

Physics & Astronomy

FROM THE HOD (ASSOCIATE PROFESSOR ROGER REEVES)

I don't have a large amount to say this week as we settle into the second semester. My time has been spent finishing some documents that will form part of our 4-year financial plan. We have had to think about what our enrolments, research income, and expenditure might look like out to 2011. There are some interesting statistics available on the numbers of high school students. There is a little bulge coming through now that will last for ~3 years and then there is a decline. One issue for us is that the projected decline in school students in the Canterbury region is greater than the decline across the country. It is very hard to factor immigration into these figures so maybe the projections are pessimistic.

The referee's reports on our 3 Marsden proposals have been dribbling in to the PI's for reply. I have seen most of them and am very pleased with the excellent comments being made about the proposals. This year the referees do not provide a score – in the past if a proposal was not rated “1” then funding was going to be difficult. Time will tell if we are going to be successful in having these proposals funded.

Further down in the newsletter you can find the second instalment of my trip to Europe.

THIS WEEK'S SEMINAR: - 11:00AM, FRIDAY 27 JULY

Dr. Leslie Young
Southwest Research Center, Boulder, Colorado, USA
Deputy Project Scientist. New Horizons

*Pluto's changing atmosphere: stellar occultation's and the
New Horizons mission to Pluto*

Pluto's nitrogen atmosphere is in vapour-pressure equilibrium with the nitrogen ices on the surface. As Pluto recedes from the sun and the sub-solar latitude moves poleward, changes in the surface temperature leads to rapid and significant changes in the atmospheric thermal structure, dynamics, and overall pressures. For example, Pluto's atmosphere has doubled in pressure between its discovery in 1988 and more recent observations in 2002, 2006, and 2007. The best way to study Pluto's current change is with the technique of stellar occultation, where Pluto and its atmosphere pass between an observer and a distant star. The defocusing of the starlight allows us to derive pressure and temperature profiles of Pluto's atmosphere. We observed a Pluto occultation from Australia and New Zealand in 2006, and are attempting another observation on July 31 of this year. The time-base of occultation studies will tie in with the New Horizons mission to Pluto, which will give us a rich snapshot of Pluto's atmosphere and surface in 2015.

NEXT WEEK'S SEMINAR – TO BE ADVISED ... (WATCH OUR DEPT WEB SITE FOR SEMINAR DETAILS)

[HTTP://WWW.PHYS.CANTERBURY.AC.NZ/](http://www.phys.canterbury.ac.nz/)

DAMON SKY PATROL (WILLIAM TOBIN)

Members of the Department with long memories will remember the Damon Sky Patrol undertaken for a number of years at Mt John by Mike Clark. This was part of the Harvard College Observatory's more-or-less regular monitoring of the northern and southern sky begun in Peru in the late 19th century. Mike used special, wide-field cameras to record the sky on 8x10-inch glass photographic plates which every so often

were shipped off to the States. Budget cuts ended the contract under which Mt John ran the patrol in about 1990. The Damon camera piers and fenced-off enclosure can still be seen on Mt John.

Harvard's plate stack occupies three floors and is estimated to contain some half-million plates (not all from Mt John!) weighing some 165 tonnes. Plans are afoot to digitise the plates, to produce the first, century-long, time-domain catalogue of the sky. All that is needed is some generous donor with US\$5-6 million to spare. For an interesting description, with many old and modern photographs, read the article which has just appeared in the on-line version of The New York Times:

<http://www.nytimes.com/2007/07/10/science/10astro.html>

CITIZEN IAN

A big congratulations to Ian Farrell (a departmental PhD student) who this week was awarded his NZ citizenship.



ROGER'S OVERSEAS TRIP – SECOND INSTALMENT.

After the DPC conference in Spain we had a week to kill before joining up with a tour party in Malaysia. So with not much planning from me and a lot from the girls we went to Malta.

Malta has a long history with the first habitation around 5000BC. It is thought that the oldest man-made structures can be found there with megalithic temples dating back to 3500BC. The civilisations that created these structures either died out or left and the next significant habitation was by the Phoenicians around 800BC. Roman rule started about 200BC until the island was taken over by Arab rule in the first century AD. A significant event was a shipwreck in 60AD that landed St Paul the Apostle in Malta. He was on his way to Rome as a prisoner to appeal for clemency from his death sentence. But while in Malta he instigated the conversion to Christianity that exists to this day.

After various occupations the island was gifted to the Knights of St John in 1530. We can see the link between Malta and St John today with the Maltese Cross and the cross of the St John ambulance service being the same. The story goes that the Knights of St John were often second (or third) sons of nobility who were unable to inherit the ancestral estates and found occupations providing safe passage and care of pilgrims in the holy lands – hence the connection with St John Ambulance Service of today. Their oversight of Malta was ended by Napoleon in 1798 but not before repelling a significant invasion by the Turks in 1565 when 9,000 defenders fought off ~40,000 invaders.

British rule of Malta came in 1814 through the Treaty of Paris. It gained independence in 1964 and EU membership in 2004.

We flew into the capital Valetta on a Sunday night and were surprised to see our very own fireworks display – actually it was not really for us, as each Sunday in June they have fireworks to celebrate the feast of St Paul. We had bought and paid for an accommodation/tour package before we left and so were met at the airport by the agent who delivered us to the hotel. Sunday night the hotel seemed a bit dodgy and in the morning even worse. It was a 2-bedroom apartment and because it could sleep 6 people it commanded top dollar as we found out for the tariff. But it all seemed a rip-off when the furniture was worse than “warehouse” brand and you can't close the bedroom doors because the bed extended into the door space. Having prepaid we didn't have much leverage but its amazing what can be done when you really start to get annoyed. So after pestering the agent we moved to a nicer hotel down the



road as you see from the photo above the view from the window wasn't bad

Malta is really quite small in area – 320 km² (Canterbury is ~40,000 km²) with a population around 400,000. As you travel around the roads there are clumps of houses forming a village with perhaps no more than 1000 people. In many cases the villages are only a few 100 metres apart. The competition and rivalry between these villages is such that they all build their own church – Malta has 360 churches for 400,000 people. It seems that wherever you look you can see either a dome or a steeple.

One of the weird things for us was the Malta currency – the Lira. It must be one of the few currencies that is “stronger” than the NZ dollar. At the time of our visit it took more than \$4 kiwi to buy 1LM. For me it was a return to the 60's to be buying ice creams and drinks for 25c. 2007 is the last year of the Lira as they convert to Euros from 1st Jan. Unfortunately for us no bank will now accept Lira for exchange and we have been caught with more unused notes than I would like. If anyone is going to Malta this year then maybe we can do a deal!

Most of our time in Malta was taken up being the typical tourists – tours of numerous churches, lounging on the beach etc. The weather was fantastic and always a treat to swim in the ocean without freezing. Because of the British heritage it's really easy to use English and be understood. In fact Malta has a large number of English language schools where continental Europeans can go to learn the language without messing with the Brits and their cold weather. One other leftover from the Brits is that the Maltese drive on the left. It made it easy to not get run over crossing the road.



View General Scholarships at:-

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

College of Science Scholarship

<http://www.canterbury.ac.nz/scholarships/noticeboard/july2007sci.shtml>

NEWS FROM THE PHYSICAL SCIENCE LIBRARY

(1). Scopus now indicates copyright

Scopus database has integrated copyright permissions from Copyright Clearance Center (CCC) within Scopus. Clicking the "Get Permissions" icon in search results will display all of the permission types available for the content you wish to use.

More info: <http://www.copyright.com/ccc/viewPage.do?pageCode=au122>

Scopus - <http://library.canterbury.ac.nz/databases/>

(2). Journal Citation Reports

Wondering about Journal impact factors? The 2006 data are now available for Journal Citation Reports.

JCR - <http://library.canterbury.ac.nz/databases/>

(3). SciTalks - YouTube for Science

From the Press Release..."...over 1,000 lectures online, and more are being added daily. Segments range from a series of hour-long lectures by the late Richard Feynman, to a short, hilarious Ali G interview with Noam Chomsky, and a fascinating talk on designing a semiconductor-based brain, by up-and-coming Stanford researcher Kwabena Boahen."

<http://www.scitalks.com/>

(4). World eBook Fair

<http://www.worldebookfair.com/>

Second Annual World eBook Fair: July 4th to August 4th

- * 620,000 Free eBooks + ~110,000 Commercial eBooks
- * Grand Total about 3/4 Million Total eBook Files Available
- * eBooks in over 100 Different Languages!
- * Created by Contributions from 150+ eLibraries Around the World

Adam - <http://library.canterbury.ac.nz/people/cath.shtml>

If you have anything you would like to contribute to the Newsletter, please email Ro on rosalie.reilly@canterbury.ac.nz:
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