

Weekly Newsletter

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Physics & Astronomy

FROM THE HOD (ASSOCIATE PROFESSOR ROGER REEVES)

Yesterday Ian Shaw held a forum to release the College Plan. All staff were given a URL where they could download a copy for study. Essentially the elements of the plan are to set up reviews of each department, a review of technical services, a study of the creation of a department of GeoSciences and the relocation of Communication Disorders. Many are perhaps wondering why quite a bit of time was needed to get to this stage when a lot of hard work still has to be done. However, what was not included in this document was a lot of data gathered on departments - mostly financial - that will be needed to feed into the department reviews. The process has no doubt been slowed by the lack of a College Manager until the recent appointment of Kevin Barnes. The College has absolutely no traction in the University environment until it can at least say that it has looked at itself.

I want to say a couple of words about security in the department. Over the last few weeks we have had some thefts occur - a laptop a few weeks ago and prior a significant amount of cash from 701 over a weekend. The laptop was clearly taken by an outsider and I hope so was the cash. The idea that a member of the department took the money from 701 is frankly unthinkable. So clearly at least over a weekend we had unauthorised people wandering our halls. I am not going to issue a rule that only department personnel can be in the building out of hours as that is not reasonable. However, every outside person in the building must be responsible to a member of the department. Their behaviour is a reflection on us. Lets keep our own control of security so that we don't have obtrusive rules implemented from outside.

Monday, Tues and Wed of next week I'm heavily involved with the IPENZ review of the Engineering College by convening the university panel for the internal review. Engineering Intermediate substantially funds this department - we would look very different with only PHYS/AST etc majors to teach at all years. Hence I have a keen interest in the role of Eng Int in the BE degree and thus agreed to take part. We were due to have a monthly dept meeting next week but because of this review I have to look for a date the following week.

TODAY'S SEMINAR: - 11:00AM, FRIDAY 4 MAY

Professor Pál Ormos,

Institute of Biophysics, Biological Research Centre, Hungarian Academy of Sciences, Szeged, Hungary

Optically driven micromachines for biotechnology

NEXT WEEKS SEMINAR: - 11:00AM, FRIDAY 11 MAY

Dr Richard Watts

Physics & Astronomy Department, University of Canterbury

Imaging the Brain: A Physics Perspective

The human brain weighs less than 1.5kg, and yet contains roughly 100 billion neurons. It uses nearly 20% of the body's energy, despite accounting for only 2% of its mass. I will present a physicist's view of how we can start to understand this most complex of machines through the use of medical imaging and specifically MRI. Very preliminary results of functional and diffusion MRI from the first 3 Tesla MRI scanner installed in New Zealand, recently installed in Christchurch) will be presented.

FORMER STUDENT WINS PHYSICS PRIZE WHILST STUDYING AT THE UNIVERSITY OF CONNECTICUT

I have received an e-mail from Sarah Boukoms (University of Connecticut, and an exchange student doing papers in our Department in 2006). Sarah did a Phys391 project with me in Semester 1 2006 on "Analysis of the Light curve of the RV Tauri star RU Cen". Apparently when she returned to the States her advisor suggested she submit her research paper for an award, the "Katzenstein Prize". The Katzenstein Prize is given for the "best essay by a graduating physics major the Physics Department at the University of Connecticut and this year Sarah is the recipient.

RUTHERFORD INDUCTED INTO THE CANADIAN SCIENCE AND TECHNOLOGY HALL OF FAME. (JOHN CAMPBELL)

On April 25th Ernest Rutherford became the 40th inductee into the Canadian Science and Technology Hall of Fame. The Hall of Fame was initiated by the National Research Council and later transferred to the Canadian Science and Technology Museum in Ottawa. The event was like a corporate breakfast event.

There were three inductees. I was surprised to arrive at the Rutherford table to see David Lockwood (MSc and PhD Canterbury) and his wife there. David is a bigwig in NRC and materials science so I asked him what hat he was wearing there. He had nominated Rutherford. Others present were Rutherford's great-granddaughter and the science adviser to the Canadian government. A letter from the Canadian Prime Minister was shown.

A nice do and now there is a little of New Zealand in Canada.

left to right

Dr Arthur Carty, Scientific Advisor to the Canadian Government.

Prof Mary Fowler, Rutherford's great granddaughter.

John Campbell, Rutherford biographer.

Dr David Lockwood, NRC, who nominated Rutherford.



ONE YEAR ON

(William Tobin)

As a letter from the Government Superannuation Fund (asking if I'm still alive) reminds me, it's been a year since I retired. Avid readers of this newsletter will know that I have removed a 700-kg block of concrete from my bedroom ceiling in France, but what else have I been up to?

Universities are not at the summit of tertiary education institutes in France. There are rivalled by a couple of hundred of the so-called *grandes écoles*, which are more specialized, often concentrating in engineering or business. Entry is by competitive examination following two further years at high school after the normal school-leaving examination of the *baccalauréat*. My elder daughter, Lara, had followed this route, and last summer it was time for the entrance examinations. This involved her taking over 50 written or oral examinations spread out over about as many days. In this obstacle course, candidates are rather like race horses - they need constant attention from their grooms and trainers (I mean parents), and that took up a good chunk of my time and especially emotional energy. The happy outcome, however, was that Lara was admitted to the respected *École polytechnique* at Palaiseau, a little to the south west of Paris. For the first eight months, students are on placement. The *École polytechnique* is actually run (and generously financed) by the Defence Ministry, so Lara has been with the French armed forces, first in the Alps firing machine guns, then at the Naval School in Brest learning port from starboard, and finally on a warship in the Indian Ocean, visiting many of the Gulf states, then East-African ports, and finally Jordan. One of her jobs was to provide the Admiral with daily



reports of what the British and American newspapers were saying about Afghanistan, Iraq, Iran and Somalia. She reports that near Iran her vessel was constantly harried by Iranian high-speed launches which would steer straight at her ship, stopping 20 metres short of collision. Classes started for her at Palaiseau last week. All very different from higher education in New Zealand.

For various reasons, my wife is a Czech patriot, and amongst travels last summer was a trip to the Czech Republic, coincidentally at the same time as the General Assembly of the International Astronomical Union. With an 800 Euro entrance fee, even for Members, I didn't attend any of the sessions, but we kept on meeting astronomers in the streets of Prague, including Siramas, and Jack and Maiya Baggaley. We visited the Ondrejov Observatory and in Prague saw a wonderful meridian in the Astronomical Tower as well as Tycho Brahe's tomb in the Tyn Church. Less astronomical, but just as enjoyable, was the Victorian-era distorting mirror labyrinth on Petrin Hill (see photo).



In October, Hans Zinnecker (Potsdam, Erskine visitor to the Department in 2005) invited me to attend a workshop on Antarctic Astronomy which he was co-organising in the charming little port of Roscoff in northern Brittany. Hans spent a night with us in Vannes before we drove to Roscoff via the megaliths at Carnac (see photo, note the kiwi on Hans' cap!)

The European Union has granted money for scientists to consider how best to exploit the astronomical potential of the French-Italian base at Concordia (Dome C)...but there is the problem: it's a French-Italian base, and no one else has any right to use it, especially those who speak English, like the Australians or British! It rapidly became clear that the politics was a real hornets' nest. The EU money includes a component for outreach, so I presented a poster about my experience and philosophy of teaching Antarctic Astronomy in Christchurch. (For what I said, visit <http://www2.phys.canterbury.ac.nz/~wjt23/TobinRoscoffPoster.pdf> and TobinRoscoffProceedings_p.pdf)

Things then became difficult because in mid-November my father in the UK became sufficiently unwell that he was no longer able to look after himself or my mother, who is blind. I was with them for much of the time until it became clear that my father would not improve and I was able to find and then move them into a care home in late January. Soon after the move, however, my father died. This was the first time I have arranged a funeral, and I adopted many of the elements that I appreciated from John Grant's funeral, such as giving a summary of my father's life for those mourners who only knew part of his history. Since then I have been engulfed in a morass of parent-related paperwork, and clearing and selling their house in order to pay the care-home fees. Going through family papers has had its poignant moments, especially concerning my grandfather, who was a padre with the New Zealand Expeditionary Forces in the Great War. I found a field notebook listing the dead, and their possessions, which would typically be a packet of cigarettes, a photograph and a letter. The luckier ones would also have a pen knife. Besides burying the dead, my grandfather was I suppose responsible for returning these meagre possessions to the relatives. I didn't cry for my father, who at 88 had had a long life, but I did weep for these young soldiers cut down on the battlefields of France in a war that had no clear reason and no clear outcome. *And of course there were photographs of my childhood - yes, last week's quizz photo was of me, aged about one, somewhere in Minnesota.*

Despite these parental preoccupations, there has been some progress on other fronts. I have had a splendid dormer window installed in the attic and hope to build an office for myself up there over the coming months. Then I will have the space---and filing cabinets---to attack a number of unfinished astrophysics projects from Canterbury. I have almost completed some raised vegetable beds in the garden. (Real stone turned out to be only a third of the price of ersatz lookalike concrete blocks, but was more of a challenge to lay). The beds are completed, and planted, but the paving around them still requires a few days work. And finally, for those of you who have read my biography of Foucault closely, you will remember that Foucault's biggest telescope was used in 1862 to make a drawing of M51, the nebula in which spiral structure was first discovered by Lord Rosse 17 years earlier. In my book, I lamented that this drawing was lost. Well, it has been found, in the Paris Observatory archives, by Jay

Holberg of the Lunar and Planetary Laboratory in Tucson, and it turns out to be a real cracker, far more accurate than any other pre-photographic image. I'd print the drawing here, except that the Paris Observatory would want a 40 Euro reproduction fee, so those who are interested will just have to wait until the appearance of an article by Jay and myself which we have just submitted to the *Journal for the History of Astronomy*.

So it's been a busy year, and once again the old adage proves true: don't retire, you'll have no free time because there's far too much to do!

AMERICAN ASTRONOMICAL SOCIETY CONFERS HIGHEST HONOUR ON McDONALD OBSERVATORY DIRECTOR DAVID LAMBERT (FEBRUARY 2007) (PETER COTTRELL)

David Lambert a former Erskine visitor to the department (on two occasions - in 1985 and 1999 was recently honoured...

WASHINGTON, D.C. - Dr. David Lambert, director of The University of Texas at Austin's McDonald Observatory, has been awarded the Henry Norris Russell Lectureship, the highest honour that may be conferred on an astronomer by the American Astronomical Society (AAS). The AAS is the major organization of professional astronomers in North America, with about 5,000 scientist members.

Lambert holds the university's Isabel McCutcheon Harte Centennial Chair in Astronomy. The American Astronomical Society said the Russell Lectureship is conferred on Lambert "for contributions in the field of stellar spectroscopy and abundances, which have profoundly influenced our knowledge of stellar evolution, nucleosynthesis, and their effects on the chemical evolution of the universe."

The Lectureship is named for the Princeton University astronomer who pioneered the study of stellar evolution. It is presented, the society said, "on the basis of a lifetime of eminence in astronomical research."

In four decades of research in astronomical spectroscopy, Lambert has published 450 papers on topics from the composition of the Sun, molecular emission by comets, the chemistry of the diffuse interstellar medium, and stellar nucleosynthesis and evolution.

In 1987, his work on the quantitative analysis of stellar spectra was recognized with the Dannie Heineman Prize for Astrophysics awarded by the American Institute for Physics and the American Astronomical Society. He has held visiting professorships at the European Southern Observatory in Garching, Germany, the University of Canterbury in Christchurch, New Zealand, and the Indian Institute of Astrophysics in Bangalore, India.

Lambert came to The University of Texas at Austin as a faculty associate in 1969, was appointed associate professor in 1970, professor in 1974 and the Isabel McCutcheon Harte Chair in 1987. He was educated in England, obtaining his bachelor's and doctor's degrees from the University of Oxford. Between Oxford and Texas, he was a research fellow of the California Institute of Technology and the Mount Wilson and Palomar observatories. He has been director of McDonald Observatory since 2003.

WHATEVER HAPPENED TO TREVOR CAREY-SMITH (GRAEME PLANK)

Congratulations and best wishes to a former student and staff member, Trevor Carey-Smith – he and partner Gwyneth have recently had a baby daughter – Anne Vivienne, born 8:55am, 28 April weighing in at 2.86 kg.

As a former student and teaching fellow Trevor Carey-Smith developed the ST radar system at Birdlings Flat from a concept to a working system for his PhD (completed 2002). He then worked as a post-doc in the department to develop and install a new A/D system for it. In August 2004 he went to work in Canada for Wayne Hocking's group at the University of Western Ontario as a post doctoral fellow. His research in Canada was described as: *Managing an upper air sounding program to investigate the mechanisms of stratosphere-troposphere exchange and Quantitative analysis of the sources of ozone in the troposphere*. Since mid 2006 he has been based at NIWA in Wellington.



OBITUARY– DR DON HUTTON – (JOHN CAMPBELL)

Don Hutton died this week on the 2nd of May. Don had a brain tumour operation last year and a final trip home to see family this year. In recent weeks he went down very quickly. He died in the Cabrini Palliative Care Unit in Prahran.

Don completed his MSc at Canterbury, followed by his PhD at Monash in 1964 and returned to the Department as a staff member from 1965-69. His research interests were wide. In formal research he used electron paramagnetic resonance to probe doped crystals and, amongst other things, developed techniques to check whether the colour of gemstones had been enhanced by crooks with scientific knowledge. He also carried out an experimental determination of the most appropriate temperature for a sleeping human. Don was highly regarded for his teaching and spent the last few decades shared between the physics and education departments.

Dot, Robert and Ellie's address is 30 Guest Rd, Oakleigh South, Melbourne, Vic. Tel: +61 3 9570 3970
Glynn Jones will write a longer profile for next weeks newsletter.

MAY 2007 SCHOLARSHIPS – WEB SITE

View General Scholarships at:-

<http://www.canterbury.ac.nz/scholarships/resources/currentnoticeboard.shtml>

College of Science Scholarship

<http://www.canterbury.ac.nz/scholarships/noticeboard/may2007sci.shtml>

<p>If you have anything you would like to contribute to the Newsletter, please email Ro on rosalie.reilly@canterbury.ac.nz: Newsletter, Department of Physics and Astronomy, University of Canterbury, Private Bag 4800, Christchurch, Phone: +64 3 364 2404, Fax: +64 3 364 2469.</p>
