to Brendon Bradley.

The Best Research Paper was by Tobias Smith, S. Pampanin, A.H. Buchanan and M. Fragiacomio.

The Best Poster was by Eu Ving Au, G.A. MacRae, D. Pettinga, B.L. Deam and V. Sadashiva on "Simple Design for Yielding Structures Subject to Torsion".

Team Schlong – third floor social soccer

The Civil and Natural Resources Engineering boasts a reputable indoor soccer team that competes in the University of Canterbury Rec Centre's competition. Captain Dion Marriott says, "It's a great way to show off those trigonometry skills learnt during undergrad, as wall reflections are allowed..."

Squad highlights have included two recent wins after the transfer of international player, Alejandro Amaris of Colombia, and recruitment of star runner Perry Jackson of Nelson. Team numbers vary, but top play-maker, athlete, scorer and player, Brendon Bradley, with an average of 4 goals per game has estimated the overall performance as "pretty solid".

After the previous two games, reminiscent of sunny Nelson, the future success of the team looks cloudy as their star goal keep, Brian Peng of Masterton, languishes with a sore wrist after saving 9 goal attempts a month ago. Al Boys, while central to the team's midfield strategy and team talks, has stepped up to take on this pressure-fueled position.

We look forward to following the success of Team Schlong as the season progresses. For more information please contact Brendan Bradley on: bab54@student.canterbury.ac.nz.

Poster Competition

Michelle Wild was recently awarded a merit prize in the College of Engineering Postgraduate poster competition.

Michelle's poster was entitled "Growth Dynamics and Management of Braided Alluvial River Deltas in New Zealand". Well done Michelle; more HEEG entries are anticipated for 2009.

Brendan, Al, Perry, Dion (c), Mike, Tobias and Brian (seated) in the team strategy room (E316)- Kam and Alejandro missing.



Mark Milke now CPEng!

In late 2007, Mark Milke received registration as a Chartered Professional Engineer by the Institution of Professional Engineers New Zealand. He joins Des Bull as academic staff to have received registration under the new arrangements. Registration requires submission of a portfolio of evidence of relevant work experience, referee reports, and professional development, and also an interview.

Mark has provided peer review work over the years, and has been an appointed Peer Reviewer for the Kate Valley Landfill project since 2004. The Kate Valley work has allowed Mark to learn more about the practice of engineering through involvement in design, construction, operation, monitoring, and regulatory aspects of the project, while sharing the latest international knowledge on solid waste management with the facility's operators.

Out and about

NRE Field Trip 2007

Accompanied by Drs. Andy Dakers and David Wareham, seventeen 2nd pro Natural Resources Engineering students attended the NRE Field Trip in 2007. Once again, the field trip was sponsored by consultants Tonkin and Taylor and Aqualinc and, this year, the group visited several sites around the north part of the South Island. The particular focus was sites lending themselves to design issues of interest to Natural Resources Engineers. Without mentioning every stop, the students visited the Lincoln University Dairy Farm where, in addition to talking about irrigation concerns, efforts are being directed towards the monitoring and control of nitrate leaching losses from cow urine patches through the use of a nitrification inhibitor. Traveling to the West coast, the students also visited Solid Energy's Strongman mine where the site visit included a discussion of the main strategic initiatives that form part of the mine's rehabilitation programme.

Swinging over to Nelson, the next stop was the Wai-iti valley Community dam operated by the Tasman District Council. This 20m high irrigation dam stores approximately 800,000 m³ of water. The purpose of the dam is to provide drought security for irrigators downstream in the valley through augmentation of the groundwater resource during times of peak groundwater use. Also in Nelson, the students visited a subdivision in Tasman Heights being developed by Tonkin and Taylor while Andrew Fenemore explained the Motueka Integrated Catchment Management Research Programme operated by Landcare Research. This latter programme attempts to improve the understanding of land, freshwater and near coastal environments in catchments that have multiple, interacting and potentially conflicting land and water uses. The next stop was the Pelorus subdivision development near Blenheim which is being developed in several separate phases. Ross Davis of Davidson Partners Ltd. did an excellent job of explaining drinking water, wastewater, urban hydrology, and roading concerns associated with the sequential development of such a large initiative. Final stops included a visit to the Lake Grassmere salt works operated by Dominion Salt Ltd and another subdivision development in Kaikoura. Overall, it was a very successful trip and the students gained a greater appreciation for the engineering issues that Natural Resources Engineers routinely handle.

Dr. David G. Wareham



Debris Flow field Trip

At the end of 2007, Michael Carrol, Vivi Edwards and Perry Jackson, three final year Natural Resource Engineering students investigated the influence of different debris flow parameters using scale model studies as part of their Honours level research project. They were assisted by supervisor Dr. Lis Bowman (Civil Engineering), Dr. Tim Davies (Geology) and Prof. Jonathan Fannin, a visiting Erskine fellow from the University of British Columbia, Canada.

Debris flows are complex solid-fluid physical phenomena that pose a risk to infrastructure and lifelines especially as human development expands into mountainous terrain.

The group spent much of last year in the transportation laboratory running tests using a small scale debris flow flume with a clear Perspex side, allowing a high speed digital camera to record their dynamic behaviour.

In October 2007, the group then went to the base of Mt Thomas, a known debris flow site, to put some of their new found knowledge into perspective.

Perry Jackson, ME Candidate

Above: Tim Davies, Lis Bowman and Vivi Edwards survey the confined erosive transport reach reach while Perry Jackson and Jonathan Fannin climb the slope.

Below: Six months later, two current final year NRE project students, Beth Parkin and Fiona Myles (centre) were accompanied to the same site by visiting PhD student Nicoletta Sanvitale from University of Padua and newly-arrived (that morning!) PhD student Patrick Kailey. They encountered fresh deposits from a debris flow over the access track to the site. This debris flow had occurred only the day before, reminding everyone of the very real hazard posed by such events.



Other events...

Europe Study Tour, Bridget Burdett

BE (Hons) (Civil) 2002, UC

At the 2007 IPENZ Transportation Group Conference I was awarded the 2007 Group Study Award. I used the \$10,000 funding to visit leading researchers and engineering practitioners in Europe working in driver behaviour and road categorisation. I am currently enrolled part-time for a Master's in Engineering Transportation through the University of Canterbury. My thesis topic is a study of rural roads in New Zealand, with a focus on whether perceptual speed management treatments could be applied to manage speeds and reduce accident risk. Perceptual speed management treatments ideally create an environment where the safe operating speed of a section of road is so apparent as to not require enforcement. Roadworks sites, for example, show significantly lower operating speeds when they have been dug out, are surfaced in rough gravel, and have 2.5m traffic lanes delineated by cones, than when they appear the same as any standard 10m wide, sealed rural road carriageway – despite 30km/h speed limit signs being optional in both cases.

[Taken to its logical conclusion – this suggests that for safer driving, we should just dig up all the roads and admire the beauty of the natural soil beneath! But hey, I'm just a Geotech. – Ed.]

I embarked on a four week study tour in January 2008, involving meetings with transportation researchers and practitioners in England, the Netherlands, Denmark, Sweden and Finland. My foremost impression from talking to world leaders in the field of traffic psychology and in particular speed management is that driver speed choice is a very complex issue. There is evidence that perceptual speed management treatments can affect drivers' speed choice. Other factors influencing speed choice include the posted speed limit, enforcement methods, driver training, local culture and road type consistency, for example. While speed management is a very complex issue, it is clear that there are some things we as traffic engineers can do, to at least influence some of the people, some of the time. It is refreshing to look at road safety from the human factors psychology perspective. Increasing our understanding of how humans think and behave can only be beneficial in our quest to improve road safety.

Obituary Jane Jerram and Mark Emerson

We were greatly saddened last year to hear of the tragic death of Jane Jerram, her fiancé Mark Emerson and two friends in a climbing accident in late July 07 on Mt Blanc. Jane is remembered fondly by staff, her classmates and members of the wider community as a very personable, enthusiastic and many-talented person and an exceptionally competent engineer. Mark, whom she met when they were both doctoral students at the Ecole Hydraulique de Grenoble, shared many of these attributes. Mark had recently been appointed lecturer in geomechanics at Canterbury. The Mt Blanc climb was to have been their last climb together before he moved to New Zealand to take up that post, with Jane to follow after defending her nearly-completed thesis.

Both were exceptional young people. Jane had been Dux of Marlborough Girls College before coming to study civil engineering at Canterbury where she distinguished herself in the classroom and in sporting and cultural activities. Among other things, she was an effective class representative, an accomplished DramaSoc actress and finished amongst the top four or five students in 3rd Pro. A 3rd Pro project in geomechanics kindled a liking for research, which together with her French language skills led to post graduate studies at Grenoble. Once there, she so excelled in the Master's course she was awarded a French Government doctoral scholarship, a rare occurrence for a non-native French speaker and one who had not been through the rigorous preparation in maths and mechanics that characterises French engineering schools.

We offer again our sympathy to the families of all four victims of the accident, but especially to Mr and Mrs Emerson, of Moulton, North Yorkshire and to Peter and Ally Jerram of Blenheim, and assure them that our thoughts and prayers will long be with them.

John Berrill

Below: Cyclists in the snow, Uppsala, Sweden Roundabout cycle lane, Kongens Lyngby, Denmark



Web site moves on

UC Composting has recently morphed into a new web site to be known as CompostingNZ and will be hosted by the Waste Management Institute of New Zealand (WasteMINZ). Ian Mason, who created the UC Composting site in 2002, said that this was a very satisfying development that would provide the opportunity to broaden the scope of the site from its initial process orientation, to include pages on product use, product marketing and the various educational initiatives and interests. CompostingNZ is a part of the official website of CompostNZ, a group comprising industry, local government and academic representatives, whose mission is "to promote organic resource recycling in New Zealand". The site can be viewed at: http://www.wasteminz.org.nz/sector_groups/compost/composting=nz

Energy : use and abuse?

Concrete Research

Materials researchers, James Mackechnie and Larry Bellamy, have developed an energy efficient precast concrete wall system dubbed stratified concrete. Concrete containing light and heavyweight aggregates is stratified under vibration to produce a dense, structural layer providing thermal mass together with a light, insulating layer to limit thermal losses. An inorganic polymer concrete has also been developed as part of the work, which contains no Portland cement, consisting almost entirely of waste materials. The project has developed a more sustainable building material with low embodied energy and excellent thermal resistance as is required for new building regulations. Industry partners Fletcher Building have been instrumental in the development of the technology together with postgraduate students Thorbjorg Saevarsdottir and Phillip Park.

“Our stratified concrete panels currently grace the side of the concrete lab wing like tombstones” - James. *{It wouldn't be civil engineering without a few slabs of concrete lying about the place! Ed.}*



Reinforced Concrete from Theory to Practice: The ENCI 332 2nd Pro Concrete Laboratory Project

A unique feature of the teaching philosophy in the Department of Civil and Natural Resources Engineering has always been a strong focus on the practical aspects of structural design. A perfect example of this philosophy is demonstrated in the 2nd Pro Structural Concrete Course taught by Dr James Mackechnie and Dr Stefano Pampanin.

After having been introduced to the theoretical aspects of concrete technology, structural concrete analysis and design in the first part of the course, the 2nd Professional students were challenged with the design, construction, analytical prediction and experimental tests of a variety of beams. At the conclusion of the project, as part of the students' course assessment, a technical research report was submitted by each team. In order to allow for research-level set-up, the testing facilities and resources of the Structural Laboratory of the Civil Engineering Department were used. The technician involved, Tim Perigo (previously Gary Harvey) and the teaching assistants (Weng Yuen Kam, Alejandro Amaris, Umut Akguzel and Masoud Moghaddasi) put in a lot of time and energy to organize the laboratory projects!

As a further challenge, the student teams were then invited to present their results and findings during the 2nd Pro Annual workshop on Concrete Design and Behaviour, comprising members of the faculty, post-graduates and industry partners. The teams were expected to present and critically discuss design aspects and expected behaviour and observed response of the different specimens under a variety of loadings. aspects of engineering such as communication, research and critical thinking. This series of workshops has been generously sponsored by Golden Bay Cement for the past 5 years.

The 2nd Pro laboratory project has garnered interest from the Science Learn website

(<http://www.sciencelearn.org.nz/>), an initiative to encourage high school students to take up science-related study.

More information is available on:

<http://www.civil.canterbury.ac.nz/workshop/>

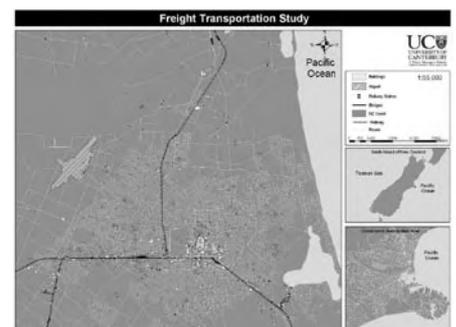
Freight Transport Study

The study of urban freight transport in New Zealand has been an exciting challenge for Aline Lang, PhD Student who has taken up the task of understanding and modelling freight movement in Christchurch. Under the supervision of Drs. André Dantas and Susan Krumdieck, she developed a pilot study to collect and organise data on socio-economic characteristics, land use, transport infrastructure and freight company's profiles. A GIS database and a report with the pilot study findings were produced for Environmental Canterbury, which is supporting her research. Aline is focusing now on developing accurate and reliable estimates of freight energy consumption in Christchurch.

Main features of the GIS database shown below.



Above: Student groups constructing beams.
Right: Mixing and casting the beams.





Postgraduate Opportunities

There are new postgraduate opportunities from new courses and course structure to scholarship offerings. Here is a sample of some of the new happenings and some of the current students already making use of them.

Please visit our scholarships page if you wish to provide a scholarship or apply for one.

<http://www.civil.canterbury.ac.nz/scholarshipsPG.shtml>

Postgraduate scholarships

There are many scholarships available to postgraduate students at national, university, departmental and project levels. In fact, more than 90% of our postgraduate students are supported by scholarships!

Available selected scholarships

- University of Canterbury Doctoral Scholarship
- University of Canterbury Masters Scholarship
- University of Canterbury International Doctoral Scholarship
- Civil and Natural Resources Engineering Departmental PhD Scholarship (**NEW**)
- Top Achiever Doctoral Scholarship
- TIF scholarship
- Commonwealth Scholarship
- Enterprise Scholarship
- NZIDRS Scholarship
- NZDS - formerly NZAID
- International Agreements (France, Germany and Malaysia)

In addition to scholarships supported by the NZ government and university / department, there are research projects and grants through which our students are supported such as the Foundation for Research Science and Technology (FRST) and Royal Society of New Zealand Marsden Fund.

Travel / conference grants

Postgraduate attendance at international conferences is an important part of research - of learning how to be a researcher, of generating and testing ideas, learning about the research field and building a network of contacts.

Full time PhD students in the Department of Civil and Natural Resources Engineering are now eligible for a one-off Conference Travel Grant of up to \$4000. (**NEW**)

Travel can also be funded from research grants, by industrial sponsors and consultancy earnings, or from schemes such as the New Zealand Postgraduate Study Abroad Awards and those provided by the Royal Society of New Zealand.

Some industry and government-related groups that are currently funding research students

Via scholarships and/or direct research costs:

- Avon-Heathcote Estuary Trust (ME student Joe Wheeler)
- Arup Fire (Australia) (ME student Emma Heyes)
- Hanshin Expressway Corporation (PhD student Koichi Sugioka)
- Earthquake Commission (ME student Perry Jackson)
- Otago Regional Council (PhD student Michelle Wild)

Via research projects:

- Solid Energy New Zealand, Coal Research Limited and Coal Association of New Zealand (PhD student Craig McCauley)
- CCC WWTP, NIWA and DP Consulting (PhD student Julia Valigore)
- ECan (several undergraduate projects)
- Fire Protection Association of NZ (FPANZ) (part time student, Biswadeep Ghosh)
- Auckland Civil Defence Emergency Management Group (ME student Amy Stephenson)
- Earthquake Commission (PhD student Vinod Kota Sadashiva)
- CCC (ME student Joe Wheeler)

New Departmental PhD Scholarships

In 2008, between five and six PhD scholarships are being offered by the department. The value in 2008 (per year) was \$15,000 plus tuition fees at NZ domestic rate for thesis only students (ENCL790). The scholarship amount will increase in 2009.

Eligibility:

- Full-time PhD students who either started their studies in the previous year or will start this year.
- Candidates who applied for UC Doctoral Scholarships, but missed out, are automatically taken into consideration, however, still have to submit the Department PhD Scholarships Application Form
- GPA will also be considered.

New Qualification

We have established a new post-graduate certificate (PGCertEng) in both Fire and Transportation engineering which is primarily targeted towards those part-time students who are already working in industry. The PGCertEng consists of five of the six courses required for the Master's and allows part-time students to complete a qualification in 2½ years rather than the typical four needed for the Master's degree. Once the five courses have been successfully completed a student can graduate with the PGCertEng or transfer to the Master's and do the one extra course and research topic.

Transportation Engineering offerings

Continuing the effort to make the Transportation courses available for the returning or practicing engineer, twelve transportation courses will now be offered on a rolling basis every 2-3 years. These include a prerequisite "Fundamentals" course for non-engineers and a compulsory "Planning and Managing Transport" course. Topics such as sustainable transport and traffic modelling will be expanded under the new suite of courses.

Work, work, work...

GIS Modelling Lab

Growing demand for GIS based technologies and solutions in engineering and science have translated into large numbers of postgraduate students seeking projects involving GIS research and modelling. To cater to this demand, the GIS modelling laboratory was established by Drs Tom Cochrane and Andre Dantas in late 2006.

The lab provides an atmosphere where students can develop GIS applications and exchange knowledge. It caters to a wide range of students working on interdisciplinary GIS modelling research from within the department and those from Biology and Geological Sciences who are also supervised by Civil and NRE staff.

The GIS modelling laboratory equipment and facilities include:

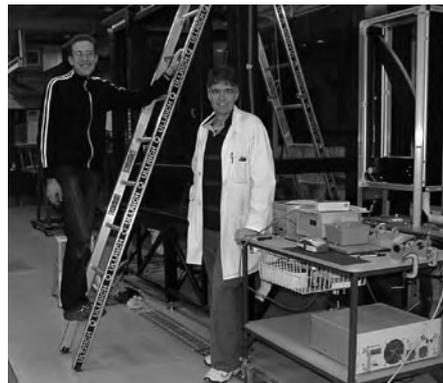
- GPS's (Trimble GeoXH pro and others)
- Computer hardware (various Intel duo core computers)
- GIS software (ArcGIS 9.1 and 9.2, IDRISI, TransCad, GeoMedia, MapInfo, etc.)
- Digitizing tablets (Summa sketch 12 inch)
- Data server (1.5 Tb server)
- Large plotter



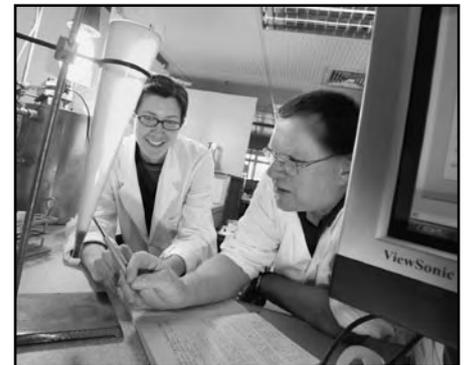
GIS modellers left to right: Ali Bazgard, Thomas Wilson, Rebecca Neumegen, Dr. Andre Dantas, Michelle Wild, Andy Welsh, Frederico Ferreira, Dr Tom Cochrane, and Gyanendra Regmi (photo-shy postgrad students: Darragh Woodward and Govind Acharya).

Fluids lab update

Other major initiatives in the laboratory include the commissioning of a transient research facility (consisting of two 50 metre long pipelines), which will provide support for Dr Pedro Lee's research into leak detection in pipe systems; the new glass tank pictured below, and the refurbishment of our largest flume, which has not been fully operational for some time, and will be initially utilised by Dr Tom Cochrane's work to study the growth dynamics and management of alluvial braided river deltas in New Zealand, a project funded by the Otago Regional Council. These initiatives have placed exceptional demands on our technical colleagues Ian Sheppard, Alan Stokes and Kevin Wines who have coped remarkably well; we are greatly indebted to them.



Cameron Oliver (PhD Student) and Roger Nokes with the new experimental facility where research into the behaviour of hypersaline discharges is continuing.



Water Quality Lab Humming

The large number of research projects in the Level 3 laboratory in the past year has made it a busy place for staff and students. The projects that have been supported include:

- production of volatile fatty acids for biological nutrient removal
- effect of arsenic on biological nutrient removal
- treatment of acid mine drainage with sulphate-reducing bioreactors
- production of algae for biodiesel production
- anaerobic digestion of food wastes
- COD/BOD analysis of wood kiln drying condensate water for Department of Chemical and Process Engineering
- TOC analysis for School of Forestry study of soil carbon

Peter McGuigan, (shown above with PhD student Julia Valgore) water quality technician, is busy keeping all projects running while ensuring the laboratory is available for undergraduate laboratories. "I have enjoyed working with students on such a diverse and interesting set of projects."

Dynamic Response Recovery Tool - Resilient Organisations

The development of the Dynamic Response Recovery Tool (DRRT) has been exciting and challenging research for The Resilient Organisations Research Programme and particularly for Frederico Ferreira (PhD Student - shown below on left with observation team at Transit New Zealand's Traffic Management Centre in Auckland - 13th March 2008). Fred along with Andre Dantas (Senior Supervisor), Erica Seville (Co-supervisor) and Sonia Giovinazzi (Research Engineer) has been involved in observing emergency exercises throughout New Zealand and meeting State Highway Organisations representatives. The aim of these activities is to learn how information technology can support and improve decision making during extreme events. Focus is given to the State Highway network managed by Transit NZ and its consultants and contractors. It is expected by the end of 2008, that variables involved in the decision making will be identified and to have a preliminary version of the DRRT available.





Fire Engineering notes...

New Courses

Last semester a new optional course (ENGR403 Introduction to Fire Engineering) was offered to introduce senior undergraduate engineering students to fire engineering. The course attracted 50 students from civil, mechanical and chemical engineering which was double what was expected. The course covers a wide range of topics including fire dynamics, fire safety systems, structural fire performance and human behaviour. It is hoped that the course will attract more students into our Master's programme and raise the profile of fire engineering amongst the other disciplines as students enter the professional workforce.

We have also established a new post-graduate certificate (PGCertEng) in fire engineering which is primarily targeted towards those part-time students who are already working in industry.

Funding for risk based fire engineering

The University and BRANZ have been awarded \$427,500 in funding by the Foundation for Research Science and Technology (FRST), Building Research and the Department of Building and Housing. This will be used over the next five years to develop the BRANZFIRE zone model as part of a tool to support risk based fire engineering in New Zealand.

The tool will have a database of building contents so it can account for item to item fire spread. The performance of active and passive fire safety systems will also be included. Probability distributions generated by the tool will be used as a way in which compliance can be shown through a probabilistic statement of performance.

The funding includes support for at least one PhD scholarship and also one or two Master's scholarships each year.

For more information on Fire Engineering happenings, please visit the web page www.civil.canterbury.ac.nz/fire/firehome.shtml or download and read FENews from www.civil.canterbury.ac.nz/pubs/FENews/FENews.shtml.



Transportation Engineering turns a corner

Over the past six years, the postgraduate transportation programme at Canterbury has operated with very few major changes. However the transportation industry has continued to evolve, both in terms of the types of issues dealt with and the range of people involved. With this in mind, a comprehensive review of the programme was undertaken over the past year, in consultation with students and industry and changes are being put in place.

From 2008, students will be able to study for the following postgraduate transportation qualifications at Canterbury (either full-time or part-time):

- A one-off "Certificate of Proficiency" (COP) paper
- A 5-paper Postgraduate Certificate (PGCertEng) in Transportation Engineering
- A 10-paper Master of Engineering Studies (MEngSt)
- A Master of Engineering in Transportation (MET), typically involving up to six papers and a research project
- A doctoral (PhD) research thesis

Twelve transportation courses will now be offered on a rolling basis every 2-3 years, including a prerequisite "Fundamentals" course for non-engineers and a compulsory "Planning and Managing Transport" course. Students can also credit some transport papers from the University of Auckland and other relevant papers at Canterbury (e.g. risk management, construction management, geography).

The new programme is designed to cater for a range of people with various backgrounds:

- Engineering (BE) Graduates
- Non-Degree Engineers
- Non-Engineers
- Working Practitioners
- Distance (non-Christchurch) Students
- Overseas Students

Canterbury lecturer Glen Koorey, who oversaw the changes, says that the aim is to ensure that the programme meets a wide range of needs. "We've seen an increasingly diverse range of students take part in our programme and that has created a few challenges. At the same time, I suspect that some people have been put off study because of their background or for fear of committing to too much. Our new setup should provide appropriate entry points and progression paths, depending on the interests and ability of the students."

For all the details please read METNews from www.civil.canterbury.ac.nz/pubs/transport/transportpubs.shtml.

Travels and conversations

Prof Jonathan Fannin waxes lyrical...

Sunrise bore all the frosty hallmarks of a winter morning in July, confirmed in elegant simplicity by the flashing neon sign warning of ice outside the arrivals terminal at Christchurch International Airport. We had arrived, and the much-anticipated Erskine Fellowship was now very much a reality. Together with my wife and three children, we shouldered our five rucksacs, five daysacs, two tents, two ski bags, and two laptops, and stepped out enthusiastically to the warmest of welcomes from a colleague at the Dept. of Civil Engineering.

Now, for their sins, our children had just finished their school year in Vancouver at the end of June – only to start school again in Christchurch barely two weeks later! Early bemusement at this situation soon gave way to a nascent protest movement, with youthful indignation doubling upon the discovery that they should celebrate Father's Day, for the second time in short succession, not long after setting foot in New Zealand. However, and in keeping with the benevolent dictatorship that befits all good parenting, we had distracted them by a week on Rarotonga en route to New Zealand, and then mercilessly crushed the uprising in its infancy. Following the promised week of beaches and snorkeling, we landed at Christchurch on Saturday, bought school uniforms on Sunday, and walked them at a brisk pace to their respective schools bright-and-early on Monday!

Later that same morning I found myself inducted to the morning tea ritual at the university, through which I was reminded of the simple things that are the foundation of academic collegiality, or so I believed, until Friday afternoon came to pass and with it the vibrant social commons of the University Staff Club.

Truth-be-told, I found my new colleagues in Civil Engineering to be absolutely terrific. It was genuinely enriching to contribute to

the teaching of the department, and share insights to engineering practice from Canada. It was also most encouraging to discover that undergraduates are, generally, the same creative, energetic and enthusiastic individuals everywhere. Beyond teaching, it was a pleasure sit down with colleagues in order to forge new ideas for future research collaboration, and lay the foundations for reciprocal visits to the University of British Columbia.

Weekends were spent hiking and, occasionally, skiing around Christchurch as we ventured outside our campus housing, so perfectly modelled on Spartan charm, for the relative luxury of a night in our tents (which offered a similar degree of thermal insulation, but a little less furniture). At home, we quickly mastered the technique of retiring to bed under copious layers of heavy wool blankets, which appeared to induce sleep through impairing the ability to breathe freely whilst pinning us motionless under the leaden weight of the covers...

As Winter yielded to Spring, for an unfamiliar second time in our calendar year, thoughts turned to the end of the university term and the 'delayed gratification' of the summer holiday that we had forsaken upon crossing the equator. The sadness with which we left Christchurch was due entirely to the many wonderful people whom we had grown to know in such a relatively short time, and tempered only by the anticipation of a wild and wonderful journey crisscrossing New Zealand. And so began travels that took us up to the museums of Wellington, to wild deserted beaches and penguin colonies, to Maori influences around the Bay of Plenty, over the volcanic terrain of the Tongariro crossing, to floating through glow-worm caves, via the history of Waitangi, to landslide field-trips (a family concession to the occasional mixing of business-and-pleasure), to the Great Walks of the Abel Tasman and the Heaphy tracks, to a serene couple of days in Queen

Charlotte Sound, and on to witness a glacier collapse, try river-boarding, and finish the journey's end at Mount Cook amongst the towering peaks of the Southern Alps, where together with our two eldest boys, we climbed the first mountain that Sir Edmund Hillary had ascended as

Jonny's visit is a multi-disciplinary, multi-family affair: researchers and proto-researchers from Geotech and Management take Castle Rocks

a young boy. And what a wonderfully enriching journey we had experienced... at so many places, upon packing a tent into a rucksack, the flattened ground bore gentle witness to the imprint of our souls, for there were just so many moments of simple yet heartfelt beauty.

Jonathan Fannin held an Erskine Fellowship at the Department, July to October 2007.

Lis Bowman tells us...

"Towards the end of 2008 I was the recipient of a UC Erskine award, enabling me to travel to the UK and to Western Australia. My arrival in the UK drizzle and damp was met with raised eyebrows by one academic "Why on earth did you come NOW? Nobody comes here in Winter?!" to which I replied "To remember why it was that I left..!"

My trip was aimed at examining the potential for developing a new 3rd pro or postgraduate course in Ground Engineering and how to implement a system of compulsory final year undergraduate projects without giving the staff a collective nervous breakdown. I travelled to a number of universities well-known for their excellent undergraduate programmes in the UK, including Cambridge University, Imperial College and University College London, returning to NZ via the University of Western Australia. Advice on the new course idea was detailed and sound. Reactions to the compulsory projects conundrum ranged from the slightly hysterical "You have how many undergraduates? Are you mad?! It can't be done!" to the pragmatic "Well, if you make the project worth a reasonable chunk, say, over a third of their final mark, the students will take it on themselves to make it work for them. They will become responsible for themselves – at least, we work on that assumption. The main trick is to have it all organised the year before!"

As well as talking teaching, I was fortunate to be able to attend the UK's travelling workshop on Microgeomechanics at University College London to discuss research. I also gave seminars on recent debris flow work at Cambridge University and at UWA and caught up with friends and colleagues in both UK and Australia."



More research group news

Hydrological and Ecological Engineering (HEEG) Research Group.

Re-branding to reflect current research activities:

When the Department underwent a name change in late 2007 to become the Department of Civil and Natural Resources Engineering, the Natural Resources Engineering Research (NRE) Group became the Hydrological and Ecological Engineering (HEEG) Research Group. This was an important initiative to (a) avoid confusion with the undergraduate programme in Natural Resources Engineering and (b) better reflect the current research of its members. The focus of HEEG is on applying integrated hydrological and ecological principles to solving worldwide engineering problems. Our research covers interrelated topics including natural and engineered wetland systems, catchment hydrology and GIS, sediment transport, irrigation, waste reuse, stormwater, and modelling sustainable use of water and land resources. We currently serve as senior supervisors for five PhD, three Master and four undergraduate honours research students. Current and completed research projects can be found on our webpage at www.civil.canterbury.ac.nz/hydroeco/research.shtml.

Do we really need more rain outside?

A combined rainfall simulator and steep flume apparatus (shown here) was built to support Govind Acharya's PhD research which examines the interactions between shallow landslides and erosion. The results of these experiments are being used to develop a model for the prediction of sediment discharge from catchments. Many thanks go to Ian Sheppard, Alan Stokes, Kevin Wines, Mike Weavers, and Stu Toase who were instrumental in building the various components and have helped maintain the apparatus.



Successful PhD research proposals defended.

Govind Acharya, Michelle Wild and Julia Valigore all successfully defended their PhD Research Proposals to the Department recently. Congratulations all!

HEEG Seminar Series:

Members of HEEG meet regularly (usually twice a month) for a series of seminars given by its members on a rotating basis. Recent presentations have included trial run of conference presentations or research proposals and the introduction of a new presentation learning software tool (ViP) developed by Tom Cochrane.

Recent milestone in engineered wetlands.

Craig McCauley's PhD research on engineered wetlands for treating acid mine drainage at Stockton coal mine has successfully progressed into stage 3; pilot-scale systems. Peter McGuigan and Bob Wilsea-Smith have been a great help in constructing the modules for this stage of the research and their assistance has been invaluable to the success of the project. Based on results from his field monitoring and mesocosm-scale laboratory bioengineered systems, Craig optimised the designs of his pilot-scale (800 m²) systems, which were recently completed on-site. Craig's research will now focus now on assessing the treatment performance of the pilot-scale systems at Stockton, which will be a first for New Zealand in using primarily waste substrates and gravity energy to treat a complex mining wastewater.

A list of our recent (including downloadable) publications is available on our webpage.



Construction of the pilot-scale engineered wetland systems at Stockton Mine.

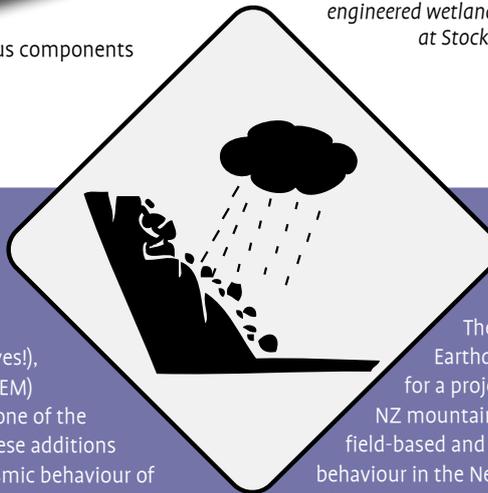
Geomechanics

New Lab / Modelling equipment

The geomechanics lab is benefiting from a new dynamic Triaxial (or at least it will be once it arrives!), two copies of the distinct element mechanics (DEM) software, PFC3D (jointly held with Geology) and one of the finite difference modelling software, FLAC3D. These additions will beef up both our testing (particularly for seismic behaviour of soils), and numerical modelling capabilities within the group.

Funding success

Lis Bowman was successful in an application to the Royal Society of New Zealand Marsden Fund to support research into the "Internal Mechanics of Debris Flows". The project will be an experimental one, involving the construction of a transparent debris flow flume and using optically-matched transparent debris flow materials. Ordering of materials for construction of the flume is underway.



A visiting PhD student, Nicoletta Sanvitale, from University of Padua in Italy is associated with the project.

The group also received support from the Earthquake Commission's (EQC) biennial fund for a project entitled "Debris flow mechanics for NZ mountain catchments" – aimed at a mixture of field-based and laboratory-based research on debris flow behaviour in the New Zealand context. Patrick Kailey from the USA has recently arrived for a PhD, supervised Lis Bowman & Tim Davies, which will be linked to this project.

In the past year, EQC also provided biennial funding for the project entitled "Analysis and design of pile foundations in liquefying soils" (Misko Cubrinovski) and non-biennial support of a PhD project "Characterization of undrained behaviour of Christchurch soils" carried out by Sean Rees, and supervised by Misko Cubrinovski and Lis Bowman.

Timber Engineering Research Group

Prof Andy Buchanan is leading a small active group of staff and students in the development of innovative timber structures. These large-span timber buildings, from single storey to 10 storeys or more, will have a wide range of uses in New Zealand, Australia and other markets.

STIC

The timber research group is seeking funding from FRST through the establishment of a Research Consortium to be jointly funded by industry and government. It is expected that this will lead to the establishment of the Structural Timber Innovation Company (STIC) by mid-2008.

The industry investors will be Carter Holt Harvey, Nelson Pine Industries, Wesbeam (Australia), Forest and Wood Products Australia, NZ Pine Manufacturer's Association, Building Research and the Universities of Auckland and Canterbury. The company will have major research contracts with the University of Canterbury, the University of Auckland, University of Technology Sydney and BRANZ Ltd. It will also collaborate with overseas universities and research establishments.

Timber composite floors

PhD students David Yeoh and Nor Hayati are leading a team investigating concrete-timber composite floors, under the supervision of Massimo Fragiaco and Bruce Deam. Massimo has taken up employment at the University of Sassari in Italy, and will visit Canterbury in July and August 2008. Undergraduate student help on the project has included James O'Neill, Jenny Haskell, Marta Mazilli and Mary de Franceschi. This project is supported by Carter Holt Harvey Woodproducts through Warwick Banks, and Professor Keith Crews from the University of Technology Sydney.



Andy Buchanan (far right) shown here with timber research students and technician staff.

Long term performance

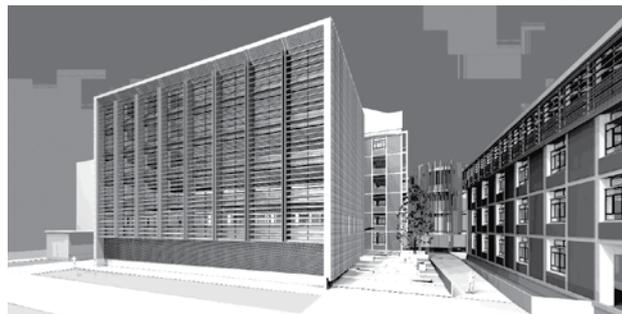
3rd Pro student Chris Wallington is helping Massimo Fragiaco on a research project to assess the long term performance of epoxy-glued portal frame connections in glulam structures.

Seismic design of timber structures

The seismic design group is carrying out experimental testing and analytical studies of structural frames and walls made from post-tensioned timber members. This is led by Stefano Pampanin and Bruce Deam. Research students include Tobias Smith (ME) Asif Iqbal (PhD), and Michael Newcombe (PhD). Michael did the first tests on post-tensioned timber in 2004, and has returned from Masters studies at the ROSE School in Italy. This group will be assisted by Alessandro Palermo from the Technical University of Milan, and Adjunct Professor Nigel Priestley.

Six-storey virtual building

A "virtual" timber alternative has been designed for the Biological Sciences Building under construction on campus. The timber alternative will never be built, but it has been a platform for many feasibility studies, including investigation of composite floor systems, seismic performance, fire safety and sustainability.



Fire safety

Fire safety of multi-storey timber buildings is being studied by ME(Fire) students Jeremy White, James O'Neill and Robert Gerard, supervised by Andy Buchanan, Mike Spearpoint and Geoff Thomas (VUW) and Colleen Wade (BRANZ). Other students, including Agnese Menis, Marrit Stub, David Carshalton, and Carla Austruy have been assessing the fire resistance of timber connections with the help of Massimo Fragiaco and Peter Moss.

Sustainability

UC has a contract from MAF on "Maximising the Use of Wood in Sustainable Buildings". We are using the six-storey virtual building as a case study, comparing the environment impact of concrete, steel and timber alternatives. This work is led by Stephen John with help from Nicolas Perez, Master's student at Victoria University Wellington. Nicolas has calculated the lifetime energy use of the alternative building materials, and is assessing the carbon footprint through a subcontract to Scion.

Other timber activities

Andy Buchanan (Professor of Timber Design) has stepped down as President of the NZ Timber Design Society. He is on the Management Team of the NZ Wood promotional campaign which has launched magazine and TV advertisements for increased forestry and greater use of wood as a building material, with a new website under construction. He recently prepared the 3rd Edition of the Timber Design Guide, available from the NZ Timber Industry Federation.



2007/2008 Departmental Staff

* - Emeritus professors

Canterbury and Westland Schools Science Fair 2007

The Department of Civil and Natural Resources Engineering of the University of Canterbury prize for 2007 was awarded to **Evelyn Spiers** of Year 7, St Patrick's School, Bryndwr.

The prize is awarded annually to the best exhibit in the Fair concerning an aspect of Civil or Natural Resources Engineering and consists of book vouchers for both the student and for the school.

In her exhibit titled "Rotten Rock Repair", Evelyn examined possible methods of solving a real engineering problem, using a range of materials and performing experiments with several variables. Evelyn was able to understand the context of the problem in terms of engineering risk, and the economics of the solutions.

Judge: Brandon Hutchison



Academic/Research Staff

Lis Bowman : Geomechanics
Andy Buchanan : Timber and fire
Des Bull : Structural concrete design, earthquake engineering
Athol Carr : Structural dynamics, finite element analysis
Misko Cubrinovski : Geomechanics
Andre Dantas : Transport planning, GIS
Mark Davidson : Fluid mechanics
Roger Dawe : Surveying
Bruce Deam : Earthquake and timber
Rajesh Dhakal : Structures
Charley Fleischmann : Fire
Glen Koorey : Transport and traffic
James Mackechnie : Concrete materials
Ian Mason : Environmental
Mark Milke : Environmental
George Mullenger : History of civil, continuum mechanics
Alan Nicholson : Transportation
Roger Nokes : Fluid mechanics
Aisling O'Sullivan : Natural resources
Stefano Pampanin : Structures
Mofreh Saleh : Transport and pavement
Erica Seville : Risk, systems
Michael Spearpoint : Fire
Rabin Tuladhar : Structural engineering
Hugh Thorpe : Groundwater and ecological
Warren Walpole : Structural steel design, earthquake
David Wareham : Environmental

Support Staff

Elizabeth Ackermann : Departmental Administrator
Louise Barton : Postgraduate Administrator
Janet Butcher : Departmental Administrator
Alan Jolliffe : Administrative Services Manager
Catherine O'Shaughnessy : Undergraduate Administrator

Technical and General Staff

Melody Callahan : Graphics, Publicity, Web
Peter Coursey : Computer technician
Nigel Dixon : Structures laboratory
Grant Dunlop : Fire Engineering laboratory
Siale Faitotonu : Geomechanical laboratory
Mosese H Fifita : Structures laboratory
Frank Greenslade : Transport laboratory
Brandon Hutchison : Computer analyst
Gavin Keats : Structures laboratory
David MacPherson : Tech Services Mgr, Environmental laboratory
Russell McConchie : Fabrication and testing
Peter McGuigan : Environmental laboratory
John Maley : Structures laboratory
Richard Newton : Electronics workshop
Tim Perigo : Structures laboratory
Norman Piling : Structures laboratory
Alan Poynter : Model structures laboratory
Ian Sheppard : Fluids laboratory
Bob Wilsea-Smith : Fire laboratory
Stuart Toase : Fabrication, testing and stores
Michael Weavers : Electronics laboratory
Kevin Wines : Fabrication and testing

Retired Staff

John Berrill : Geomechanics, eng seismology
Nigel Cooke : Structures
Rob Davis* : Geomechanics
David Elms* : Risk analysis
Richard Fenwick : Structures
Bruce Hunt : Fluid mechanics, groundwater flow
Peter Moss : Structural analysis
Tom Paulay* : Structural design
Ian Wood* : Fluid mechanics

The Systems Boys

David Elms (DGE!) writes:

At a recent presentation given by Professor Paul Jowitt (Heriot Watt University, Edinburgh) to honour the retirement of Professor David Blockley from the University of Bristol's Civil Engineering Department, he said he thought the Systems Engineering movement within civil engineering had been pushed along by a gang of five. "The Systems Boys", he called them – namely David Blockley, Colin Brown, David Elms, Ian (John) Munro and Paul Jowitt. All have connections with our Civil Engineering programme at Canterbury.

Ian Munro was professor of civil engineering at Imperial College till his early death about 20 years ago, and he was particularly interested in integrating different forms of analysis into a whole. He supervised the PhD work of both Paul Jowitt and our own Peter Moss, and was a close friend of Colin Brown.

David Blockley is shown standing with DGE in front of Brunel's ship, the SS Great Britain. Besides being a professor, David is also past president of the Institution of Structural Engineers, and among other systems activities he was instrumental in helping structural engineers to look more carefully and systematically at the causes of failure in structures. He spent time as an Erskine Fellow in the department in the past and has visited on other occasions.

Colin Brown (shown to the left of Paul Jowitt) was a professor of civil engineering at the University of Washington, Seattle, and a formidable intellect. Colin and Paul cofounded the journal Civil Engineering Systems, now known as Civil and Environmental Engineering Systems. He also spent time as a Erskine Fellow and otherwise was visitor to the department on more than one occasion.

Paul Jowitt and DGE have met many times over the years as shown in the last two photos (one taken outside one of their favourite coffee bars...). Paul is Director of the Scottish Institute for Sustainable Technology. He is currently Vice-President of the Institution of Civil Engineers (ICE), UK and next year he will be its President, at which time he intends making an official presidential visit to us here at Canterbury. Many will remember Paul as giving the ICE Brunel Lecture here last year [to a packed audience of student staff and visitors! – Ed.] and he has even gone to the lengths of becoming a fellow of IPENZ – an extreme gesture, to be sure, but typical, in a way, of the good feelings the Systems Boys have for Canterbury.

