CE News

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

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05

2004 Departmental Staff

** - Emeritus professors*

Academic/Research Staff

Chris Allington
Structural concrete

John Berrill
Geomechanics, engineering seismology

Andy Buchanan
Timber and fire engineering

Des Bull
Structural concrete design, earthquake engineering

Athol Carr
Structural dynamics, finite element analysis

Nigel Cooke
Structural engineering

Erica Dalziell
Risk, systems

Andre Dantas
Transport planning, GIS

Rob Davis*
Geomechanics, continuum mechanics

Mark Davidson
Fluid mechanics

Roger Dawe
Surveying

Bruce Deam
Earthquake and timber engineering

Rajesh Dhakal
Structural engineering

Richard Fenwick
Structural engineering

Charley Fleischmann
Fire engineering

Bruce Hunt
Groundwater flow, analytical analysis

David Elms*
Risk Analysis

Glen Koorey
Transport and traffic engineering

Jason LeMasurier
Eng. management, risk, geotechnical engineering

Kevin McManus
Geotechnical and foundation engineering

James Mackechnie
Concrete materials

John Mander
Structural and earthquake engineering

Ian Mason
Environmental engineering

Mark Milke
Environmental engineering

George Mullenger
History of civil engineering, continuum mechanics

Peter Moss
Structural analysis

Alan Nicholson
Transport planning, engineering and safety

Roger Nokes
Fluid mechanics

Aisling O'Sullivan
Natural resources engineering

Alessandro Palermo
Structural engineering

Bob Park*
Structural engineering

David Painter
Water resources engineering

Stefano Pampanin
Structural engineering

Tom Paulay*
Structural design

Mofreh Saleh
Transport and pavement engineering

Michael Spearpoint
Fire engineering

Bruce Steven
Transport and pavement engineering

Alex Sutherland
Sediment transport, coastal engineering

Hugh Thorpe
Groundwater, ecological engineering

Warren Walpole
Structural steel design, earthquake engineering

David Wareham
Environmental engineering

Ian Wood*
Fluid mechanics

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Fabrication, testing and stores

Michael Weavers
Electronics laboratory

Kevin Wines
Fabrication and testing

CENews
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Head of Department Messages

Retiring HOD

A lot of water has flown under the bridge in 2004. A major change was implementation of the new University structure forming the College of Engineering. Professor Peter Jackson was welcomed as Pro-Vice-Chancellor to take over leadership of the new College. Under the new structure we have much more transparent budgeting and accountability, with excellent new support staff in the College Office.

We have welcomed a record number of students in 1st Pro in 2004 (approximately 110 in B.E.(Civil) and 20 in the B.E.(Nat.Res.) degree programmes). On the staffing front we farewelled Professor Rob Davis (after 32 years) and Dr Bente Clausen (after 7 years). Early in 2005 we will farewell Dr Kevin McManus who moves into the consulting world after 12 years here, and Dr Alex Sutherland who is to become a Commissioner in the Environment Court after 37 years in Civil Engineering, doing a sterling job as Dean of Engineering for the last 18 of those years.

We have welcomed the arrival of new academic staff - Dr Aisling O'Sullivan in Natural Resources Engineering and Glen Koorey in Transportation Engineering; both have made a big impact since their arrival. We also welcomed new Departmental Administrator Belinda Jemmett, who has rapidly become an enthusiastic member of our growing team.

Still on staffing, we have recently made offers of employment to five outstanding candidates in the areas of Structures, Fluid Mechanics, Natural Resources Engineering and Geotechnical Engineering, and interviews are in progress for a new 3-year position in Timber Engineering funded by Carter Holt Harvey. When these are filled we will have a very different staffing profile, with more than half of the 32 staff having been appointed in the last six years.

Looking ahead to 2005, I am very pleased to announce that Dr Alan Nicholson takes over as HOD on 1st January, when I step down after five rewarding years in the job.

In 2005 we will deliver new 2nd Pro courses for the first time and finalise the new 3rd Pro curriculum. There will be many new initiatives and lots of change as we welcome more new staff and new students.

I want to thank everyone in the Department for their efforts over the past five years. It has been a very productive period with several new initiatives and many new faces. I am sure that the next five years will be even more exciting and rewarding for all involved with the Department. In 2005 there will be more change, with many challenges and opportunities to even further enhance the reputation of Civil Engineering at Canterbury.

Readers of CE News may be students, their families, teachers, graduates, friends, colleagues, collaborators or clients of the Department. If we are to serve you well as a stake holder in the Department, we need to hear from you, telling us what we have done well and what we could do better.

Professor Andy Buchanan
Head of Civil Engineering (to December 2004)
andy.buchanan@canterbury.ac.nz

Incoming HOD

On behalf of the Department, I must thank Andy for his leadership during the last five years. It has been a period of considerable change. Much rebuilding has been going on, and this will continue in the next few years, but because of the high quality of the staff we have been able to appoint, we are maintaining a high level of momentum.

Andy has played an active and constructive role during the recent re-structuring and his contribution was recently acknowledged by Alex Sutherland, who was the Acting Pro-Vice-Chancellor (Engineering) during this process. While Andy has found it a rewarding five years, it has also been a rewarding period for the Department, and I believe we are much better placed to meet the challenges that lie ahead, as a result of Andy's leadership.

Finally, I would re-iterate Andy's invitation to those with a stake in the well-being of the Department to help us to serve you better by telling us what we have done well and what we could do better. I look forward to hearing from you in the future.

Associate Professor Alan Nicholson
Head of Civil Engineering (from January 2005)
alan.nicholson@canterbury.ac.nz

Six hours in a rubber boat

HOD Andy Buchanan led a team of departmental staff and assistants on an extraordinary expedition down the Hurunui River in November, 2004. The party examined the effects of a range of Reynolds and Froude numbers on the velocity and stability of an inflatable raft operating in unsteady non-uniform open channel flow conditions. The consensus was that the experiment was a resounding success, but that further research is required on Andy's innovative inflatable headgear. Hydrology rules, H2OK.

Editorial: Unity in Diversity

Scholars have a long history of travel. One of my favourite stories is that of legendary Frenchwoman Alexandra David-Neel, who set off for India and beyond in 1911 at the age of 43, telling her husband that she would be back within 18 months. Disguising herself as a beggar-woman this intrepid traveller successfully entered the then closed country of Tibet, walking in clandestinely from Sikkim. She failed on this attempt to reach her goal - the capital, Lhasa. Undeterred she chose to take the long way around, travelling through Japan, Korea and China, and finally after many years made it once more into Tibet and ultimately to Lhasa. En route she perfected her Tibetan, listened, studied, wrote and visited many places, accompanied by a young Tibetan monk whom she later adopted. Alexandra David-Neel eventually returned to Paris after a 14 year absence and produced a number of seminal books on the Tibetan customs and practices she had observed, as well as an account of her travels.

In earlier times, the great medieval scholar Abelard was reported to have taught "in and around Paris, attracting large numbers of students wherever he went", whilst his most famous pupil John of Salisbury said concerning another teacher "...one of them went to Bologna and unlearned what he had taught, so that on his return he also untaught it". Bologna is the site of the earliest of European universities and students travelled long distances to be there, and later to attend other seats of learning, at a time when universities in Europe were in their infancy. According to one writer "the wandering scholar, migrating from one university to another, was a common sight on the roads of Europe" at this time. As new universities were founded, with constitutions based on those of Bologna (the student university) or Paris (the university of masters), they hired teachers from these, or other established universities.

These traditions continue today. Academic jobs are advertised internationally, as a quick browse through the pages of the Times Higher Education Supplement, or the Guardian Weekly courses and appointments section, reveals. Staff move from one country to another in order to take up teaching and research appointments, as we see later in this issue. International conferences are a normal part of academic life and exchanges and visits to other universities happen frequently. In his academic novels "Changing Places" and "Small World", writer David Lodge illustrates that such cross-cultural meetings may well generate a heady mix of learning, excitement, personal challenges and bewilderment! As Professor Morris Zapp of the State University of Euphoria (Euphoric State) exclaims on hearing that his English counterpart Professor Phillip Swallow of the University of Rummidge does not actually hold a PhD, "You mean the jobs are hereditary?".

In this issue we look at the range of countries and cultures represented in the department, explore our international connections and hear of international travels. One person deserves special mention at this time. Emeritus Professor Bob Park who sadly passed away in November 2004 enjoyed the highest international reputation in structural and earthquake engineering and we pay tribute to his achievements later in these pages. We also explore our Italian connections, hear from two intrepid young women now living in France and learn more about several of our international postgraduate students. In all this diversity, there is scope for fascination, learning and unity. Vive la différence.

Ian Mason

IPENZ awards conferred on civil staff

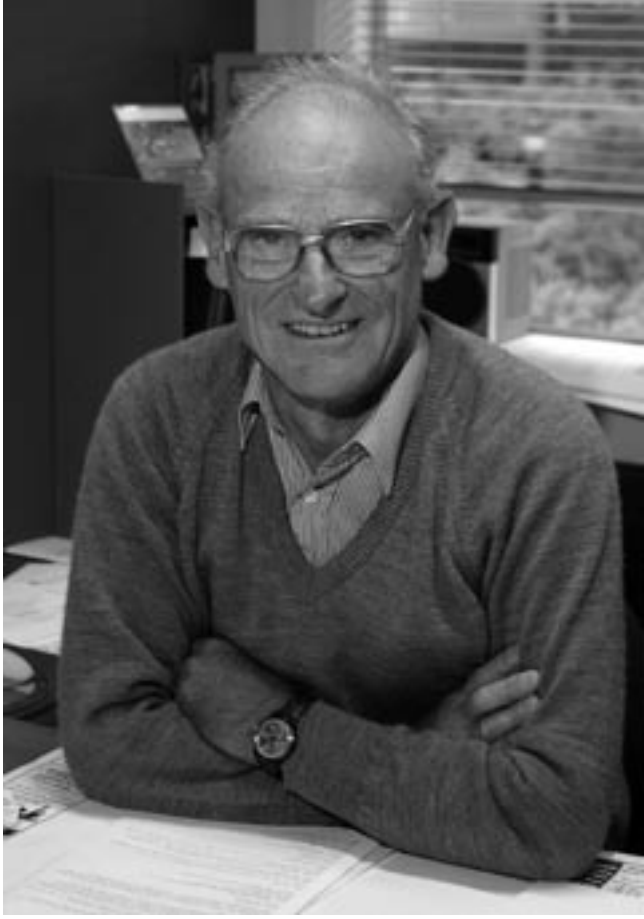
Associate Professor Alex Sutherland was made a Distinguished Fellow of the Institution of Professional Engineers New Zealand (IPENZ), in March, 2004.

Commenting on the award, IPENZ deputy chief executive, John Gardiner said that no more than half a dozen people are made distinguished fellows each year, their work having to be over and above the norm. "It's not just for doing a good job" says John. "Alex has made a major contribution to New Zealand. The strength, quality and stability of the School of Engineering at Canterbury is largely attributable to him." Alex said that he was deeply honoured to be made a distinquished fellow of IPENZ, a status he never thought he would achieve. He is particularly proud of his involvement in developing a strong relationship between Canterbury University and the engineering profession. "I have made it my business to see that the connection is strong," he says. "It is a relationship with mutual benefits and I am confident that link can be maintained, because engineering students are people who want to make a difference for the society in which they live."

Professor John Mander (Structures) was made a fellow of IPENZ and Adjunct Professor Des Bull (Structures) won the IPENZ Professional Commitment Award for his ongoing contributions to the engineering profession, including his work in the Department of Civil Engineering, writing of national and international concrete codes, and especially his contribution to Urban Search and Rescue training programmes.

Prof John Boys congratulates Alex on his award.

Alex Sutherland recalls "Thirty-seven years of being civil"



After 37 years Alex Sutherland, Dean of Engineering and Forestry, retires and moves on to new adventures. He writes:

In the late 1960s the Department was in a growth phase and seeking new staff. I applied from a postdoctoral position at Stanford University, over a month late, for a position advertised in the (then) NZIE magazine. The University (Frank Henderson actually) replied by telegram appointing me without further ado. I accepted and was excited at the thought of working with Frank who had just published his book "Open Channel Flow".

It was only a year later that Frank announced, while serving us sherry in his office, that he was leaving Canterbury. His departure was controversial and drew comment in the national press and was the subject of a cartoon on the editorial page of the NZ Herald. It also caused me to think about leaving. However I inherited two very good PhD students from Frank, one was David Painter who has since been and continues to be a valued colleague and I also saw an opportunity to rapidly establish myself in the hydraulic engineering area both in the university and within the profession – my decision to leave was thus delayed, indeed delayed for thirty-six years. Now it has been made and I leave on 31st January 2005 to take on the role of Commissioner in the Environment Court.

Three memories of my early years in the department are afternoon tea, blackboard cleaners and a flood.

Each afternoon when running a Fluids Mechanics Laboratory class I was asked, precisely at 3.15pm, by the Head Fluids Technician, "Would you like your tea now, sir?". Promptly at 3.30pm tea and biscuits would be delivered on a silvered tray to the office that overlooked the laboratory with the question, "Will that be all, sir?". Things were done properly in those times.

The university used to employ an army of white-coated blackboard cleaners – mostly male as I recall – whose sole job appeared to be to wait outside lecture rooms and rush in to clean the blackboards at the conclusion of each lecture. This was not considered part of an academic's job. What the army did outside of term time I do not know.

Minor floods are not uncommon in a Fluids Laboratory. However one day I caused a major one by opening a six inch line that was still connected directly to the constant head tank. To their credit, and my embarrassment, the technicians calmly turned the pump off, reconnected the line and cleaned up. Not a word was said but I had learnt a valuable lesson about not rushing in.

The 1970s and 80s and early 90s were very good years to be in the university – good if you enjoyed teaching and having the freedom to pursue your research interests. The university was expanding, a research culture was being established and money for research never seemed to be a problem. Academics were not laden with the myriad of planning and reporting requirements that exist today. We did not spend time talking about education nor about quality – we just got on and did it. The achievements of many of our graduates suggest we must have done it tolerably well. Whether the education we provided was better or worse than the current education is of course debatable.

In 1994 I gave a talk to the 25th year reunion of the class of 1969 – my first second professional class. The topic was changes in the curriculum in 25 years. They were substantial. Nontraditional subjects – environmental analysis and transportation engineering – had been introduced and there were twenty plus options for third professional students to choose from. This year I repeated the talk at their 35th year reunion. Over the intervening ten years only first professional showed any change and that was introduced in 2004. Fortunately I could foreshadow changes for 2005 and 2006.

I advanced the view that the new curriculum was very much better than that of the past. It pleases me to see the move towards including more professional practice and the places of environmental, systems and infrastructure engineering all being confirmed. This trend will be welcomed by the profession and stand the degree in good stead for the IPENZ accreditation due in 2006.

In 1986 the Faculty was concerned that the Auckland School of Engineering, which had a full time Executive Dean, seemed to be catching up with Canterbury. On the recommendation of past Deans, Faculty decided to appoint a Dean for 5 years (rather than the traditional 3) who would be expected to spend a substantial part of his/her time on the Deanship by being freed from the bulk of departmental teaching and administration. The Departments agreed to provide funding to facilitate the Dean's activities. I accepted the position retaining about a quarter of a normal teaching load.

It was not anticipated by anyone that the appointment would extend for eighteen years. They have been particularly satisfying years in which I have enjoyed the full support of the Heads of Department as I worked on behalf of the School both within and outside the university. I have derived particular pleasure from:

- being able to solve problems for students and in giving academic advice to so many.
- representing the School on boards, university committees and advisory groups within the engineering education sector.
- membership of the Council of Engineering Deans in Australia and in New Zealand.
- guiding the introduction of the MEM, MEFE, MET and BE (Hons) (Fore).
- securing and being involved in the Electrical building and the Civil / Mechanical building.
- being involved in the restructuring exercise and the formation of the College of Engineering.

The College environment provides the opportunity for the department to flourish. My hope is that it will grasp this opportunity, be setting challenging but achievable goals and then going after them.

Promoting Civil Engineering

During 2004, the department commissioned the creation of a set of physical models, as part of our programme for promoting Civil Engineering. It is proposed to develop a number of high-quality, interactive displays, covering a range of engineering topics.

This project arose following a very generous donation by Professor Graham Powell, a PhD graduate of the Department, and for many years a Professor of Structural Engineering at the University of California, Berkeley, USA. The remainder of the donation is to be used to fund the Graham Powell Prize in Civil Engineering, to be awarded to a 3rd Pro student.

Alumni are invited to consider supporting the Department through donations, which can be made via the University of Canterbury Foundation. Such donations are tax-exempt. For further information please contact shelagh.murray@canterbury.ac.nz or alan.nicholson@canterbury.ac.nz

Transportation research grant

Dr. Andre Dantas has received a major research grant from Intergraph Corporation (NZ) enabling access to Intergraph's Registered Research Laboratory programme, which includes Geospatial software to a commercial value of NZ$100,000. The software, which includes "Geomedia" and "Transportation Manager" will initially be used on a project entitled "The Conception of the New Zealand Transportation Data Warehouse". This project aims to investigate and conceptualise a "data warehouse" which could eventually form the basis of a Nationwide Transportation Information System. The software is also being used for teaching activities in the Department of Civil Engineering. "Geomedia is proving to be a fantastic tool for teaching the core concepts of GIS," says Dr. Dantas.

New funding for wetlands research

Aisling O'Sullivan has been awarded a $63,000 grant from the Coal Association of New Zealand, in collaboration with CRL Energy, for a study of the suitability of engineered wetlands for the treatment of coal mine drainage water in New Zealand. Additional funding, through Technology New Zealand, has been secured to support a PhD student on this project.

Major funding for hazard research

Dave Brunsdon (Kestrel Group), Jason Le Masurier, Erica Dalziell, Alan Nicholson and John Vargo (all University of Canterbury staff) make up some of the members of the hazard research team.

A team led by Erica Dalziell has secured an approximately $1.8 million research contract with the Foundation for Research Science and Technology (FRST).

The 6 year project will focus on the ability of organisations to respond effectively following a major hazard event and will feature case studies of a number of NZ organisations. The project team includes Andre Dantas, Jason Le Masurier and Alan Nicholson from Civil Engineering and John Vargo from the Department of Accountancy, Finance and Information Systems at the University of Canterbury. External collaborators include researchers from the University of Auckland and from the Kestrel Group (a private company specialising in risk and emergency management).

"The project will help New Zealand organisations recover economic competitiveness after hazard events," says Erica. "There is a need for research focused on organisations, as it is organisations that manage, maintain and operate our infrastructure, create our economy and contribute to our society. The ability of organisations to respond effectively following a major hazard event will have a large influence on the length of time that essential services are unavailable, and therefore on New Zealand's ability to retain economic competitiveness in the aftermath of a hazard event."

She adds, "The economic imperative to build businesses and organisations that are more resilient to hazards was clearly illustrated by the September 11 terrorist attacks, in which business interruption losses far exceeded the sum of all property losses. That is not the only example. After the 1989 San Francisco Bay Earthquake it is estimated that 50 percent of small businesses in the area were permanently disabled, with the resulting job losses significantly impacting the economy of the area. These cases illustrate that there is a clear economic imperative to build businesses that are more resilient to hazards."

Erica believes that the project's findings and recommendations will be applicable anywhere and could provide significant commercial opportunities. The research will provide techniques for taking a systemic view of organizations, to evaluate how vulnerable they are, and of the ability of the organisation to adapt and recover from major hazard events. It will challenge organisations to think more holistically about the risks they face in order to identify what aspects of their organisation are most critical for their survival.

There and back again in 45 days

Athol Carr (Structures) visited five countries around the globe whilst on Erskine leave during August and September, 2004. The first week was spent in Vancouver, Canada, attending the 13th World Conference on Earthquake Engineering. Athol presented one of four papers on which he was co-author, made contact with users of his program "Ruaumoko" and spent time catching up with past Doctoral and ME students. Week two found Athol in Buffalo, USA, discussing the teaching of dynamic and earthquake analysis, and later in Vermont for discussion on "the teaching of mechanics and changes to courses, as well as the decrease in the standards of mathematics and physics of entrants to engineering degrees."

In week three it was on to the Technical University of Munich, Germany and Professor Ulrich Scrieber. "Professor Scrieber is involved with setting up the ring-laser rotational velocity meters that are installed in Christchurch, behind Princess Margaret hospital and in the Physics building at the University of Canterbury, to record the rotational motions associated with earthquakes," explains Athol. He also met with the head of the Department of Civil Engineering at Technical University of Munich and came away with an expression of interest in supporting research, and reciprocal staff and student exchanges, with the University of Canterbury, in the area of earthquake engineering.

A week spent at the Norwegian University of Science and Technology in Trondheim included discussions with Professors Svein Remseth and Kolbein Bell on the teaching of structural mechanics, structural dynamics, finite element methods and programming to engineers, and on the latest relevant software developments. Athol was also able to catch up with a Norwegian student who had spent the previous year as an exchange student in our department. In Trondheim, Athol was shown a timber footbridge being built (shown below), with assistance from Professor Bell, by students from three of the Norwegian University Architecture departments. This structure is in a public area so had to meet stringent design requirements and the city allowed the structure to stand until mid-December 2004.

The final week was spent at the University of Iceland in Reykjavik, where Athol had been invited to give a two hour public lecture to the engineering profession on the modelling of structures for earthquake analyses. He also spent time at the Earthquake Engineering Research Center in Selfoss, about 60km south-east of Reykjavik. Once again discussions occurred on the teaching of mechanics and dynamics to civil engineering students. As part of the time in the South Iceland seismic zone he was shown a new arch bridge which spans a river bounded on one side by old lava flows and on the other by largely out-wash material. He was also shown a new supermarket complex where a fault line, uncovered whilst excavating the foundations, has become a feature of the complex. The fault line is covered with glass floor panels, with a series of coloured lights along the fault trace! "Earthquake engineering is taken as part of the scene here, and is not something just left to the designers," says Athol.

Chess Olympian

In October, 2004, Roger Nokes attended the 36th Chess Olympiad held in Calvia, Mallorca, Spain where he was a member of the 12 strong NZ chess team. The event attracted 130 teams in the open section and more than 80 teams featured in the separate women's section.

"The highlight for me was my first victory against a Grandmaster - Rodrigo Vasquez from Chile," says Roger. "I also had an exciting draw against Kobese, an International Master from South Africa in the second to last round."

He adds, "The event was big news in Spain with the first few rounds featuring on the front page of Spanish newspapers and it was nice to be in a part of the world where chess has a much higher profile. The coverage dipped later in the event when the Spanish team failed to stay close to the leaders."

Other impressions of the event included the incredibly tight security, with players forced to go through security checkpoints whenever they entered the hall. "There were armed police and Civil Guard troops everywhere," says Roger. "It was also slightly amusing seeing the composition of the various teams. Many ex-Soviet players have now emigrated, so the Israeli team was really just a 'Russian B' team and the USA group a 'Russian C' team (including such names as Onischuk and Shabalov)."

"One of my strongest impressions was the youth of the players," he adds. "There were roughly 30 players under 16 playing in the two events, and huge numbers of players in their late teens or early 20s. I felt quite old! The 6th ranked player for the Ukraine was a 15 year old Grandmaster who had the best result of the entire Olympiad. The top player for Norway was a 13 year old Grandmaster who looked 8 and brought his 'play lunch' along each day in a plastic container."

The open event was won convincingly by the Ukraine, followed by Russia and Armenia. The women's event was won by China, followed by the USA and Russia. NZ finished 84th, being seeded 81st. "However we played quite strong opposition," says Roger, "playing against 3 teams ranked below us and 11 ranked ahead."

People

Glen Koorey

Glen Koorey joined the Department in March 2004 taking over the position of Transfund Lecturer in Transportation Engineering, which was vacated when Andre Dantas was appointed to the continuing staff. For Glen it was a relatively short shift from the departmental postgraduate offices where he had been working on a PhD in rural highway geometry safety since 2001. Glen now teaches in both the undergraduate and postgraduate transportation programmes, with an emphasis on geometric design, road safety, and traffic engineering. He continues to work part-time on completing his PhD thesis.

Glen is a past graduate of the department, having obtained his Bachelor and Master's Degrees from Canterbury a decade ago, together with a BSc in computer science. He started work in 1994 as a graduate roading engineer with Works Consultancy Services (now Opus) in Blenheim, looking after the Marlborough state highway network. After two years he moved on to Opus in Wellington, where he focused more on traffic surveys and accident studies. In 1997 he shifted to Opus Central Laboratories in Lower Hutt, where he became Principal Researcher for Traffic Engineering and Road Safety. Mixing consulting and research, Glen investigated a wide range of topics including accidents on curves, passing lanes, traffic growth prediction, road link reliability, curve advisory speeds, cycling accidents, and rural road simulation. Upon returning to Christchurch for his PhD, he remained working part-time for Opus Central Laboratories until his current appointment.

Away from academia, Glen and wife Dianna are kept busy with their four youngsters, Nicolette, Stefan, Xanthe and Lucas. A keen sports person, Glen plays cricket regularly and has also graced the Department at various times in netball, soccer, and touch rugby. Glen's other passion is planning and design for cycling and he has been heavily involved in the national Cycling Advocates Network (CAN) and the local advocacy group Spokes.

Belinda Jemmett

Belinda joined the Department in January 2004, taking up the newly created position of Departmental Administrator. Belinda has a BSc in Zoology and Plant and Microbial Sciences from Canterbury and pursued this field briefly before discovering that she enjoyed administration. Her first administration job was in a local car dealership, where she "learned a lot about car salesmen - but wouldn't have given up the experience for anything". Immediately prior to coming to Civil Engineering, she worked for one year as a secretary in the Department of Electrical and Computer Engineering. In her spare time, Belinda enjoys rock-climbing and writes short stories. She also plays the viola and is part of a string quartet which plays at weddings and functions around Christchurch.

Aisling O'Sullivan

Dr Aisling (Ash) O'Sullivan joined the Department in March 2004 as a Lecturer in Natural Resources Engineering. She received a BSc (Hons) degree in 1995 from University College Dublin in Ireland and then worked for 18 months with the C.S.I.R.O. in Canberra, Australia, as a research scientist investigating rehabilitation strategies for salinity impacted lands. In 2002 she was awarded a PhD from the National University of Ireland at Dublin, for research on constructed wetlands for the treatment of mine tailings water at Outokumpu Zinc, Europe's largest lead/zinc mining company. Simultaneously, she pursued a Diploma in Business Administration. Following her PhD, Aisling was awarded a prestigious post-doctoral research fellowship from the Ministry of Education in Ireland as principal investigator to model contaminant fate and transport in constructed wetland sediments. More recently, she taught in the Department of Civil Engineering and Environmental Science at the University of Oklahoma, USA, for 18 months, as a visiting post-doctoral Teaching Fellow.

Aisling has experience in designing, constructing and evaluating engineered treatment wetlands in Ireland and the USA. Her research interests are in ecological engineering and waste management, with a particular focus on the mining sector, and she has authored 15 peer-reviewed publications to date. At Canterbury she is teaching courses in natural resources engineering and waste engineering, and also contributes to Environmental Engineering 1 and Introduction to Engineering. She is currently developing a new course called Ecological Engineering 1.

Aisling enjoys tramping, rock-climbing, cycling, good red wine, water sports, attending rugby games and especially playing soccer. She is also enjoying teaching Irish to anyone who mistakenly enquires about the language. Aisling and her (English microbial geneticist) partner Darren are delighted to be living in New Zealand along with their adopted Kiwi kittens Éire and Myrtle.

Rebekah Hunt

Rebekah arrived in the department in November 2004, as an administrative assistant to Erica Dalziell and Andre Dantas for 2 years, as part of their FRST funded project. However, she is no stranger to the department, having worked for David Elms as his secretary some 16 years ago. In between times Rebekah has worked for the Department of Chemical and Process Engineering, the Department of Physics and Astronomy and raised three daughters Ruby (10), Holly (9) and Emma (6). Rebekah is married to Warren, and says that she now spends most of her spare time surfing when possible and "taking the girls around to various dance rehearsals and shows – fun but very busy!"

Farewells

Rob Davis

Emeritus Professor Rob Davis (Geomechanics) came to New Zealand from the USA in 1972 as a senior lecturer, intending to stay for 3 years. Now after 32 years at the University of Canterbury he looks back with some fond memories. "It was very easy to settle here," says Rob. "Everyone was very friendly and helpful, the lifestyle was, and still is, very pleasant. At the time I accepted the job I did not know a single Kiwi. Now I'm married to one!" He now regards himself as a Kiwi too.

Rob recalls, "When I first came, the University was in a golden age. It was a wonderful place to work. Everything ran on little more than a telephone call. It's a very different place now, with managerialism pervading everything. Nevertheless the University still has some very positive points, the study leave system, Erksine Fellowships and good students". He adds, "Teaching students has been my single greatest enjoyment". Rob says that he is proud of being a good teacher and imparting his knowledge to students. "I have loved teaching and the contact with students and great workmates has made my job worthwhile." One particular attraction has been that in New Zealand, the student population covers a whole spectrum of abilities from mediocre to exceptional - there is no Oxford or Cambridge to cream off the most intelligent students. "Here we get students of all abilities, including extremely intelligent ones - that's what makes teaching here so interesting."

Born and raised in Chattanooga, Tennessee, Rob completed his undergraduate study at the University of Nevada and his PhD at the University of New Mexico, Albuquerque, where he began his academic career as a lecturer. Over the years he developed an international profile and is very highly regarded in his field. When he was awarded the title of Emeritus Professor, in appreciation of his services to the University of Canterbury over 32 years, Chancellor Dr Robin Mann said he was a renowned researcher and an exemplary teacher in geomechanics, soil mechanics and earthquake engineering. He is the author of two books - *Elasticity and Geomechanics* and *Plasticity and Geomechanics*. As a consultant he has been involved in a number of high profile projects including a review of liquefaction risk for the Waitara methanol plant; roading and slope stability investigations on the Remarkables Skifield; liquefaction risk analysis for the Seaview LPG bulk storage facility; and designing earthquake formulations on the Christchurch Telecom building.

Rob officially retired on 30 June, 2004 but life doesn't look it is slowing down for him. "We have four acres in Oxford to potter around on and have recently moored a boat in Nelson - my wife and I hope to become more competent at sailing - so we have plenty to keep us busy." Not ready to give up teaching just yet, he intends to maintain a presence in the department as required, with two postgraduate students still going, and has plans for another book.

Kevin McManus

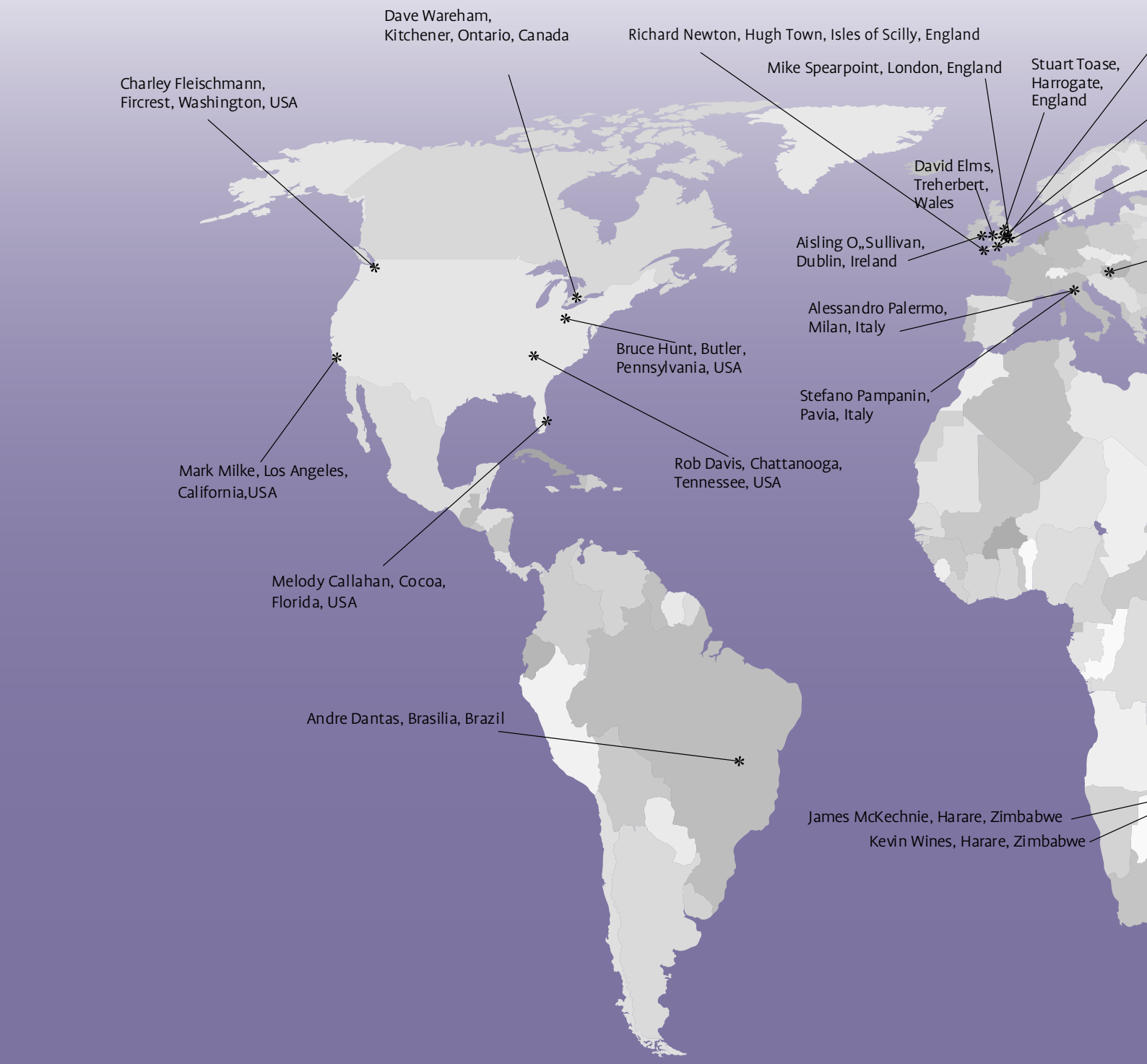
After 12 years with the Department, I have decided to "retire" at the end of February 2005 to become an independent geotechnical practitioner. Twelve years is perhaps a relatively brief sojourn, but it seems a long time to me. The rate of change in the Department has accelerated recently, with more or less a whole new generation of academics being recruited to replace those who have retired or moved on. It seems like a good time to step back and give these new people with many fresh ideas the freedom to rebuild the Department anew. I wish them well.

A highlight of my years in the Department was the period spent as HOD, from 1998 – 1999. This was a time of rapid change, with the University Executive demanding a more managerial style of University and Departmental leadership. My project management background perhaps proved helpful in initiating this transition within the Department. My best memory of this time was our first ever, and only, Departmental residential retreat held at Mt Vernon Lodge in Akaroa, in April 1998. The main stated objective for this retreat was to formulate a strategic plan for the Department – my main motivation though was to break down barriers and get everyone talking to each other in a relaxed environment. I think the retreat was a great success in both respects. The strategic plan we eventually formulated is still in use to day, with modifications, and the attendance and pivotal inputs of the several invited industry participants led to the formation of the Industry Liaison Committee, forerunner of the present Civil Engineering Advisory Board.

Another highlight has been participation over the years in the Engineering Geology field trip through Central Otago and Manapouri. This trip has also been a great highlight for many students, resulting in Engineering Geology often being the most popular final year course. The students get to see amazing sights such as the underground drainage galleries at Brewery Creek in the (former) Cromwell Gorge and get to stick their fingers into the soft clay gouge on the failure plane of the Clyde landslide, deep underground. It has been fun and a privilege to interact with the students on this odyssey into the world of civil engineering. I hope that the field trip continues and many thanks are owed to David Bell and Jarg Pettinga from Geology who are the main driving force behind the trip, and to all who permit access to the project sites and help as tour guides.

As my involvement with geotechnical practice has increased in recent years, I have had a lot of fun in teaching geotechnical engineering to our undergraduate students. Any time the room becomes noisy and disinterested (often with more than 120 students these days) I have simply stopped working on theory and introduced some relevant project I might be working on. However mundane, the students immediately stop talking and often you might hear a pin drop – their interest in practical application after years of study is so great. I strongly believe that engineering institutions such as the Department must be involved in Teaching, Research, and Practice as exemplified by many of the great civil engineers. I hope that our new generation of academics will involve themselves actively with practice and I hope that you, the readers of CE News, will encourage and facilitate such interaction.

Thanks to all my students over the years and to my colleagues, academics, technicians, and secretaries for your friendship and support. I look forward to maintaining close ties with the Department.



2004 International visitors

In the tradition of taking leave abroad,

Canada
Kenneth Johns, Sherbrook University, Sherbook, Quebec (curriculum development)

Bryan Karney, University of Toronto, Toronto, Ontario (fluid mechanics)

John Wilson, McMaster University, Hamilton, Ontario (structures)

Germany
Michael Reick, German Fire Service/Biberach University of Applied Sciences (fire)

Rolf Eligehausen, Stuttgart University, Stuttgart (structures)

Italy
Gianfranco Capriz, University of Pisa, Pisa, (mathematics)

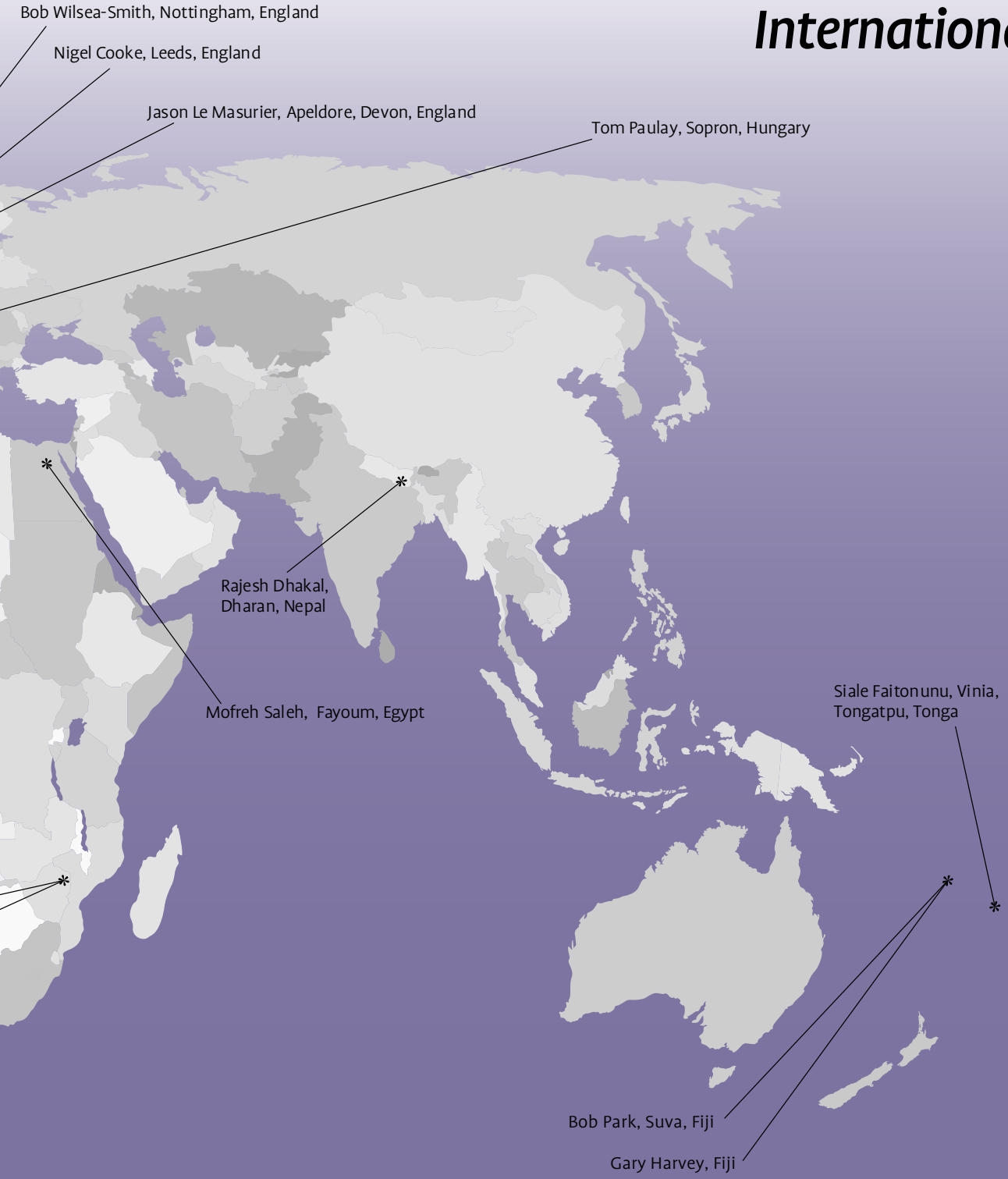
Korea
Jae-Hyuk Kwon, Samcheok University, Samcheok (environmental)

Byoung Koo Lee, Wonkwang University, Wonkwang (structures)

Hak Eun Lee, Korea University, Seoul

Joo Saeng Park, Seoul National University, Seoul (timber, fire)

Civil Engineering International Staff 2004



20 Erskine and other visitors spent time in the department during 2004, with some continuing on into 2005. They are:

Taiwan

Bang-Fuh Chen, National Sun Yat-Sen University, Kaohsiung (fluid mechanics)

UK

Peter Cumber, Heriot-Watt University, Edinburgh (fire)

Ilan Kelman, Royal Society, Cambridge (risk management)

Michael Bell, Imperial College, London (transport)

Martin Snaith, University of Birmingham, Birmingham (transport)

USA

James Mihelcic, Michigan Technical University, Houghton, Michigan (environmental)

Kurt Patterson, Michigan Technical University, Houghton, Michigan (environmental)

David Stevens, Utah State University, Logan, Utah (environmental)

David Rosowsky, Oregon State University, Corvalis, Oregon (risk management)

Robert White, US Forest Products Laboratory, Madison, Wisconsin (fire)

Emeritus Professor Bob Park 1933-2004

Bob Park died suddenly in November 2004 at the age of 71. Bob was Head of Civil Engineering for 15 years from 1978 to 1992 and Deputy Vice-Chancellor from 1992 to 1997.

Long time friend and colleague, Emeritus Professor Tom Paulay said he had the pleasure of working "side by side" with Professor Park for 40 years. They were together on a walk when he collapsed. "I felt privileged that I could stand by him when he died. The University was fortunate to have such a gifted man. He was an excellent administrator, an excellent researcher and an excellent scholar. One of his most defining features was his total dedication to the University. Nothing mattered more to him than the past, present and future of the University, so it is appropriate that he is farewelled from University grounds."

Vice-Chancellor Professor Roy Sharp said the University community was greatly saddened by the death of Professor Park. "He had a distinguished career in civil engineering and was internationally renowned for his work with structural concrete and earthquake engineering."

Head of the Department of Civil Engineering, Professor Andy Buchanan said that Bob will be missed by his friends and colleagues in the Department. "Bob Park was a wonderful people's person and a meticulous manager. He did a terrific job for the Department of Civil Engineering in the 15 years he was head. He is fondly remembered, particularly by his graduate students – "Bob's boys" as they used to call themselves – and there were close to 62 of them over his academic career." At the funeral, Adjunct Professor Des Bull remembered Bob as being "passionate about engineering, wholly committed to the Department, and hugely enthusiastic about seeing young graduates develop into research engineers".

Professor Park was born in Fiji, receiving his initial education in Suva. He studied at the then Canterbury University College, receiving a BE(Hons) in Civil Engineering in 1956 and an ME with distinction in 1958. In 1964 he completed a PhD at the University of Bristol. He returned to the University of Canterbury as a senior lecturer in 1965, becoming a professor in 1968. He was head of the Department of Civil Engineering from 1978 to 1992 and served as deputy vice-chancellor from 1993 until he retired in 1999.

His research resulted in two books, nine invited chapters in books and more than 300 technical papers. His major work – Reinforced Concrete Structures, written with Tom Paulay in 1975 — has been translated into Spanish, Chinese and Indonesian. Over the years Bob received more than 20 prestigious awards from New Zealand and overseas, most recently being honoured with a Meritorious Service Award from Standards New Zealand, in 2004.

In 2001 Bob was awarded an Honorary Doctorate of Engineering by the University of Canterbury. In the citation, Dean of Engineering Associate Professor Alex Sutherland said Professor Park's work in earthquake engineering had resulted in a whole new technical vocabulary, which was now commonly used in civil engineering. "He had a very strong influence on the development and writing of the first New Zealand Concrete Code. This code is considered by many people abroad as the 'Rolls Royce' of codes. It has significantly influenced worldwide structural practice, particularly in the United States, Europe, Japan, China and South America." From the 1980s onwards, Bob focused on how to build better seismic-resistant buildings using prestressed concrete and studied what could be done for pre-1980 buildings and bridges to improve their performance in an earthquake. "Under his insight and leadership the engineering profession has answered these questions and so ensured the integrity of many important, pre-1980, structures. The Christchurch Cathedral and the Provincial Chambers are examples," said Associate Professor Sutherland.

Bob played an active role in the affairs of the engineering profession. He served as President of the New Zealand Prestressed Concrete Institute (1975-77), President of the New Zealand National Society for Earthquake Engineering (1983-85) and Executive Vice-President of the International Association for Earthquake Engineering (1996-2000).

On news of his passing, tributes flew in from friends and colleagues around the world. "Bob was a great person, an excellent engineer, and a fantastic ambassador for New Zealand," said Nicholas Jones, Dean of the Whiting School of Engineering at John Hopkins University, USA. "The earthquake engineering community, as well as the civil engineering and broader engineering communities will miss him." From Australia, Arthur Crimp described Bob as "a brilliant soul. We were contemporaneous, but he outshone us all, and was a jewel in the University of Canterbury's crown." Dr David Hopkins, a consulting engineer from Wellington said "Bob was an inspiration to many in so many ways. The world engineering community will miss him immensely, both as a person and a peerless contributor to earthquake engineering." Dr Jack Breen from the University of Texas described Bob as "a giant in the field and a wonderful human being besides."

Bob is survived by his second wife Pauline and five children to his late wife, Kathy.

Geoff Hill

The Department was saddened by the news of Geoff Hill's passing in August 2004. Geoff was a member of the Technical Staff from 1973 to 1995. He came to the Department from a background in heavy engineering that was to prove most useful when the Dartec Universal Testing Machine arrived in 1977. Geoff had the task of operating the Dartec for a number of years and guided postgraduates through their research projects. His patience and skill in engineering problem solving has been recognised in the acknowledgement page of many a thesis.

As a Senior Technician Geoff later took on the roll of Technical Services Manager and in his usual quiet efficient manner did a very good job of organising the work and manpower in the Laboratory Wing, a task that has been likened to 'herding cats'. He also put many hours into producing high quality Health & Safety manuals to help the Department comply with new H&S Act.

Geoff's memory will live on in a corner of the minds of those with whom he had contact, as a quiet, reliable and diligent Technician for the Department.

Ian Sheppard

Student Prizes

The department would like to extend congratulations to all the students who won prizes for their excellent work in 2004. These prizes are made possible by generous support of industry sponsors.

Concrete and Cement Association NZ Prize
2nd Pro : Hayden Bowen
3rd Pro : Dion Marriott

Civil Engineering Prize
Edward Plummer

Concrete Prize
Christopher Hartley

MWH NZ Ltd/Jim McFarlane Memorial Prize
Karissa Hyde

RW Morris Prize for Coastal and Ocean Engineering
James McBryde and Tessa Beetham

NZ AA Prize in Traffic Engineering
Benjamin Hayward

NZ Pavement and Bitumen Contractors Association Prize in Pavement Engineering
Paul Jackson

Tonkin & Taylor Prize in Geomechanics
James McBryde

Traffic Design Group Prizes
2nd Pro : Wayne Juno
3rd Pro : Paul Jackson

Laserframe Award
1st Prize Team
Sean Brennan, Brett Christie, Gabriella Amesbury, Stephanie Spedding

2nd Prize Team
Daniel Ashby, Stephen Bodley, Sheridan Peckett, James Lloyd

3rd Prize Team
Kent Jacobsen, Kelly Sunnex, Samuel Toulmin, Julian Addington

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

Student ambush!

The 2004 engineering geology field trip took place in April, with Dave Bell, Tim Davies and Kevin McManus providing expert commentary, and the newest staff member of the group, James Mackechnie, acting as “driver and tourist”. The trip went as far south as Manapouri and included visits to most of the large hydro schemes in the South Island. “Students were impressed with the scale of the projects, seeing the range of geological conditions and enjoyed evenings in the traditional fashion,” says James.

One of the last inspections was at the Kawarau bridge, where reports James, “students ambushed the greenhorn staff member and demanded he walk the plank (at their expense having each scratched together $2). To get value for money the students also managed to persuade the operators to ensure full immersion of their victim. Younger members of staff are encouraged to volunteer as drivers for next years field trip,“ he adds!

Class of ‘69 reunited

Thirty-one BE (Civil) graduates gathered at the university for the Class of ’69 reunion, held over Labour weekend 2004. Participants came as far afield as Australia, Malaysia and Bangladesh. They were treated to tours of the Civil Engineering Department, which has been extensively remodelled since the last reunion 10 years previously, followed by dinner with Mayor of Christchurch Garry Moore at the Christchurch Art Gallery, and a day-long trip to Arthur’s Pass to visit two of the South Island’s great feats of engineering, the Otira Viaduct and Candy’s Bend.

Professor Andy Buchanan, who was a member of the class and the reunion organising committee, said, “it was a wonderful opportunity for old classmates to see friends and to meet others they had not seen for 35 years”. He was struck by the fact that 31 classmates meeting to reminisce over 35 years since graduation represented “over 1000 years of professional engineering experience in a myriad of different activities. As everyone briefly described their careers, it became clear that the foundation of a BE(Civil) programme in the 1960s had led people in many very different but complementary directions.” New HOD, Associate Professor Alan Nicholson is also a class of ’69 alumnus.

Engineers without borders

David Wareham followed up his interests in environmental engineering and the developing world during Erskine leave in the USA during April-June, 2004.

In particular, he came into contact with a relatively new organisation called Engineers Without Borders (EWB), which is modelled on the well known French medical aid organisation Medicins Sans Frontieres (MSF), whilst at the University of Colorado, at Boulder.

EWB is promoting the use of the words "partnership" (to convey equality), and 'developing communities', rather than developing countries. As an example of the latter, Indian reservations in the USA, where appropriate water and wastewater systems may be needed, would be classed as developing communities, although overall the USA is considered a developed country. "There is tremendous interest from students in EWB," says David, "not only from altruistic motives, but partly because in the USA there seems to be no formal requirement for practical training in undergraduate engineering programmes. As such, EWB often provides the first hands-on engineering practice students receive when they enroll in a post-graduate degree."

David also visited Professor Scott Summers at the University of Colorado, who has been instrumental in setting up a programme called Engineering for Developing Communities. Of particular interest was a student project using 10 litre clay pots as water filtration and disinfection devices, (an initiative first promulgated by Potters for Peace). David says that it was encouraging to see publishable research being performed in this area. "These systems (e.g. rainwater harvesting systems, pit latrines) are not usually addressed in university engineering education or research, as they are mostly perceived as low tech and unimportant."

David also visited Michigan Technological University where he attended part of a course entitled "Field Engineering in the Developing World." David hopes that a graduate course entitled "Engineering for Developing Communities", plus a local chapter of EWB, might eventually evolve at the University of Canterbury.

Portaits unveiled

A special moment during the class of '69 reunion festivities was the unveiling of two specially commissioned portraits, by Christchurch artist Sally Hope, of Emeritus Professors Tom Paulay and Bob Park. Professor Andy Buchanan said that it was fitting that the portraits should be shown first amongst a group of former students, who so appreciated the two professors' influence on their ensuing careers. The portraits are presently on display in the foyer of the department.

Tom Paulay (left) and Bob Park stand with artist Sally Hope at the unveiling of their portraits.

APEC delegation visits Civil Engineering

A group of APEC officials and business people visited the university during 2004 as part of the "Innovation Showcase", running alongside the 4th APEC Science Ministers' Meeting held in Christchurch. The visits included a tour of the Civil Engineering laboratories, with a particular focus on earthquake engineering research. Vice-Chancellor Professor Roy Sharp commented that he welcomed the opportunity to showcase both Canterbury's world-leading research, and the commercial opportunities that flow from such innovations in science and technology.

PhD student Nor Hayati Abdul Hamid (Yati) from Malaysia explains her research in earthquake engineering to visiting scientists and technologists from around the Asia-Pacific region.

Turkish delegation inspects earthquake engineering research

The Turkish Deputy Prime Minister, His Excellency Associate Professor Abdüllatif Sener, led a 12-strong delegation to the department in September 2004, to learn of research being undertaken to strengthen buildings and other structures against earthquake damage. Following the 1999 Izmit earthquake, John Mander was part of an American team which flew to Turkey to investigate the damage and advise the locals on how to repair buildings, bridges and viaducts. Professor Mander told the delegation that the focus of his research at Canterbury was how to retrofit existing buildings, design new structures and do risk assessment for large urban areas.

Bell' Italia

Departmental links with Italy are focused on academic and student exchanges with the University of Pavia, in the areas of structural and earthquake engineering. In addition we presently have two Italian staff members, Stefano Pampanin and Alessandro Palermo, in our structural engineering group.

Pavia

Pavia, known as the city of 100 towers, is located in the Lombardia region of northern Italy. It is the home town of Stefano Pampanin, who "received most of his education and took his first steps into the scientific world there", studying for his laurea degree (a 5 year programme including a thesis) at the University of Pavia. His thesis, under the supervision of Professor Giorgio Macchi, was related to work done by an international committee for the preservation of the Leaning Tower of Pisa. A New Zealand connection was initiated when Stefano studied for his MS at UC San Diego under Professor Nigel Priestley, who is a Kiwi originally from Christchurch. Contacts with the University of Pavia continued when Stefano subsequently enrolled for his PhD at the Technical University of Milan, where his supervisors included Professor Gian Michele Calvi, from Pavia, and Professor Priestley. Stefano then returned to Pavia as a post-doctoral fellow and fixed-term lecturer before coming to New Zealand in 2002.

Stefano and Professor Macchi during the presentation in Athens of the international fib diploma award, for young (under 40-year old) engineers

ROSE School

The University of Pavia is currently home to the ROSE (Reduction of Seismic Risk) school, which draws upon both Italian and international visiting faculty to teach post-graduate courses. Stefano Pampanin was actively involved in the birth and development of the school, which was officially launched in 2001, with Professors Calvi and Priestley as co-directors. John Berrill (geomechanics) was the first University of Canterbury staff member invited to join the ROSE School faculty, in 2001. At this time, the University of Canterbury entered into a formal agreement with the University Institute for Advanced Studies (IUSS) of the University of Pavia, for the exchange of post-graduate students in earthquake engineering, between the then UC School of Engineering and the ROSE School. At the first course given by the ROSE school, in January 2001, three of the nine students - Tim Sullivan, Damian Grant and Simon Glaister - were Canterbury graduates. Tim and Damian are currently finishing their PhDs.

Past exchange students have included Francisco Lopez, Mario Galli and Alejandro Amaris, who came to Christchurch from Pavia for MS and PhD studies, and Kirsti Carr and Alex Murahidy from Canterbury, who took a course at Pavia in 2002. Currently Didier Pettinga, a Canterbury graduate, has completed an MS at Pavia and is now continuing on there for a PhD, under the co-supervision of Stefano Pampanin and Professor Priestley.

In 2004 Athol Carr (Structures) was invited to join the faculty of the ROSE School and will present a course on structural dynamics there during May 2005.

Joint EU/NZ research project

In 2004 the University of Canterbury was invited to join with a major EU funded programme in a project entitled "Reduction of Seismic Risk for Existing Buildings: Vulnerability Assessment and Retrofit Solutions". This collaboration involves a formal link between an existing 17 million Euro EU funded project on "Reduction of Seismic Risk and Landslides (LESSLOSS)" and a NZ$3.6 million FRST funded project on "Retrofit Solutions for NZ's Earthquake Risk Multistorey Buildings". The linkage will give NZ researchers access to knowledge and information generated by more than 46 research teams involved in the EU project. Direct collaboration will occur between the University of Canterbury and the University of Pavia, with groups led by Stefano Pampanin and Professor Calvi respectively.

Visitors

Alessandro Palermo arrived in the department from the Technical University of Milan in 2003, to finish his PhD, co-supervised by Stefano Pampanin and Professor Calvi. Alessandro was invited to return and is now here until August 2005, as a fixed-term lecturer in Structural Engineering, funded by FRST. He will then return to the Technical University of Milan as an assistant professor, but plans to continue collaborating on several research projects here at UC, working with Stefano Pampanin, Athol Carr and Andy Buchanan.

Emeritus Professor Gianfranco Capriz, is a mathematician from the University of Pisa, and is visiting us from Dec 2004 to Feb 2005, working with George Mullenger. This is the 3rd time Professor Capriz has visited the department.

Concrete Design workshop

Students in Design 2 participated in the 2nd annual workshop on "Reinforced Concrete Design and Behaviour" in September, 2004.

The event, organised by Stefano Pampanin, was structured into three sessions, with student teams presenting results of their experiments on the performance of concrete beam elements, beam column joint sub-assemblies and post-tensioned pre-cast jointed systems. "It was good to see these students dressing up and giving high level presentations in front of colleagues and practicing engineers from the city," says Stefano. Industry sponsors provided prizes, which were augmented by an organiser's merit award comprising bottles of Italian wine.

Students during the experimentation phase of the workshop.

The French Connection

Our present links with French academia have come about through the influence of John Berrill (Geomechanics). Two of John's former students are currently in France, one now studying toward a PhD and one commencing a post-doctoral appointment in a major research laboratory. Their stories are told below.

Jane Jerram ~ Grenoble

Jane writes: "I finished my BE (Hons) Civil in 2002 with a strong interest in Geomechanics and Seismology, and I wanted to study these subjects at Master's level. However, at the same time, I was looking for a change of scene. To this end, I spoke with Dr. John Berrill about the possibility of doing a Master's in Europe. John had a good contact in Grenoble, France - a professor at the research laboratory "Laboratoire 3S" (sols, solides, structures, or Soils, Solids, Structures). This laboratory is linked to University Joseph Fourier, so, via John, this professor, Mr. Pierre Foray, was organized to be my supervisor of studies for the Master's.

The Master's in France is a one year program, which I began in September 2003. It comprises a first semester with six papers, and a second semester in which a small research project is carried out over 4 months. The theoretical (papers) aspect is more heavily weighted than the project, which is normally considered to be a foundation study for a continued doctorate subject. I found the courses to be much more theoretical than their New Zealand equivalents. Everything was in French, and the Master's class consisted predominantly of French students, with a scattering of foreign students. I quickly grew accustomed to the language as I was absorbing it every day – the course load was intense from December until exams in February.

The research project I carried out investigated ways of modelling earthquake-induced liquefaction using non linear and cyclic soil behaviour models, and comparing these methods with the currently used empirical method based on tip resistance, sleeve friction and pore water pressure data from in situ testing with the cone penetrometer or piezocone. By at the end of the Master's I was hooked into the subject, so I was very happy to be awarded a French government scholarship for 3 years of PhD study based on the grades achieved during my Master's. The PhD is a continuation of the Master's and will involve more detailed modelling of non linear soil behaviour under seismic loading, with a special focus on liquefaction of loose, saturated sands.

Grenoble is a lively student city, with an international environment. I have met and worked with people from Argentina to Iran, and made some great friends. Furthermore, Grenoble is fantastically situated, surrounded by the French alps and two other mountain massifs. I found many opportunities to get into skiing, tramping and rock climbing. It is a beautiful place and I love being able to get outdoors so often. The opportunity to study overseas is a brilliant one. It has changed my outlook both personally and professionally."

Above: Jane - tramping in the Alps.

Caroline Francois-Holden ~ Paris

Caroline, with a collegue visiting the trench of the Chelungpu fault in Taiwan.

Caroline completed her first degree in Geophysics in Strasbourg, and then arrived at the University of Canterbury in 2000, to begin her PhD studies in seismology under the supervision of John Berrill.

"Four years later I am very happy to have graduated," says Caroline. "During these years I gained great experience in both research and field work. I also discovered a unique country and met many remarkable people. I was amazed too at how many international students the department welcomes. This is very important for personal enrichment, and also for the department, which benefits from the ideas and experiences from overseas, and spreads its good reputation internationally. I thoroughly enjoyed my experience in New Zealand, even though I never felt any earthquakes!"

Caroline's PhD research led her to analyse a set of seismic data from Taiwan. The results of this work were presented briefly at a conference in Paris, where they were well received. This led to an invitation to participate in a top-level seismic mechanics workshop held in Taiwan in July, 2004, at which one of two invitations issued to Caroline led to "an incredible post-doc opportunity in France". So, in October, 2004, she set off for Paris along with her Kiwi husband Tony (BE Civil (Hons)), to work in the field of strong motion seismology at the Ecole Normale Superieur, a major research laboratory. "I believe that my application was strengthened by having made contacts with people in my field during conferences and talks in New Zealand and overseas," says Caroline. "For the future, I would like to retain and develop contacts in New Zealand, as it has unique and exciting research opportunities".

Environmental Engineering

Our international students come from three countries around the Pacific Rim and represent different cultures and experiences. Here they tell something of their background, research interests and life in New Zealand.

Mauricio Taulis - Chile

I was born in Santiago, Chile. After doing my first degree in Civil Engineering there, and then working for a while, I soon felt the need to pursue a more challenging activity. When I met with my former Chilean supervisor, and told him that I wanted to do a postgraduate degree in another country, he immediately suggested New Zealand.

So, I arrived in NZ in 2000, to do an ME in Natural Resources Engineering at Lincoln University. Although my original plan was to study timber design, I soon became interested in solid waste management, as this is now a big problem in Chile. In this way I came into contact with Dr. Mark Milke, who became my ME thesis supervisor. We worked on modifying the Hydrologic Evaluation of Landfill Performance (HELP) model to make it suitable for Chilean conditions, and as a side project, also calibrated this model so that it could be used in New Zealand. Today, our version of HELP is available from the UC website and has been downloaded by more 50 people in at least 20 countries.

After I finished my ME I went back to Chile and worked there for an environmental engineering company designing landfills. However, I missed my life in New Zealand and the challenges involved in research study. Luckily, I was selected to do a PhD at Canterbury working with CRL Energy, and again under Mark Milke's supervision. The project that I'm working on started in 2003 and involves the characterisation, treatment and disposal of coal seam gas wastewaters. Coal seam gas is extracted from underground coal seams, using large amounts of water. The overall project is at the cutting edge of technology and offers great potential both in terms of a new energy source for New Zealand and a supply of irrigation water, following appropriate wastewater treatment. I am happy with my life in New Zealand, and hope that my work will be useful to people in other countries wanting to develop coal seam gas.

Nastaein Qamaruz Zaman - Malaysia

I come from Ipoh, which is Malaysia's third largest city, located about 200 km north of the capital Kuala Lumpur. My undergraduate study, which led to a BE (Hons) in Civil Engineering, was done at the Universiti Teknologi Malaysia in Johore Bahru, right at the southern end of the country (just across the strait from Singapore). After graduating and spending 2 years as a housewife, I set out for New Zealand and the University of Canterbury in July, 2003, to begin studies toward an ME in Environmental Engineering. This marked both my first trip overseas and also my first time on an airplane!

In my research I have been looking at two aspects of odour production from kerbside collected residential food wastes. The first is to see if there is a correlation between odour intensity and easily measured indicators (such as volatile fatty acids or ammonia) and the second is to look at practical ways to reduce or control odour production. The use of zeolite (a clay type mineral used in 'kitty litter') has proved successful in the second case. I hope that such information could help encourage acceptance of food waste collection programmes in New Zealand. In Malaysia recycling is not widespread and we have lots of curries in our food waste plus higher temperatures – these are some issues for future research.

Things I have appreciated about New Zealand include the 'green' environment, the slower pace of life and the local fruits - especially cherries! At the university the easy access to learning, the vast and up-to-date full text journals, 24-hour computer access, plus the many courses that enhance both thesis writing and presentation have been good.

I travelled here with my husband Rojali, who is also a Civil Engineer and my son Amir Haikal (now 2 years old). Rojali has enjoyed doing lots of cooking in New Zealand and is now less interested in construction site supervision than he was previously! After graduation I plan to return to Malaysia for a while, but would eventually like to do a PhD and then take up an academic career.

He Xuan (Sarah) – China

My home town is Shijiazhuang which is the capital of Hebei Province, in the northern part of China. It is a city of 2 million people, situated 270 km south-west of Beijing. After graduating with a Civil Engineering degree from the Agricultural University of Hebei in 1992, I worked for a real estate company doing financial work, followed by a job with the Hebei government, where I was involved in English-Chinese translation. Then in 1999 I travelled to Thailand to pursue my interests in environmental engineering and subsequently completed an ME at the Asian Institute of Technology in Bangkok. I came to New Zealand in 2000 and worked for a while, before starting on my PhD with Dr. David Wareham at the University of Canterbury in 2003.

The subject of my research is the breakdown of pesticides during the denitrification stage of wastewater treatment. Volatile fatty acids will be generated to act as a carbon source during denitrification (a nitrogen removal process) and the linked removal of the pesticide 2,4-D will be studied. It is hoped that the results will help wastewater engineers to assess the feasibility of treating pesticide-contaminated wastewaters using this process.

My husband Bo is an animal scientist, currently studying for a PhD in immunology at Lincoln University (where he previously completed an MSc). We have a baby daughter Nicole who is now 8 months old. New Zealand seems very quiet compared to China, but we like that, and have really enjoyed exploring the beautiful South Island, especially Milford Sound. While not studying or looking after my family I like to keep fit and have played table tennis, badminton and enjoyed swimming. After our PhDs are completed, we hope to stay on in New Zealand.

Above: Environmental engineering students left to right: Nastaein, Sarah and Mauricio

Industry Funded Academic Staff

The Department of Civil Engineering is unique in New Zealand universities in having a large number of industry-funded academic staff.

In addition to the 26 full-time positions funded by the University through student fees and government grants, we currently have six positions funded by industry or state-sector organisations. The staff in these positions provide us with many win-win scenarios. We are able to promote the wishes of the funding agencies using expert staff members who would otherwise not be at Canterbury. These staff members carry out specialised teaching and research in the areas for which they are funded, and they also reduce the teaching pressure on other staff, allowing more valuable time to be spent on research and industry interaction across the whole Department.

These positions allow the Department to foster excellent relationships with the civil engineering profession, manufacturers and government organisations, for mutual benefit.

Andy Buchanan

Carter Holt Harvey funds new timber teaching fellowship

Wood products company Carter Holt Harvey is funding a new, three-year, $150,000 teaching appointment in the Civil Engineering Department. The Carter Holt Harvey Fellow in Wood Structures will act as lecturer, student mentor and promoter of research into the use of timber products in civil engineering design and construction. A similar fellowship will also be established at Auckland University. "We hope the Carter Holt Harvey Fellows in Wood Structures will inspire tomorrow's engineers and designers to become as enthusiastic and passionate about wood as we are," says Carter Holt Harvey Chief Executive Officer Peter Springford. Students will be able to learn more about the construction properties of structural timber, laminated veneer lumber and plywood. The research will also provide more hard data on the performance of some of the more high-tech timber products. The University of Canterbury and the University of Auckland have committed to running the fellowship programmes for three years. The fellows are expected to be appointed early in 2005.

Mr Mike Spearpoint is the New Zealand Fire Service Commission Lecturer in Fire Engineering. This position was established in 1993 at the time of implementation of the 1992 Building Act which allowed fire engineering to be practised in new ways in New Zealand. A third five-year term of the contract has recently been signed. Mike's interests include fire development, active fire protection systems, fire risk, and escape from fire, and he is completing his PhD in the electronic exchange of fire data. This position supports the very successful master's degree in fire engineering.

Dr Bruce Deam is the Leicester Steven EQC Lecturer in Earthquake Engineering, funded by the Earthquake Commission (EQC). He has been in this position for five years and we recently concluded negotiations with the EQC for a second five-year term. Bruce has been teaching widely in earthquake engineering and carrying our research into housing, shelving, and other aspects of concrete and timber structure behaviour in earthquakes. He has an active role with the New Zealand Society of Earthquake Engineering and is co-ordinating development of the University of Canterbury Earthquake Engineering Research Group.

Dr James Mackechnie holds the CCANZ Fellowship, funded by the Cement and Concrete Association of New Zealand. He has served four years of a five-year contract and during that time has made a major contribution to concrete technology in New Zealand, classifying aggregates, and investigating durability of many types of concrete in close consultation with the design profession and manufacturers. James teaches concrete technology and related subjects to undergraduate and postgraduate students.

Mr Glen Koorey is the Transfund* New Zealand Lecturer in Transportation Engineering. This position was initially held by Dr Andre Dantas, who has transferred to the continuing staff. Glen is one year into a four-year contract. He is an expert in road safety, geometric design and cycle planning, and is completing his PhD in rural highway safety. This position supports the very successful master's degree in transportation engineering. (* Transfund has now merged with the LTSA, forming "Land Transport NZ").

Professor Des Bull is the Holcim Adjunct Professor of Concrete Design. This is a part-time position funded by the major cement company Holcim New Zealand. Des takes a major part in teaching of final year reinforced concrete structures, and is involved in many research projects involving seismic design and the construction of concrete structures. He is also employed by the Holmes Consulting Group in Christchurch, and is able to bring a unique mix of theory and practice into the classroom.

Fire Engineering

BIA Fire Advisory Panel

Charley Fleischmann has joined a group of leading fire experts on the BIA Fire Advisory Panel. The panel has been established following concerns that the Government does not have sufficient links with the fire safety industry. The panel can identify important fire safety issues at an early stage so that they can be appropriately acted on.

Visitors

In 2004 we welcomed exchange students Oskar Eriksson and Madelein Nilsson from Lund University. Dr Peter Cumber from Heriot Watt University, Scotland spent 10 weeks as a visitor to the department. We also hosted a visit from Dr-Ing Michael Reick, a Fire Officer with the German Fire Service in a region near Stuttgart in Southern Germany. He also lectures at the Fachhochschule Biberach (Biberach University of Applied Sciences). He spent time visiting with the New Zealand Fire Service to investigate its differences from, and similarities to, the German Fire Service.

Korean delegation

The Department welcomed a delegation of senior government officials and researchers from South Korea who were visiting New Zealand as part of their investigation into performance-based fire codes. The visitors were given presentations on New Zealand's performance-based regulatory system, the Fire Engineering programme and some aspects of the structural fire modelling research currently being undertaken by some of our students.

Staff and laboratory developments

We were glad to welcome Bob Wilsea-Smith, originally from the UK, to the Fire Engineering team in 2004, as our new technician. In 2005, Andy Buchanan will be taking sabbatical leave, and plans to spend some of that time catching up on current structural design practices by spending time in a local consultancy.

This year we successfully completed the commissioning of a heated wind tunnel and the apparatus has already been used, in particular as part of project work being carried out by one of the Master's research students. We have also constructed a small-scale furnace that is used for testing structural connections under fire conditions. The first phase of testing has already been completed and further work is planned for 2005.

Research sponsorship

In addition to support from the NZFSC, we are grateful to Winstone Wallboards Ltd and Carter Holt Harvey Futurebuild for providing funding which allows us to continue a range of projects.

Above: Students take part in a controlled house burn to gain first hand experience in structure fires.

Transportation Engineering

Travel and Conferences

In April 2004, Alan Nicholson visited Jordan and Syria as a keynote speaker at the International Conference on Sustainable Development of Transportation Systems. He also made two invited presentations at a pre-conference workshop. His visit to Syria involved advising the Road Communication Directorate on traffic safety management on major highways, and led to his being asked to brief the Syrian Minister of Transport on the topic.

Christchurch played host in August to the Second International Symposium on Transport Network Reliability. Alan Nicholson and Andre Dantas were heavily involved as Chair and Secretary of the organising committee for this major conference, with Alan also presenting a paper.

Mofreh Saleh made a couple of visits to North America recently to present papers; attending the U.S. Transportation Research Board Conference in Washington D.C. in January 2004, and in June 2004 travelling to Saskatoon, Canada for a specialist conference of the Canadian Society for Civil Engineering.

Staff and Visitors

The teaching complement in the transportation group rose to four with the appointment in March 2004 of Glen Koorey to the Transfund NZ Fellowship position. During 2004, the teaching programme benefited from visits by Professor Martin Snaith (University of Birmingham; Pavement design and road asset maintenance and management) and Professor Michael Bell (Imperial College, London; Transport network reliability, Intelligent Transport Systems). The group also continues to liaise with the University of Auckland's transportation engineering group to coordinate courses and share teaching.

A number of local industry experts also assist with teaching in the programme, including Dr Shane Turner (BCHF), Dr Bryan Pidwerbesky (Fulton Hogan), Axel Wilke (Christchurch City Solutions), and Shaun Hardcastle (Traffic Design Group). We are grateful for their time and assistance.

Sabine Werkmeister

Dr. Sabine Werkmeister arrived in the department in August 2004, to work for 2 years as a post-doctoral fellow in transportation engineering. Sabine comes from Dresden, where she completed her first degree in Civil Engineering at the Dresden University of Technology in 1999. At the time she had specialised in environmental engineering, but subsequently became interested in pavements, completing a PhD on this topic in 2003.

Sabine grew up in the former East Germany and says that the film 'Goodbye Lenin', recently on show in Christchurch, brought back many memories of those times. Sabine travelled to New Zealand with husband Robert (also a Civil Engineer) and says they are both enjoying the great outdoors, and especially the 2004 departmental whitewater rafting trip on the Hurunui River (see page 3).

Bridge-breaking

A large crowd gathered on the banks of the River Avon in September, 2004 to watch more than 100 1st pro civil engineering students participate in the annual challenge of building a bridge capable of holding no more than two people. Students were judged successful if their bridge collapsed after the addition of a third person. The event tests the students' knowledge of power-to-weight ratio, and accounts for 25% of their final mark in the Design 1 course.

Carter Holt Harvey provided financial support for the competition, which had a cash prize pool of $2000. We are also grateful to the McVicar Timber Group Ltd. for their donation of the timber.