ChemNEWS

Autumn 2009
Issue 14

Newsletter of The University of Sydney School of Chemistry

Chemicals are good for you -

The RACI Nyholm Youth Lecture

Peter Rutledge takes a simple but important message to Year 10 students around NSW

Ask a group of 15 year olds to picture a chemical and they come up with some interesting suggestions – from 'bubbling purple liquid' and 'Periodic Table' to 'cleaning chemicals' and 'toxic things' and even 'concrete,' 'chocolate' or 'Einstein'! But none of them suggest aspirin, penicillin or claratyne, and it's the stories of those molecules – their chemistry and their life-enhancing roles – that are the basis of my Nyholm Lecture 'Chemicals are good for you'.

Sponsored by the RACI NSW Branch and named for Sir Ronald Nyholm, University of Sydney graduate and pioneer of coordination chemistry and chemical education in Australia and the UK, the Nyholm Youth Lectures aim to bring chemistry to life for a high school audience. After an absence of several years, the Nyholm Lectures were re-launched in 2008 with important changes to format and target audience. Most significantly, the series now targets Year 10 students (previously Years 11 and 12), and is presented in June and July, before they make subject choices for the HSC; and the lecture now includes increased student involvement, interactivity and practical demonstrations.

So how do you tell the stories of aspirin, claratyne and penicillin to a broad mix of Year 10 students, in a manner that engages and entices them, without patronising or diluting the chemical message? My approach combines demonstrations with colourful graphics and animations, an interactive quiz game, question-and-answer sessions, and several very visual metaphors. Consider claratyne as a nightclub bouncer, blocking histamine from entering its receptor, aspirin as a hitman taking out cyclo-oxygenase to prevent it generating pain-signalling molecules, and pencillin as a bicycle (in structure) that is vulnerable to beta-lactamases letting the air out of its tyres.

Drawing from the impressive collection of practical lecture demos built up in the School over the years, I used five of the best (and most portable): the Iodine Clock and Magic Jug provide a great range of colour and quick change; the Flaming Lamborghini of the Canned Heat demo brings fire; dissolving an egg shell in conc. HCl has a certain gruesomeness that appeals to the 15 year old mind, and the resulting shell-less egg is a useful metaphor for penicillin's effect on a bacterial cell; and chemiluminsence finishes the show with a look to the future. The demos had to be portable as we took this lecture on the road around the state (making good use of the School Ute), and it took a fair bit of fine-tuning to package everything efficiently and safely for transport.

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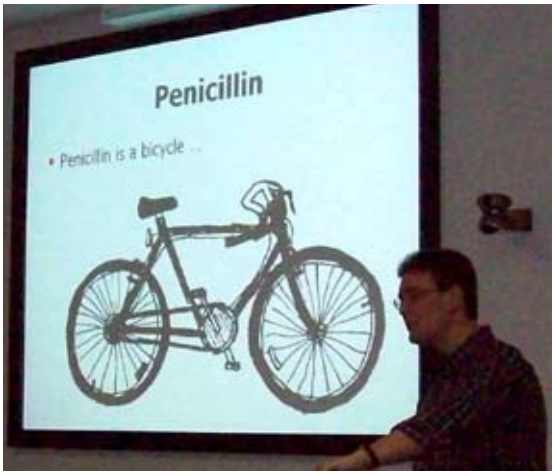
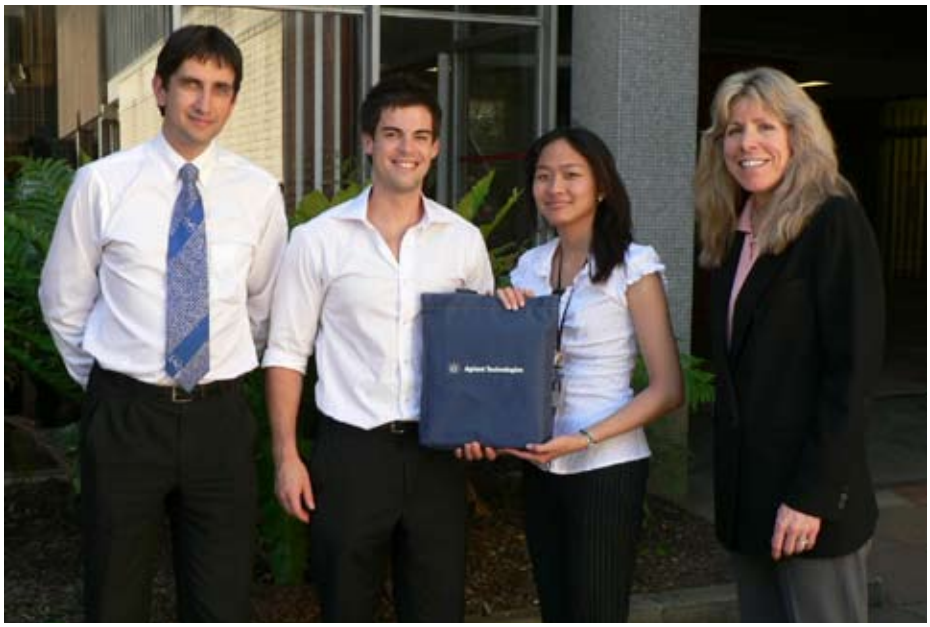


RACI NSW One-day Organic Meeting
Showcases our Students' Research by Mat Todd



From left to right: Professor Stephen Hashmi, Stephen Butler, Fiona Ky and Professor Jackie Gervay-Hague.

The RACI holds an annual one-day NSW organic chemistry symposium for students to give oral and poster presentations. This year the School was able to host this event, which took place on December 3rd. We had an excellent schedule of ten presentations from students from around the state, and around 27 posters. The day's proceedings were led by a plenary lecture from Professor Stephen Hashmi (University of Heidelberg) who spoke about his research in gold catalysis, and the day was brought to a close by a second plenary from Professor Jackie Gervay-Hague (UC Davis) who spoke about her interests in carbohydrate chemistry.

In between these plenaries we were treated to a real showcase of the diverse, fundamental research in organic chemistry going on around the state. Talks from the School included those from PhD students Jimmy Lee (Photoinduced electron transfer, Crossley group) and Stephen Butler (cyclic peptides, Jolliffe group) and Honours students Caroline Nesbitt (Synthesis of natural products, McErlean group) and Fiona Ky (Reaction monitoring with polarimetry, Todd group). In fact Stephen and Fiona won the 1st and 2nd (respectively) oral presentation prizes for their talks. By strange coincidence, Stephen's prize was an iPod – he had lost his own iPod right before the conference. From the posters, the School also won awards, with James Cochrane (PhD) and Michelle Wong (Hons), both from the Jolliffe group, winning two of the three available prizes.

Besides funding from the RACI, the day was sponsored by a number of local companies (Waters, Sigma-Aldrich, Agilent, John Morris, Shimadzu and Perkin-Elmer). We are certainly grateful to them, and to all of those who took part, for what was a very successful showcase of our students' research. ♦

Sydney is Host to Organic Chemistry, Shanghai Style by Mat Todd

The School has in recent years built up a strong interaction with China in Organic Chemistry. Following on from a long-standing series of bilateral meetings established by Professor Crossley, we were fortunate enough last year to be awarded a grant from the Australian Government (DIISR) and the Australian Academy of Technological Sciences and Engineering to run two meetings on New Chemical Technologies with one of the world's pre-eminent centres of organic chemistry, the Shanghai Institute of Organic Chemistry. Last year several members of the School visited Shanghai for the first of these meetings (see Issue 13), and this year it was the turn of the Chinese to visit Sydney.

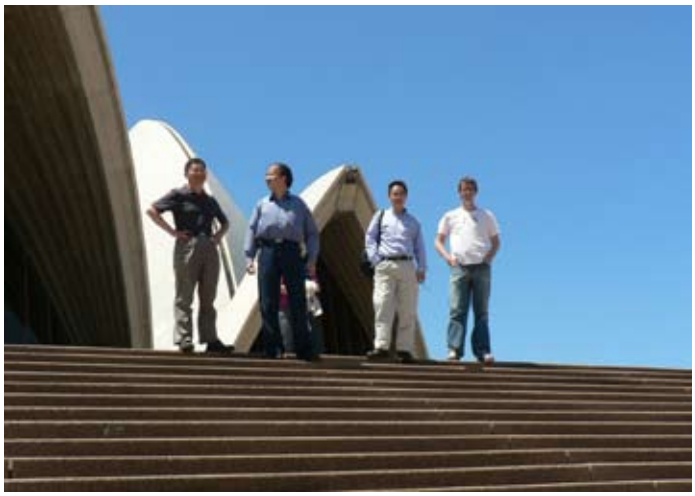
The Shanghai delegation of five scientists was led by Professor Dawei Ma, the host of our previous visit to Shanghai, and they were joined by Professor Canping Du of the National Science Foundation of China. The conference was held 1st-2nd December, 2008. Besides faculty speaking from the School (Professors Crossley and Jolliffe, A/Prof Masters, Drs Todd, Rutledge and Payne) were other organic chemists from around Australia: Dr Spencer Williams (Melbourne), Dr Kellie Tuck (Monash), Dr Craig Williams

(Queensland) and Dr Wayne Best (Epichem Ltd, WA). We were also fortunate to have two international participants on the programme, Professor Stephen Hashmi (Heidelberg) and Professor Chris Abell (Cambridge).

The seminars highlighted the extraordinary contributions of fundamental research in organic chemistry towards finding new, efficient processes for the synthesis of molecules that will impact on green industrial processes in the future. Professor Xue-Long Hou described the exquisite selectivity he had observed in several asymmetric reactions that permitted a greater understanding of catalyst design. Professor Ma spoke about his research in the synthesis of complex marine cyclopeptides, and Professor Gang Zhou discussed his leading research in the immobilisation of catalysts on solid supports. Lectures by Australian faculty included the development of new synthetic methods (Williams, Tuck), or the application of organic synthesis in nanotechnology (Crossley) or biological chemistry (Williams, Payne, Jolliffe), the design of new catalysts (Rutledge, Masters), or methods for their discovery (Todd). Our international visitors spoke on the discovery of palladium catalysts for asymmetric reactions (Hashmi) and the use of droplets as microreactors for diverse applications (Abell).

We were able to show our Chinese visitors some of the highlights of Sydney: a trip from the opera house to the zoo, followed by a harbour cruise and a beer tasting in Darling Harbour. In all our informal discussions it was clear that the same scientific pressures face both Australian and Chinese scientists: in an era of enormous global change, chemists will be increasingly relied upon to solve some of the most pressing challenges facing us all – how to discover molecules with important functions, and how to make them with as small an environmental footprint as possible. Rising to such challenges is made easier by fruitful collaborations with the best overseas institutions. We look forward to continued involvement with our Chinese colleagues in Shanghai. ♦

Wayne Best (Epichem) and Spencer Williams (Melbourne) discuss chemistry and beer with Professor Zhanting Li (Shanghai)



Professors Dawei Ma, Xue-Long Hou and Biao Yu survey the Opera House with Spencer Williams

2008 Cornforth Lecturer:
Professor Ben Davis

Professor Ben Davis

The Cornforth foundation was established to honour the life and achievements of Sydney Chemistry alumni John and Rita Cornforth. The Foundation works to continue the strong tradition of organic chemistry at Sydney by bringing major international researchers to Sydney to undertake research and postgraduate teaching here. See http://cornforth.chem.usyd.edu.au/ for more information.

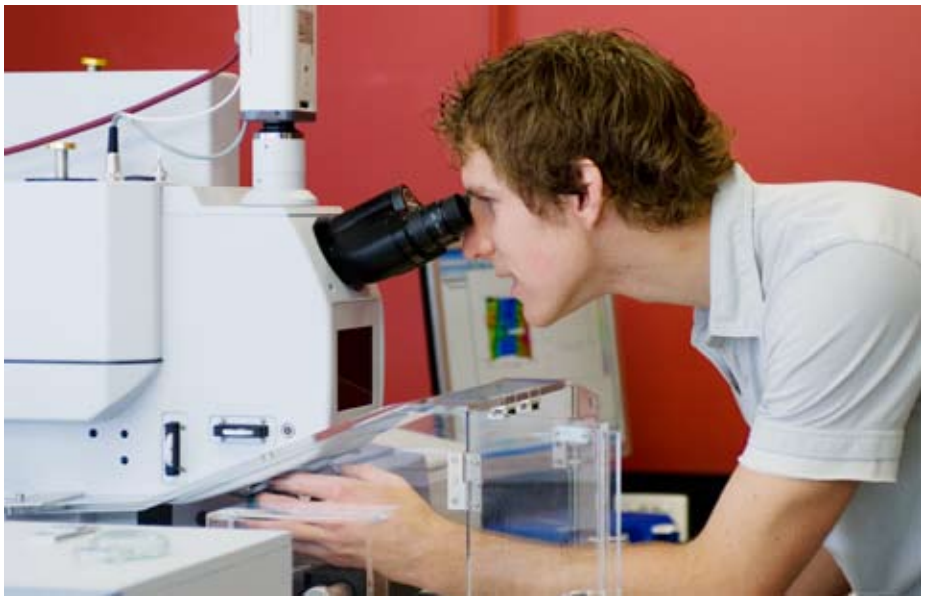
This year the Cornforth lecturer was Professor Ben Davis from the University of Oxford. Ben is a young chemist who has been carrying out cutting-edge research in the area of the chemical modification of proteins, and carbohydrate chemistry, over the last few years. He delivered several seminars in the School describing this research. He was a visitor to the School for 20 days, allowing him time to interact with staff and students.

Courtesy of the Cornforth foundation, Ben was also able to deliver the 2008 CHAST lecture. CHAST is the Centre for the Human Aspects of Science and Technology, and was established by the Faculty of Science to increase the public's understanding of science (http://chast.org/). This lecture allowed Professor Davis a chance to explain his research to a lay audience, an important part of the School's outreach responsibilities. CHAST is grateful to the Cornforth foundation for making this possible. ♦

Vibrational Spectroscopy Facility

The new laboratories and equipment of the Vibrational Spectroscopy Facility were unveiled at an opening symposium held on May 23, 2008 attended by over 100 researchers from around Australia. At the symposium the Facility was opened by the Hon. Tanya Plibersek, who is the Federal Member of Sydney and Minister for Housing and the Status of Women, and Professor Merlin Crossley, Deputy Vice-Chancellor of Research at the University of Sydney. An array of new instrumentation worth over $3M that had been funded by Australian Research Council LIEF grants, NHMRC Equipment grants, a University of Sydney Major Equipment grant and other funding from the School of Chemistry, the Faculty of Science and the University was on display. The equipment is managed by Professional Officer, Dr. Liz Carter, and is producing ground-breaking research in chemistry, materials science, biomedicine, biological sciences, pharmacy, engineering and archeology and is used widely by industry. Further information can be found on http://spectroscopy.chem.usyd.edu.au/.

The following is an excerpt from the upcoming Faculty of Science book "Sydney Science" by Sarah Masters (Editor). This article describes research undertaken by Professor Lay's group within the Vibrational Spectroscopy Facility and X-ray and infrared beamlines at the Australian Synchrotron and overseas synchrotrons in the USA, Japan and Taiwan.



Mr Mark Hackett, Postgraduate Teaching Fellow

As Head of the School of Chemistry's Vibrational Spectroscopy Facility, the largest collection of state-of-the-art equipment of its type in Australia, Professor Peter Lay focuses on the bioinorganic chemistry of transition metals to refine dietary protocols and develop new pharmaceuticals.

Housed in this facility is advanced spectroscopy equipment used by Lay to delve into drug development, diagnostics and metabolic processes. Focusing principally on the role of transition metals in these processes, Lay isolates their effects in complex biological systems. "Combining infra-red and Raman spectroscopies with X-ray spectroscopic imaging using synchrotrons, we can map changes in biochemicals, such as proteins, to changes in metal chemistry."

"The active form of any given metal is usually not the form that is ingested, but once in the body these metals change into their bioactive forms," elaborates Lay. A prime candidate in this research is chromium; many industrial processes rely on chromium(VI) a known carcinogen that causes cancers in the respiratory tract, whilst chromium(III), assumed to be non-toxic, is incorporated into anti-diabetic and weight loss drugs.

Chromium(III) complexes exert their beneficial effect on glucose metabolism in states of hyperglycaemia, such as diabetes and extreme exercise. However these conditions are also characterised by elevated levels of oxidants, such as hydrogen peroxide, that are capable of converting chromium(III) to its carcinogenic forms, chromium(VI) and chromium(V). "Chromium(III) reacts with enzyme systems or directly with hydrogen peroxide to form toxic mixtures of high oxidation state chromium species," worries Lay.

There is rather compelling evidence that the anti-diabetic effects of chromium arise from elevated levels of oxidants in diabetics. These drugs have only been consumed in large amounts for a little over a decade, but with a latency time of 10–40 years this is an area that needs to be monitored carefully in the future.

A direct result of spectroscopic techniques is the identification of how chromium replacements and new drugs using the transition metals ruthenium, gallium and vanadium work when treating cancer or diabetes, respectively. These drugs are all relatively non-toxic and have few side effects but are not yet widely used.

"Some ruthenium drugs have been shown to target secondary tumours, which opens up the possibility of treating more advanced stages of cancer and cancers that are normally intractable to chemotherapy. Gallium is believed to inhibit the metabolism of iron, interfering with iron chemistry to starve the fast growing tumour cells of an essential nutrient. Vanadium works much like chromium for anti-diabetic effects, without the same concerns about its potential to cause cancer," reveals Lay.

Vibrational spectroscopy can also be used to pick up changes in lipids, proteins and DNA within cells and tissues for diagnosis of cancer, potentially removing subjectivity in diagnosis. Lay is enthusiastic about these applications. "Accurate spectroscopic techniques may allow doctors to make decisions that minimise invasive surgery and optimise patient outcomes, a process breaking new ground overseas." ♦

Emeritus Professor Wal Taylor (1930-2009)

by Professor Lew Mander, ANU

On 1 January 2009 Australia lost one of its premier natural product chemists when Walter Charles Taylor finally succumbed to the ravages of cancer.

Wal completed his BSc Hons. (First Class Honours) and MSc degrees at The University of Sydney before undertaking his PhD with E.R.H.Jones at the University of Manchester. After 2 years as a postdoc with Barton he was appointed to a lectureship in organic chemistry at the University of Sydney in February 1958, rising to a personal chair in1985. He served as Head of the School of Chemistry, 1980-1981.

Wal's research was centred on natural products chemistry, covering isolation, structure determination and synthetic studies. He was the author of 233 research papers covering the constituents of plants and marine sponges, as well as the identification of important intermediates in biogenetic pathways.

Highlights of his research include work on the *Galbulimina* **alkaloids** and the constituents **of** *Eupomatia* species. The *Galbulimina* alkaloid, Himbacine, is a competitive muscarinic antagonist, and is a valuable tool now being used worldwide by pharmacologists studying muscarinic receptor site behaviour. This work was recognised by the third prize under the Boerhinger world awards in 1988, and was written up as two chapters in the prestigious international series "The Alkaloids".

The 'relic' Australian plant family, the Eupomatiaceae proved to be a rich source of natural products of novel structures, representing new biogenetic pathways. These include cyclohexadienone lignans, benzofuran neolignans, and azaaporphine alkaloids. Other major contributions have centred on the genus *Flindersia* (acridone and furoquinoline alkaloids, limonoid terpenoids, coumarins) and the Lauraceae family (isoquinoline alkaloids), among many others.

Wal had for the last 20 years been using his experience and knowledge to encourage chemists throughout Southeast and South Asian countries to carry out research on local problems in the area of natural products and bioactive plants through collaboration. In order to expedite this work Wal achieved a reasonable degree of fluency in Thai, Lao, Vietnamese, Burmese, Indonesian and Nepali. In 1994 he was awarded the Einstein Medal by UNESCO in recognition of his contributions to the development of science in developing countries. In 1996 he received an OAM, while in 1997 he was the Sir Edward 'Weary' Dunlop Asia medalist. ♦

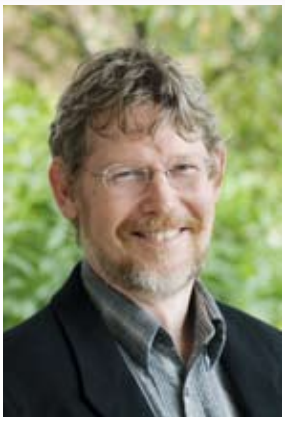
Emeritus Professor Hans Freeman (1929-2008)

by Professor Guss Mitchell, UoS

Emeritus Professor Hans Freeman passed away peacefully on November 9th, 2008. He was a significant presence in the School of Chemistry from his days as a graduate student in the early 1950's until he was taken ill a few weeks before his death. Hans Freeman was an outstanding teacher who inspired generations of students with a love for science. His lectures were elegant and always informed by current research. For him, teaching was a love, never an obligation. This was never more evident than his continued and passionate involvement for more than a decade post-retirement in the teaching of the laboratory course for talented chemistry students that he originally established.

Hans was inspired to undertake a research career focused on the use of structure determination by X-ray crystallography to solve chemical and biological problems, after spending time as a graduate student at the California Institute of Technology mentored by Eddy Hughes in the laboratory of Linus Pauling. He took up the challenge of establishing crystallography in Sydney and in the process became one of the pioneering users of SILIAC, the second digital computer to be installed in Australia. What followed was a highly productive period of research that engaged many Honours and graduate students and unusually for the time, post-doctoral fellows. The work started with his PhD project, the structure of biuret, and then progressed in complexity to metal complexes of amino acids and peptides. This established Hans' international reputation as a bioinorganic chemist.

Shortly after his appointment as the first Professor and Head of Inorganic Chemistry at this university, Hans began what was to prove to be the most exciting time of his research career. He led the research group that solved the first protein structures in Australia including that of the mysterious intensely blue copper-containing protein, plastocyanin. He continued work on the 'blue' copper proteins right to the end and a final manuscript submitted after his death on auracyanin was published in March this year. His enthusiasm for science will be missed in the University and especially in the Schools of Chemistry and Molecular & Microbial Biosciences. ♦



Professor Greg Warr
Head of School

Hunters and Collectors

The end of last year and beginning of this one were bracketed by the sad news that two of the School's most eminent members, Hans Freeman and Wal Taylor, had passed away. The careers of both men are remembered in articles elsewhere in this issue of ChemNEWS. When I first arrived at The University of Sydney in 1988, Hans was Professor of Inorganic Chemistry and Wal had a personal chair in Organic Chemistry, and both already held special places in School. I didn't realise until later that both were also natural product chemists, avidly hunting and collecting samples from exotic locations in the far reaches of Southeast Asia or the somewhat nearer reaches of St John's college oval for isolation, purification and analysis.

Wal's passion for and mastery of the art and science of natural product isolation and identification were infectious. Part of his unique legacy is his contribution to the development of chemical research in Southeast Asia through the supervision of postgraduate students both here and in their home countries, and his network of collaborators in our region. Hans' lectures to undergraduate students were legendary, inspired and informed by his own passion for scientific discovery, including to First Year classes. He was a pioneer of what we now call research-led teaching. Hans was also a key figure in the development of "big science" in Australia, made tangible today in facilities like the Australian Synchrotron and Opal research reactor.

Both men were leaders in teaching and research, whose diverse contributions will endure because they embraced their responsibility as university academics to inspire their students as well as simply teach them, to challenge themselves and their students with hard and worthwhile problems, and to have a public impact beyond the narrow definition of our job.

The lives of both Hans and Wal remind me of how closely teaching and research in universities are intertwined. Am I simply stating the obvious? Too often and too easily they are decoupled, the link severed as an administrative convenience, or by focussing too narrowly on current researchers and projects. One of the great features of the School of Chemistry is that we all contribute collaboratively to all levels of our teaching program. Even when it feels like we are stealing time from our latest results or manuscript, a serious commitment to the upcoming generation is embedded in our culture. The current development of new First Year laboratory experiments, our Postgraduate Teaching Fellowships, and our Summer Undergraduate Research Scholarships all exemplify this commitment, and also illustrate the intimacy of the relationship between teaching and research that continues to underpin our strength in both domains.

Professor Greg Warr
Head of School

2008 Young Tall Poppy Award

Dr Peter Rutledge has been awarded the 2008 Young Tall Poppy Award. Peter's research crosses many areas of chemistry, including developing new antibiotics, building improved technologies for detecting pollutants and designing new catalysts.

The Young Tall Poppy Science Awards aim to recognise the achievements of Australia's outstanding young researchers in the sciences working in universities, research institutes and laboratories in private industry, private practice and government organisations.

The NSW/ACT Young Tall Poppy Awards are principally supported by the NSW Office for Science & Medical Research as part of Science EXPOSed. The NSW Tall Poppy Campaign is also supported by Macquarie University and the NSW Department of Education and Training, with national support through the Department of Health and Ageing. ♦

Profile of an Alumnus:

Dr John E.W. Lambert-Smith (DSc, MRACI, CChem(Aust))

The latter part of the 1950s was an exciting time at the University of Sydney with the SILLIAC, Australia's first useful computer, being formally commissioned 12 September 1956. John Ernle Warwick Lambert Smith (more correctly Lambert-Smith and better known as Jewls) graduated with First Place and High Distinction in Advanced Inorganic Chemistry (double subject) in April 1957. Jewls with John Charles Taylor actually commenced work with Hans Freeman in 1956, analyzing a Patterson Function (hand calculated and plotted!) and became Hans' first two post-graduate students. The SILLIAC could not have come at a better time!

Both Hans and Jewls were interested in computer programming and Hans published a paper (1957) regarding Fourier syntheses using the SILLIAC. This was the first program written in Australia for X-ray diffraction work. The first "Freeman-Smith" paper followed and related to the polynomial representation of atomic scattering factor curves. This very accurate (max deviation <½% for full range) method of describing curves as 6^{th} degree polynomials is still in use within the Queensland Electricity Supply Industry (QESI) in 2009! It is now used for determining volumes and evaporative surface areas of dams with respect to depth.

SILLIAC Code V15 for X-ray data correction written by Jewls became the International Union of Crystallography's Program No. 3001. All of New Zealand's and nearly all of Australia's crystallographic laboratories (UNSW had its "UTECOM") used V15 into the 1960s with those laboratories mailing their data to Sydney for processing by Jewls in an arrangement with Harry Messel and John M Bennett.

John Taylor submitted his MSc thesis in 1959 and left the group. Hans and Jewls worked together refining the structures of potassium bis-biureto-cuprate (II) tetrahydrate and bis-biuret copper (II) dichloride. Three more publications resulted, one being general (Nature, Lond) and two detailing the structures of each which including solving a space-group ambiguity and locating all hydrogen atoms.

By the 1960s, funding had become available for better equipment and for the support of four post-doctoral research fellows. Jewls left the group at the end of 1963 to take up Science teaching for several years before joining the Queensland Electricity Supply Industry as a power station chemist at Calcap, Collinsville and, finally Callide B. Regular contact with Hans was maintained through visits and by mail and email until his death on 9 November 2008.

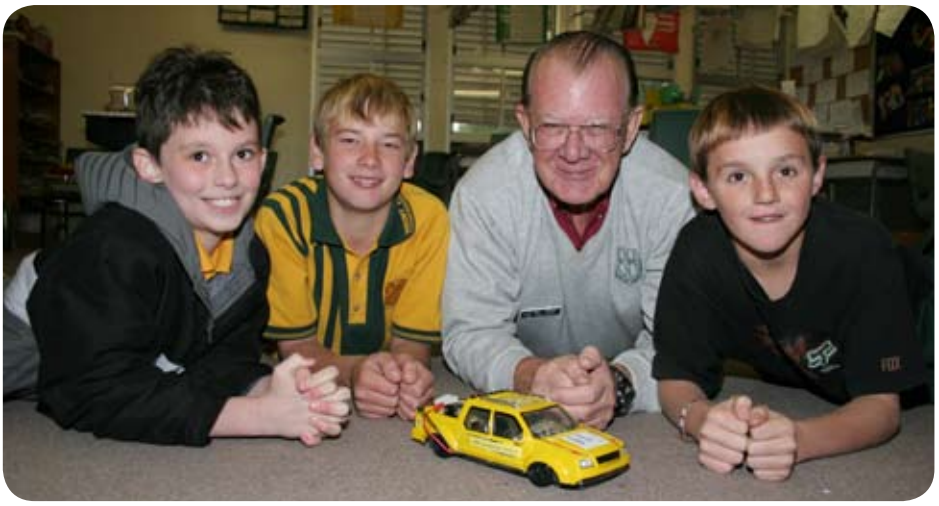
It was in 1981 after promotion to Power Station Chemist Collinsville that Jewls initiated his "Science in Schools" Program. At first, this provided one-week of work experience for Year 12 Chemistry students who spent three days in the field and laboratory followed by two days of report writing. The student(s) concluded this work with a formal presentation to management. This program involved real work, a real report and a presentation which required that the student(s) fully understood the task undertaken. After the early years, the formal presentation was deferred to provide time for the production of a really polished product. It was always thrilling to see the delight of a student who realized that he/she actually fully understood a reaction! This program was, of course, fully supported by power station management and was telecast by ABC's "Quantum" at the end of 1990. This program continued through the 1990s.

In 1992, Year 10 students were offered one-day workshops regarding coal-fired power stations, green alternatives, and discussions of environmental issues. In 1993, "Science in Schools" was taken to final year primary students. The range of activities for these students included underwater profiling at Callide B (1998), groundwater studies, crystal growing and tours of Callide B with simplified explanations of coal-fired electric power production.

Since 2006, examining and using solar panels and hydrogen fuel cells has been the topic. The primary aim is observing and measuring, recording and report writing (Scientific Method + numeracy & literacy!!!).

In 2004 Jewls was awarded a DSc after submitting a multi-volume thesis mainly concerning investigations of chemical problems adversely affecting the efficiency of coal-fired power stations as well as associated environmental issues over a 28-year period. Most of the chemical problems have been unique and required a great deal of investigation. The thesis also contained descriptions of some multi-purpose computer programs and micro-analytical methods developed by Jewls for the laboratories of the QESI. ♦

Dr John and three students from Mount Murchison Primary School demonstrate an experimental hydrogen fuel cell vehicle



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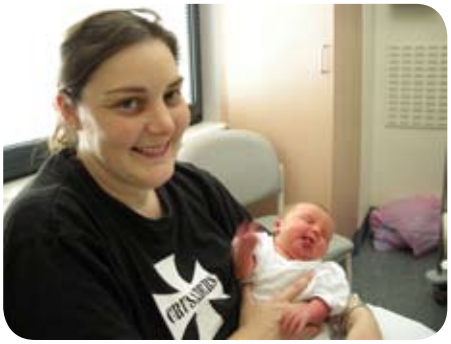

Dr Dianne Fisher, Postdoctoral Fellow, and husband Daniel on the birth of their second child, Abigail Violet Fisher, born Thursday 4th December 2008 at 12.00 noon. Abigail weighed 3.54 kg and was 50 cm in length.

Mr John Duckworth, Laboratory Manager, who has shared the 2008 Peter Dunlop Memorial OHS Award. This award recognises individual staff members who have made a significant contribution to improving health and safety at the University of Sydney.

Honours student Ms Fiona Ky who won the $500 first prize at the 2008 RACI (NSW) Analytical Group Honours presentation competition, for her talk entitled "Real-time Monitoring of Asymmetric Reactions with Polarimetry."

Professor Leo Radom, who was Chair of the Eighth Triennial Congress of the World Association of Theoretical and Computational Chemists (WATOC 2008), held in Sydney from September 14–19. The Congress attracted more than 830 participants from 46 countries around the world.

Emeritus Professor Len Lindoy on his award by the Royal Society of Chemistry UK of an RSC Centenary Lectureship and Medal for 2009-2010 for his wide ranging and important contributions to coordination chemistry, ligand design and supramolecular chemistry.

The following PhD students for their presentations at the recent DRSPOC seminar series: Mr Robert O'Reilly for Best Overall Presentation and Ms Natsuho Yamamoto for Best Themed Presentation.

Dr Kevin Cook, Postdoctoral Fellow, on his award of ARC ARNAM funding to travel to Scotland to work at Heriot-Watt University, Edinburgh on characterising soft glass waveguides and structured optical fibres and to attend an SPIE Europe Optics and Optoelectronics conference in Czech Republic.

Mr Sören Wohlthat, PhD student, who was awarded a poster prize at both the ICEM (International Conference on Electronic Materials) in July and the WATOC (World organization of Theoretically Orientated Chemists) conference held in September.

Mr Neeraj Sharma, Ms Natasha Sciortino, and Ms Kaitlin Beare who have won the C.G and R.J.W. Le Fèvre Postgraduate Student Lectures Award. These lectures were established in 1985 following a gift of $2 000 from Emeritus Professor R.J.W. Le Fèvre and are awarded on the recommendation of the Sydney University Chemical Society.

Professor Scott Kable on his award of a 2009 Fulbright Senior Scholarship to undertake research into ultra-fast photochemistry at the University of Wisconsin.

Emeritus Professor Len Lindoy has been awarded the 2009 Craig Medal by the Australian Academy of Science. The David Craig Medal recognises the outstanding contribution to chemical research of Emeritus Professor David Craig, AC, FAA, FRS. Its purpose is to recognise contributions of a high order to any branch of chemistry by active researchers. The award is made annually.

Professor Cameron Kepert on his award of the 2009 Royal Society of Chemistry Australasian Lectureship. This Lectureship is awarded every two years by the RSC (UK) and allows the recipient to give a series of research lectures at universities across Australia and New Zealand.

Cont'd from page 1

In 2008 we took the Nyholm to Dubbo, Armidale, Penrith, Wollongong and Mittagong, as well as presenting a 'central Sydney' lecture here in the School of Chemistry. The lecture was also delivered to a remote audience, using video conferencing facilities at Charles Sturt University's Dubbo campus to broadcast directly into school classrooms.

Judging by feedback from students and teachers alike, the revised format of the 2008 Nyholm definitely hit the mark, and I've accepted an invitation from the RACI to return as Nyholm Lecturer for 2009. I will be 'on the road again' later in the year. Return visits to all our successful 2008 destinations are planned, plus trips to the Northern Rivers and Riverina regions, several additional Sydney city gigs, and an extension of the video-casting successfully trialed last year.

In closing, I offer a big vote of thanks to Marjan Ashna and Hitendra Gopal of the First Year Team for their invaluable assistance preparing the demos, Edwina Hine of the RACI for all her organisational efforts, and Cliff Gatfield for help packing and transporting the demos. Thank you too to the RACI and President Mary Collins, and the School of Chemistry for support throughout.

For more information on The Nyholm Youth Lecture, Sir Ronald Nyholm and further details of my 2008/2009 lecture, have a look at the accompanying website http://www.chem.usyd.edu.au/~rutledge/nyholm. ♦

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