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We celebrated one hundred years of Engineering Science at Oxford

"It's a remarkable story." Lord Jenkin

and thought about our future role

"Engineering is at the centre of society... engineers change the way we live." Lord Browne

This Newsletter reports...
Heads of Engineering Science

Prof. Charles Frewen Jenkin (1908-29)

Prof. Sir Richard Vynne Southwell (1929-42)

Prof. Alexander Thom (1945-61)

Prof. Douglas William Holder (1961-77)

Prof. Charles Peter Wroth (1979-89)

Pictured here are recent heads of Engineering Science (from left to right): Prof. Sir Mike Brady, Prof. David Clarke, Prof. Rodney Eatock Taylor and Prof. Richard Darton.
So Many Happy Occasions

This Newsletter reports the events of 2008, in which we celebrated the Centenary of Engineering Science at Oxford. I do hope you enjoy these brief accounts, and the photographs that are such good reminders of so many happy occasions.

One of the pleasures of the Centenary Year has been in welcoming old members of the Department back as visitors, and hearing about their current activities – Oxford engineers are clearly making huge contributions in very many walks of life.

Our Centenary lectures have given us a chance to reflect on the breadth of the profession, and the way it is evolving. From flood defences to biomedicine, from legal disputes to sustainability, our speakers have shown how engineers make life richer, safer, and healthier.

Its great breadth has always been a strength of the Department, from the days of Frewen Jenkin himself, who made advances in electrical, civil and mechanical engineering (as well as being an expert on calcareous sponges).

The Oxford brand of excellence in teaching and research across the whole engineering spectrum is clearly a winner, and we aim to keep it that way as we grow and develop.

It has been great that so many alumni and friends of the Department were able to come and enjoy our Centenary activities, and we hope you will keep in touch with us in future.

Thank you all for your support.

Richard C. Darton
Professor Richard Darton FREng
Head of Department

The Department Today - The Staff

This staff departmental photograph was taken to commemorate our Centenary. Today the Department employs 270 members of staff.

Photo: courtesy of Gillman & Soame photographers.
Centenary Celebrations Get Underway

On 15th September 2007 Lord Jenkin of Roding, grandson of the first Professor of Engineering Science at Oxford University, Frewen Jenkin, formally launched Oxford’s Centenary of Engineering Science. Guests included three generations of the Jenkin family, sponsors, academics, students, alumni and staff.

Lord Jenkin of Roding, Patron of our Centenary, shared recollections of his grandfather, Frewen Jenkin – who was elected Oxford’s first Professor of Engineering Science in 1908. He explained how his grandfather’s engineering instruments came back into the family’s possession from the son of a Jewish refugee whom Frewen Jenkin had helped to rescue from Nazi persecution.

Lord Jenkin stressed the importance of attracting more postgraduate engineering students to Oxford from the UK and the EU, a task made difficult by the small number of studentships available. He hoped that establishing new studentships as part of the Centenary Appeal would help to redress the balance and this was an initiative of which he was sure his grandfather would have approved.

Our special thanks go to Lord Jenkin for loaning Frewen Jenkin’s engineering instruments to the Department. These have been on display at all Centenary events in the past year, and were thoroughly appreciated by hundreds of people who have supported our celebrations.

Frewen Jenkin’s grandsons, Lord Jenkin of Roding (right) and the Revd. Christopher Jenkin (left), are seen here with Dr. Alastair Howatson, holding Frewen Jenkin’s engineering instruments.

Pictured above are: Alex Jenkin (left), Frewen Jenkin’s great granddaughter, with her father, Revd. Canon the Hon. Charles Jenkin. To the right are Lord and Lady Jenkin.

Standing from left to right are: Revd. Canon the Hon. Charles Jenkin, Lady Ramsey, Philip Jenkinson (Atkins), Revd. Christopher Jenkin and Sir Vivian Ramsey. Seated from left to right are: Alex Jenkin, Professor Richard Darton, Lord Jenkin and Lady Jenkin.
The launch of the Centenary began with the Jenkin Lecture given by The Honourable Mr Justice Ramsey on 'Law and Engineering: resolution of technology disputes', and a lecture by Professor Martin Oldfield entitled: “Keep it cool – 38 years of gas turbine research”.

The 20th Jenkin Lecture by The Honourable Mr Justice Ramsey

Sir Vivian Ramsey’s lecture concentrated on the relationship between law and civil/structural engineering (principles that can be applied in other engineering fields too).

There were numerous myths about how the law operated, e.g. that it involved lengthy and expensive procedures of no benefit to engineering or indeed to anybody, but Sir Vivian showed that they were indeed myths, at least where technical disputes were involved.

His talk explained, through several legal examples, the genesis of technology disputes and how they can be resolved efficiently and effectively. He explained that in recent years there were four methods of dispute resolution i.e. Mediation; Adjudication; Dispute Review Board; The Technology and Construction Court. Sir Vivian demonstrated that the legal system was not the dinosaur that it was often portrayed to be.

Sir Vivian Ramsey was a civil engineer with Ove Arup for eight years before becoming a barrister. He is now a judge of the High Court.

Professor Martin Oldfield’s Lecture

Professor Oldfield focused on the work of the Oxford Turbo Machinery Group (Osney Laboratory), which is one of the world’s leading thermo-fluid research laboratories.

Staff here have designed and built a whole series of innovative wind tunnels, mostly short-duration ones, and instrumentation for measuring heat transfer, mainly directed at the cooling of gas turbine blades. They have had a remarkable record of success, of significant benefit to the aircraft-engine industry.

In his lecture Professor Oldfield acknowledged the Group’s sponsors, primarily Rolls-Royce plc. He pointed out that the Group will soon be moving to a brand new laboratory in the Axis Point building at Osney Mead.

First University of Oxford Reunion Weekend

The launch of our Centenary coincided with the first Collegiate University reunion weekend in Oxford. Over 750 alumni and their guests were treated to a wide-range of talks, tours, special visits, demonstrations and dinners in a number of locations.
An Outstanding Lecture Series

During the Centenary year we held a series of lectures by distinguished speakers. Topics ranged from the origins and history of engineering science at Oxford to current and future biomedical developments in engineering.

Here we outline the 12 Centenary lectures, followed by thoughts from members of the audience. If you missed any of the Centenary lectures then you can visit the following link on the Department of Engineering Science website: http://www.eng.ox.ac.uk/events/centenary/videos.html

Dr Allan Chapman on "The Greatest Mechanick of this Present Age": Dr Robert Hooke and the Origins of Engineering Science in Oxford'

Précis: When his Oxford friend, John Aubrey, described Hooke as the "Greatest Mechanick" of the Age, he acknowledged Hooke’s genius as an Experimentalist. For Hooke the whole of nature was a great machine or engine in motion, the deepest truths of which could be uncovered by means of ingeniously-contrived instruments.

“It was fascinating to see that much of what we do in engineering science today has its origins in Hooke’s work”.

David Brown on "William Froude – A Sacred Duty to Doubt"

Précis: William Froude was born in 1810, and in 1861 published the first theory of ship rolling. This led to studies of powering. Using models he showed that there was no one ideal form and models tested at the corresponding speed could predict accurately the performance of ships; the basis of all later tank testing.

“It was a fascinating and dryly humorous insight into a relatively unsung engineer (William Froude) who helped put Britain at the forefront of naval/maritime engineering”.

Dr Jane Smallman on "Hydraulic Engineering - How We Use Hydraulics to Solve Real Life Engineering Problems"

Précis: Hydraulics is used extensively to provide solutions to engineering problems. In this presentation the focus was on civil and environmental engineering projects in the maritime sector. A number of illustrations were given of the way in which research is developed into tools that are used to solve practical problems.

“Dr Jane Smallman gave us a reminder of the scope and relevance of hydraulic research at a time when it is very much in the public consciousness”.
Lieutenant Colonel (Retd.) Christopher Pugsley on "Engineers at War"

Précis: Many of the most prominent man-made historical features in the landscape are the work of military engineers. Hadrian's Wall, Windsor Castle, the coastal fortifications, even the Albert Hall, all testify to the skills of the military engineer. Military engineers throughout history have always had to marry theory and genius to the practical skills of making the concept work in crisis on the ground; no small accomplishment.

“A most illuminating lecture on the civil engineering aspects of military engineering. Dr Pugsley's talk illustrated this overlap, whereby military engineers have designed roads, fortifications, devices by which to lay siege to castles, pontoon bridges, mulberry harbours, Nissen huts etc”.

Professor Guy Houlsby on "An Early Structural Engineering Problem: the Oxford Connection"

Précis: The lecture followed the history of a structure often known as a "Serlio Frame" from its earliest mention (around 1270) to modern times. The structure is an intriguing "reciprocal frame" that is able to span a space with beams that are all shorter than the span required. The rare examples of construction of the frame were discussed (including one in Oxford). The other Oxford connection is John Wallis's remarkable analysis of the structure, which it was argued is the earliest example of a truly modern structural analysis. The lecture included some art and architecture as well as history and engineering.

“Professor Houlsby conjured up a wonderful collection of examples of the Serlio Frame, and argued convincingly that, through John Wallis, Oxford led the way in structural analysis”.

Dr Julian Morris on "Motion Capture"

Précis: Over the past 25 years "motion capture" has grown from very small beginnings into a global market worth millions of pounds per annum, spanning applications in orthopaedics, sport, film, TV & computer games, and industry. The populist model of start-ups suggests an original stroke of technical and entrepreneurial insight, but this is misleading. The reality is a rather more interesting story of successive engineering responses to customer demand and competitive challenges.

“I didn't realise how many applications motion capture technology had - from computer games, Hollywood film-making to helping children with cerebral palsy and designing cars - Dr Morris's lecture proved to be a real eye-opener and thoroughly enjoyable”.

Professor Lionel Tarassenko on "Advances in Biomedical Engineering"

Précis: Biomedical Engineering is a relatively new subject but one which has had a major impact on the practice of medicine. Oxford engineers have made significant contributions to the development of medical imaging and in other areas of biomedical engineering, for example in artificial knees and needle-free injection of drugs and vaccines. The lecture reviewed Oxford's contribution to advances in biomedical engineering over the last 25 years and highlighted how the Department's new Institute of Biomedical Engineering plans to develop technology for the hospital of the future and for personalised healthcare.

“Incredible minds, ingenious designs and commercial know how. Professor Tarassenko showed that these elements are firmly embedded in the ethos of biomedical engineering at Oxford”.
Dr Alastair Howatson on the "History of the Department of Engineering Science"

Précis: The lecture inclined to the earlier days of Oxford engineering rather than the more familiar recent history. The University produced engineers, not always called as such, long before 1908 and engineering was taught from 1886 although there was no formal school. Jenkin, the first professor, was elected in 1908 after years of frustrated attempts to found a chair. He combined high mathematical qualifications with years of industrial experience. After 1908, the Department evolved steadily, not without the occasional crisis, but never lost its industrial connections. From the 1950s it expanded dramatically and is now conspicuously successful.

“We don’t often have time to step back and look into the past. We often take things for granted. It was wonderful to allow Dr Alastair Howatson to educate and entertain us with stories of enigmatic engineers who have made Engineering Science a force at Oxford”.

Professor Carlos Ruiz on "Designing for Strength: A Century of Solid Mechanics Research in Oxford"

Précis: In 1908 Frewen Jenkin, the first Professor of Engineering Science at Oxford University followed in the tradition, established by Hooke, of emphasising the practical application of research to the design of machines and structures. Thanks to Jenkin’s foresight, solid mechanics in Oxford has a strong scientific basis, combining theoretical formulation and exact experimental work to provide answers to problems formulated by Industry. In this lecture, the historical development of solid mechanics research at Oxford was outlined and some of the current work described.

“Carlos Ruiz’s lecture was a wonderful inspiration to budding engineers, mathematicians and historians”.

Professor Peter Dobson on "Innovation, Spin-out Companies and Nanotechnology"

Précis: This lecture explained that innovation is what happens between the invention stage and the generation of revenue arising from the invention. Professor Dobson stressed the need to optimise innovation especially for knowledge economies such as the UK. By creating a unique Science Park at Begbroke, where high technology spin-off companies work on the same site as interdisciplinary University researchers, the dynamics and barriers to innovation can be understood. Nanotechnology is playing an increasingly important role in many fields, and it is set to provide many new ideas in medicine and the environment. Some examples were given based on the speaker’s recent work.

“It is terrific to learn, through Professor Dobson’s lecture, that Oxford has such a well developed and coherent set up for enabling discoveries made by world-class academics to be commercialised - long may this entrepreneurial spirit continue and be encouraged”.
Professor Roland Clift, CBE on "Engineering for Sustainable Development"

Précis: The term "sustainable development" embodies an important ethical principle which includes the concept of responsibility to present and future generations. This has significance not just for the practice of engineering but for the role of the individual engineer. This talk explored, using specific cases, how sustainable development affects the way in which the technical skills of the engineer should be deployed.

"Professor Clift's very interesting lecture was highly thought-provoking … engineers may need to look beyond what they are practically trying to achieve to take into account the consequences of their actions, potentially on a global scale".

Professor Sir Michael Brady on "Information Engineering: where we have been and where we may be going?"

Précis: The Robotics Group has been in existence since 1985, when Professor Brady arrived in Oxford, to find the Department had less computing power than each of his MIT (Massachusetts Institute of Technology) graduate students. This talk recalled a few of the developments of the past 23 years. Then it discussed what was meant by Information Engineering, speculating briefly on what the future may hold.

"Professor Sir Mike Brady’s was one of the most stimulating lectures I have attended in 40 years!"

Gresham Lecture on Giant Waves

Professor Paul Taylor, from the Department of Engineering Science, gave a lecture at Gresham College entitled ‘Giant waves on the open sea: mariners’ tall tales or alarming fact? This was a broad-ranging review of waves in art, cinema, reality and engineering research.

It touched on Scottish lighthouses, Robert Louis Stevenson and the unfortunate habit of Cunard liners meeting giant waves. The Queen Mary was hit by a giant ‘wall of water’ while she was carrying 15,000 American troops to Britain in 1942. The ship listed to an astonishing 52 degrees and almost capsized. More recently the QE2 encountered waves ‘as tall as the white cliffs of Dover’ in mid Atlantic.

The remarkable similarities between the various accounts of seafarers’ encounters with giant waves – walls of water, a hole in the ocean, a train of rollers etc, were discussed in the light of recent computer simulations of extreme waves with most of these features.

The talk concluded with a discussion of risk in offshore engineering and stressed the need for robust designs – structures able to operate in the expected worse case but also to survive the unexpected.

Gresham College in London continues to provide free public lectures, as it has done for over 400 years. The more recent are available on its website (www.gresham.ac.uk). Robert Hooke, who was a professor at Gresham College, was the subject of the first Centenary lecture by Dr. Allan Chapman.
An International Conference for Young Coastal Scientists and Engineers

In April 2008 the Department of Engineering Science played host to the fourth annual Young Coastal Scientists and Engineers Conference.

The Conference was chaired by Professor Alistair Borthwick (Deputy Head of the Engineering Science Department), and attended by over 75 post-graduate research students and post-doctoral researchers in universities, junior researchers in government agencies and junior engineers and scientists in private companies, all with an interest in physical coastal processes. Contributions were made from 130 researchers and practitioners from four continents: America; Asia; Australia; Europe.

Coastal science and engineering is undergoing rapid advances, underpinned by field observations, laboratory data, and numerical simulations. Coastal processes involve the interaction between hydrodynamics (tides, waves, and currents), wind, sediment, transport, and beach morphology. Coastal scientists and engineers are charged with the understanding and management of vitally important coastal and estuarine eco-systems.

Professor Paul Taylor gave the keynote "Peregrine Lecture" on Giant waves on the open sea: mariners’ tall tales or alarming fact? This formed the basis of his Gresham Lecture (please see page 9).

The following photographs help to give a flavour of the Conference...

Delegates at this year's Young Coastal Scientists and Engineers Conference.

YCSEC 2008 Conference winners. Pictured with Professor Alistair Borthwick (from left to right) are Stine Gro Jensen (poster), Adrian Pedrozo-Acuesta (oral presentation), and David Warbrick (poster).
Debate: Challenges of Power Generation and Use for the Future

On 24th May Professor Basil Kouvaritakis chaired the Centenary Debate, which focused on the challenge of generating the power we need whilst bringing down carbon emissions. Keynote speakers were Professor Lord May of Oxford and Professor Roland Clift. Delegates included sixth-formers from local schools and University of Oxford students.

The Debate highlighted some of the problems and opportunities facing our and future generations who need to generate and use energy more efficiently and bring down carbon dioxide emissions.

'We today, whatever our age, live in the best of times,' said Lord May, outlining how life expectancy and global food production has risen sharply over the last few decades - even if there are still shocking disparities between rich and poor countries. But it is also the worst of times, he noted, due to the unintended consequences of population growth and the impact of carbon emissions on the climate.

Lord May stressed that 'by the middle of the century these emissions will take our climate into a region not seen for 20-40 million years’. There was still hope, he said, but 'no magic bullet or easy solution' to the problem of cutting carbon emissions.

Professor Roland Clift took up the theme of cutting emissions, explaining that the UK would have to reach the Government's 60% reduction target by 2050 without fusion power 'because it won't be ready in time and we don't have time to wait!' He highlighted that concentrating on saving electrical power alone would not be enough as over half the overall energy we use is expended on heating space and water.

After a question and answer session, students formed groups to discuss the issues involved and came up with their own ideas and views on how to approach the problem of sustainable power generation.
Lubbock Day

Full Programme of Activities

This year’s Lubbock Day comprised a range of stimulating activities. These included a project exhibition, two mini lectures on the theme of “Personalised Healthcare”, the Centenary photography competition, and the Lubbock Lecture by Lord Browne of Madingley, President of the Royal Academy of Engineering, entitled “On Being an Engineer”.

The Lubbock Lecture

As President of The Royal Academy of Engineering, Lord Browne’s prime goal during his five years in office is ‘to move engineering towards the centre of society’. In his opinion, the words ‘engineers design the future’ have more resonance today than ever before.

Drawing on global experience of the energy business, industry and political life Lord Browne’s Lubbock Lecture reflected on what being an engineer means in the 21st century.

A detailed account of Lord Browne’s lecture can be found on the “Financial Times” website (article entitled: Engineering skills can build a better society. Date: May 14th 2008). The lecture also appeared in “Ingenia,” the Royal Academy of Engineering magazine (June 2008 issue).

The Lubbock Day in Pictures...

Lubbock Lecture: Standing, left to right: Prof. Alistair Borthwick; Prof. David Clarke; Mr Rowan Atkinson (alumnus of Engineering Science/actor); Prof. Richard Darton; Mr Keith Errey, (Toumaz Technologies Ltd/co-sponsor). Seated, left to right: Lord Avebury (Chairman of the Lubbock Trustees/co-sponsor); Lord Browne of Madingley (guest speaker); Lord Jenkin of Roding (Patron of the Centenary).

Mini lectures: Dr Yiannis Ventikos (left) and Prof. John Fox (right) gave mini lectures on aspects of “Personalised Healthcare”.

Project Exhibition: From left to right: Annika Wong (St Hugh’s): winner of the QinetiQ prize, James Solly (Magdalen): winner of the Atkins prize and Ben Jones (St Catherine’s): winner of the Sharp prize.
Our First Photography Competition

The judging of the first Engineering Science photography competition also took place on Lubbock Day. This was entitled *Engineering Science: capture the essence of engineering in an image.*

Judges were Dr Hazel Rossotti (Fellow of St Anne’s in Chemistry and an accomplished photographer); Dr Marius Kwint (Department of the History of Art); Professor Rodney Eatock Taylor (who read Mechanical Sciences and Fine Arts at Cambridge); and Lord Browne of Madingley.

The winner of the competition was Frank Payne – winning photograph below. Heather Burrage and Alice Thurston received joint second prizes for outstanding photographs of the Hoover Dam and an engine.

The Winning Photographs

- Photo of the Hoover Dam submitted by Miss Heather Burrage.
- Photo of an engine submitted by Miss Alice Thurston.

**Dr. Frank Payne**

“The inspiration for my photograph came to me when I was visiting the Tate Modern and noticed that distant flights from Heathrow could be glimpsed between St. Paul’s Cathedral and the Millennium Bridge, providing an image of three very different sorts of engineering from quite different eras.”

“I returned to take the photograph standing on the shore of the Thames to gain the composition I wanted. This was one of the few days when the river would still be at low tide around 5.00pm, which gave the light I wanted from the setting sun and also when flights from Heathrow would be passing in the right position.”

Our thanks to John Mooney, the Department’s Head of Media Resources, for organising our first photography competition.
Garden Party

Centenary Garden Party at Keble College

Over 500 staff, alumni and friends of the Department of Engineering Science turned out on a sunny Oxford afternoon to celebrate the Centenary. The Garden Party celebration, which took place at Keble College in June, was the climax of a year of lectures, seminars and exhibitions to mark the founding of the Department in 1908.

Speakers were the Vice-Chancellor Dr John Hood, Head of Department, Professor Richard Darton, and the Centenary's Patron, Lord Jenkin - grandson of Professor Charles Frewen Jenkin, Oxford's first Professor of Engineering Science.

Deputy Head of Department Professor Alistair Borthwick was master of ceremonies and greeted visitors in his grandfather's hundred year-old top hat and frock coat.

Special attractions included artist Rita Greer's paintings of Robert Hooke and Christopher Wren as well as displays by the Department's industry partners including Oxford Capital Partners, Froude Hofmann and Rolls-Royce plc.

Guests were treated to fine food and music. Dr Stephen Payne directed the choral music and Professor Basil Kouvaritakis orchestrated the classical music, performed by departmental staff and friends.

“A great day – why don’t you do this more often?” we were frequently asked. Well, we certainly won’t wait another hundred years before holding another party!

A Selection of Pictures from the Party...

Professor Alistair Borthwick greeting guests.

Engineering Science student volunteers generously gave their time to support the Garden Party.
Dr. Malcolm Roberts (Guidance Ltd.), Mrs. Naomi Brady and Prof. Sir Mike Brady

Mr. Gareth Deakin (Froude Hofmann) and Prof. Alistair Borthwick

Prof. Richard Darton, Dr. Victor Christou (Oxford Capital Partners) and Prof. Alistair Borthwick

Choir of Engineering Science staff and partners directed by Dr. Stephen Payne

Classical quartet comprising staff and alumni

Ms. Rita Greer (artist) and Dr. Robert Woodward

Prof. Paul Taylor with a model of the Wallis roof structure

Mr. Mark Jefferies (Rolls-Royce plc) and Mrs. Alison Jefferies

Lord Jenkin of Roding (Centenary Patron)

Dr. John Hood (Vice-Chancellor, University of Oxford)

Prof. Richard Darton (Head of Engineering Science)
“Mechanicks in the Universitie: A History of Engineering Science at Oxford”

During the Garden Party in June, a book commemorating the history of the Department of Engineering Science was launched. In a short speech, the Head of Department thanked Dr Alastair Howatson, the author of the book, which is entitled “Mechanicks in the Universitie: A History of Engineering Science at Oxford”.

Alastair Howatson, now retired, joined the Department of Engineering Science in October 1963 and became one of Oxford’s first group of tutorial fellows in engineering when he was elected by Balliol College in 1965. His books include Principles of Applied Electricity (1969), An Introduction to Gas Discharges (1976) and Electrical Circuits and Systems (1996). Above all, the many students he has taught will remember him as the co-author, with Peter Lund and Joe Todd, of Engineering Tables and Data (1972), always known affectionately as ‘HLT’. It graces the working library of many an Oxford-educated professional engineer.

In his new book Dr Alastair Howatson traces the history of engineering at the University of Oxford from the days of Richard of Wallingford (d1336) and his astronomical clock, through the seventeenth-century Oxford “mechanicks” who helped to found the Royal Society, to the present day. His fascinating account shows how the academic discipline of Engineering Science became accepted in the University. The modern Department, founded in 1908 under Professor Charles Frewen Jenkin, grew slowly in the inter-war years and then expanded hugely in the 1960s. It is now one of the largest departments at Oxford and the only integrated engineering department in the UK to teach all the major branches of the subject. This book, commissioned for the Centenary, explains how the seeds of its success, planted far back in history, have grown and bloomed in its first hundred years.

You can purchase the book online by visiting our website: www.eng.ox.ac.uk
Sir William Castell Opens the Institute of Biomedical Engineering

The new Institute of Biomedical Engineering (IBME) was officially opened on 16 April 2008 by Sir William Castell, Chairman of the Board of Governors of the Wellcome Trust.

Located at the Old Road Campus on the Churchill Hospital site, our IBME offers a centralised venue for engineers, biologists and clinicians to work together and to coordinate expertise, discoveries and best practice in order to enhance the diagnosis and treatment of a range of conditions.

This £25m project provides purpose-built laboratories, shared common support facilities, a core of securely funded staff, the latest equipment for research and development, and the right setting to promote collaboration among medical, biological and physical scientists and engineers.

The Institute directly benefits from close proximity to the Oxford Centre for Cancer Medicine, the Department of Clinical Pharmacology, the Radiation Oncology and Biology Unit, the Jenner Institute and the Wellcome Centre for Human Genetics, all of which units share the same building.

On the right: Sir William Castell, Chairman of the Board of Governors of the Wellcome Trust.

Below: the new Institute of Biomedical Engineering Building, at the Old Road Campus.
Honours Awarded to Engineering Science

During the course of the Centenary year Engineering Science staff received numerous prestigious honours and awards. Highlighted here are a few of these…

Professor Richard Darton

In May Professor Richard Darton, the Head of the Department of Engineering Science, was elected President of the Institution of Chemical Engineers (IChemE).

In his Presidential address, ‘To Increase Wealth, to Improve Well-being’, Professor Darton outlined his plans to take an active role as IChemE’s 67th President. He spoke of the challenges we face in changing the way we produce wealth, from consuming resources and producing waste to a drive towards sustainability and a consequent need for engineers to innovate new solutions.

Professor Sir Mike Brady

In May, Professor Sir Mike Brady became the first member of the Department to be elected a Fellow of the Academy of Medical Sciences.

Professor Brady's election recognised the outstanding contributions he has made and continues to make in the field of medical engineering and places him amongst the world's leading medical scientists.

Professor Rodney Eatock Taylor

Professor Eatock Taylor, Professor of Mechanical Engineering and our Head of Department from 2000 to 2004, was admitted as an Honorary Fellow of University College London at a ceremony in June 2008.

This was a very well deserved recognition of the distinction he has attained both for his wide-ranging research into hydrodynamics, structural dynamics and fluid-structure interactions and also for his contribution as Chairman of the Research Committee and Vice-President of the Royal Academy of Engineering from 2004 to 2007.

Professors Alison Noble and Tony Wilson

In July 2008 Professor Alison Noble and Professor Tony Wilson were elected Fellows of the Royal Academy of Engineering.

The Royal Academy of Engineering, founded in 1976, has a fellowship made up of the UK’s most eminent engineers. Election to the fellowship is, therefore, a great honour and a very well deserved recognition of considerable achievements – Professor Noble in the field of Medical Imaging and as Director of the Wolfson Medical Vision Laboratory, and Professor Wilson in the field of Scanning Optical Microscopy and its application to areas ranging from life sciences to industrial metrology.
In this section a few long-serving members of support staff share their experiences of working in the Department.

The Osney Connection

The Department of Engineering Science’s longest serving member of staff is Rex Belcher, who has been associated with wind tunnels for over 45 years. In 1962, Rex was employed, straight from school at the age of 16, as a junior technician in the Maintenance Department. After gaining his Higher National Certificate he began assisting with research into spacecraft re-entry conditions in the low density wind tunnel.

Today, Rex provides IT support to a team of 40 academics and postgraduates at the Southwell Building in Osney, where turbo-machinery is the main research area. Rex has worked at Osney since the mid 1970s when he worked on the 4m x 2m industrial wind tunnel. His role has evolved over the years, from hands-on wind tunnel research to providing IT support to the Osney team.

Rex recalls: “Computers have made a huge impact. To give you an example, my previous job here at Osney involved measuring the effect of wind on buildings, trees and forests, as well as on pollution dispersal – mainly to do with emissions from power stations. For this I used a range of ‘meters’, which were read by eye, documented by hand and the results processed by slide-rule. With the introduction of computer technology in the 1970s and 1980s things changed enormously. This was very interesting for me as I (and a few colleagues) had the task of writing computer software for low speed wind tunnel data collection and analysis”.

Rex adds: “We now use experimental results to validate computational fluid dynamics (CFD) programs. Data collection, data analysis and CFD are all computerised. I’m no longer directly involved in research, however, solving general IT problems and installing new computers is just as satisfying for me. I’m looking forward to the move to the Axis Point Building on Osney Mead, which is planned for 2009. Working in Engineering Science is as enjoyable for me now as it was back in 1962…what more can I say!”
Memories

Formal Times

Back in 1969 Caroline Harding (née Cameron) was recruited as Secretary to the then Head of Department, Professor Douglas Holder.

Caroline left to have her family and returned when the youngest was two, first as a ‘temp’ in Accounts and then as Secretary to Professor Gilliane Sills, a job she did for 18 years. She also did part-time work as Secretary to the Chairman of Examiners, but that job ‘grew’ and she now concentrates entirely on the administration of Engineering Finals.

Caroline remembers what working life was like for a secretary in the 1960s and 1970s: “When I came the atmosphere was very formal. Things like correct forms of address, grammar and spelling were regarded as very important, and we were called Miss or Mrs, and academics were called by their titles. Female staff members were not allowed to wear trousers, although we did wear mini skirts! The secretary’s job was more skilled as there were no computers and most academics wouldn’t type. The Department prided itself on being very up-to-date technically, and we had one photocopier (which was considered an amazing invention) – but you had to make a very good case for why you needed a photocopy of something!”

Caroline met her husband, John Harding, in the Department. He was then a Senior Research Officer and later a University Lecturer and Fellow of Mansfield College, and he is now retired. They have been married for 36 years, have three children and four grandchildren.

Before training as a secretary Caroline was a qualified horse-riding instructor, she gave this up after a riding accident.

Nice to know some things don’t change…

According to John Hastings, Head of Mechanical Engineering Workshops, the role of the Department’s workshops is still much the same as it was in the 1960s. Staff members in workshops then provided much needed mechanical engineering support to both students and academics, and still do.

John joined the Department in 1962 at the age of 17 as an apprentice after his first job working in the printing section of a local company. After five years in the Department, John qualified as a technician. He recalls: “I was involved in making huge numbers of test specimens for students to break which was extremely boring, but on the other hand, there was also very interesting work in the form of experimental equipment that more than compensated for the boredom”.

“T believe it was working a standard five and a half day a week in the early 1960s as students were taught on Saturday mornings and support staff had to be there. Like the old days, the workshop is still the first port of call for the majority of students wanting advice on design in the mechanical engineering field”.

John adds that some things have changed: “For example, gone are the days of writing orders by hand and keeping records in ledgers. The introduction of ESMIAS, the Department’s data base, made a huge difference to the way information was stored and speeded up a lot of processes”.

John’s career has developed over the years from apprentice, Medical Research Group Technician, Numerical Control Technician to Deputy Head of Workshops, and since 1993 as Head of Mechanical Engineering Workshops.

In 1962 there were eight technicians and one Senior Principal Technician. Today the Department employs more than 30 technicians and produces work for Government and Industry, in addition to equipment for teaching purposes.
Our Iconic Heritage

The boy on the tortoise has become a departmental icon. Designed in 1914 by Frewen Jenkin’s sister-in-law, Margaret May Giles, it is not only found on the northern gable of the Jenkin Building but is also in the possession of many retired members of the Department in the form of a bronze statue.

For the last eight years Senior Technician, John Richards, has had sole responsibility for skilfully producing the wooden plinths and bronze feet, and safely mounting the statues. John has developed a special fixture for holding the irregular shaped statues in order to drill and tap into the bottom of the bronze without damaging the patina.

John said: “I recycle the wood from mahogany bench tops that were used by student engineers in years gone by. I finish the plinths in wax and then age the bronze feet to match the patination of the statues”. This is a painstaking process and John spends three weeks on each statue, finishing each by recessing the personalised photo-etched stainless steel name plate into the bottom of the plinth.

John Richards joined the Department 28 years ago and retired in July 2008. Prior to working for the Department he served an apprenticeship and worked as a mechanical engineer and later for 10 years as a self employed clockmaker. He is a Fellow of the British Horological Institute.

“Of course, many people will remember the paternosters that were in the Thom Building before we had our current lifts. Jumping on and off this moving staircase was a bit of a health hazard – I’m glad they were replaced by lifts in 1983”.

Health & safety- what health & safety!

Jeffrey Vize is one of the longest serving members of staff and has numerous memories from yesteryear – here he focuses on how health and safety conditions in the Department have changed over the 45 years he has worked here.

Jeffrey recounts: “I came here straight from school at the age of 16 in 1963 to be a Junior Technician. One of my first jobs was to coil up cable in the Lower Electrical Laboratory where machines and generators were kept (it was also known as the Heat Engines Lab Calorimeter Room) in the Jenkin Building. Health and safety didn’t exist in those days – there was no one like Derek Reed, the Department’s current Health & Safety Officer. There were not many fire extinguishers, and wires were left hanging when maintenance work was being carried out – we just worked around them.”

He recalls: “Staff operating machinery in workshops experienced not needing to wear goggles and no guards for machines. In fact, staff paid half the sum for their safety clothing and equipment and the Department paid for the other half! Today, things couldn’t be more different – we now get health and safety training on how to sit on our office chairs!”

Today Jeffrey works as a Technician/Caretaker in the Maintenance Department and says: “It was not my intention to stay this long. I’ve ridden a few storms over the years and enjoyed the company of past and present colleagues!”
Scholarships

Oxford Engineering Centenary Fund

In order to attract outstanding students, the Department of Engineering Science is seeking to establish postgraduate studentships (DPhil) and a student support fund to allow postgraduates to pursue their studies regardless of their financial circumstances. Our goal is to establish six graduate studentships.

Our postgraduates are not only creative members of research groups, they also help to inspire and enrich the experience of others around them, including undergraduates, faculty and the communities in which they operate.

Former students and faculty, together with current members, have made major contributions across the full spectrum of engineering. Notable Oxford engineers have included Stanley Hooker who was the Chief Engineer of the Pegasus engine, used in the Harrier Jump Jet; Sir Ralph Freeman, SOUE President for many years, who became the Senior Partner of Freeman Fox and Partners, designers of numerous large bridges world-wide, including that across the Humber, then the longest span in the world; Ewan Corlett who initiated the restoration of Brunel's SS Great Britain, the first ocean liner, which was brought back as a wreck from the Falkland Islands in 1970 and is now on show in Bristol Docks.

Whilst the Centenary year enables us to reflect on past achievements, it also provides an opportunity to look forward. As we move into our second century, the Department is looking to expand its activities across a wide range of research areas, particularly in the fields of biomedical and environmental engineering, to address the most important issues where engineers will make a real difference. A thriving school of well funded graduate students will be required to make a vigorous contribution to our research life.

However, the rising costs of graduate study deter many top students from continuing their education at Oxford. Only a very limited number of studentships and scholarships is available. Sadly, without this financial support, students are often forced to reconsider their options. We compete with departments the world over and miss out on many outstanding graduates who would like to come here – a great loss to Oxford. These potential leaders lose a rare opportunity to benefit from the great learning environment that Oxford provides.

Sarah Bond came to Oxford in 2003 to study for a DPhil in Engineering Science and was fortunate to receive one of the few EPSRC studentships. She has recently joined Siemens Molecular Imaging as a Research Scientist.

"The funding I received allowed me to continue my postgraduate studies without any financial worries, and also enabled me to attend a number of international conferences where I presented my work. I am very grateful for the funding, because without it I would not have been able to achieve such success in this important industry."

How you can help

We are extremely grateful to those who have already generously supported the Oxford Engineering Centenary Fund but we still have a long way to go to achieve our target.

If you or your business are interested in supporting our brilliant postgraduate community, please contact William Thomas on +44 (0)1865 611547 or e-mail william.thomas@devoff.ox.ac.uk. You may also like to visit www.eng.ox.ac.uk/events/centenary/ to read more about the Centenary and www.campaign.ox.ac.uk to find out more about the Campaign for the University of Oxford. Online giving is also available at both these websites.
Information Engineering Building

Information Engineering Building, designed by architects RMJM, opened in 2004.

Photos: courtesy of Chris Gascoigne.
We would like to acknowledge the important role played by our corporate and individual supporters in our Centenary year, and we thank them for the invaluable contribution they have made to our Department. Supporters have included:

Thanks also to the Centenary Committee: Prof. Alistair Borthwick (Chair); Prof. Richard Darton; John Mooney; Prof. Martin Oldfield; Christopher Scotcher; Prof. Paul Taylor; William Thomas; Eva Williams.