Imperial ENGINEER



TRIODES REUNION
LA RÉUNION TRAVERSE
100 YEARS OF LINKS CLUB
RSM 175TH ANNIVERSARY
AI – PAYING THE ENTROPY BILL
MONEY DOESN'T GROW ON TREES
ROBOTIC MAKEATHON FINAL STAGE

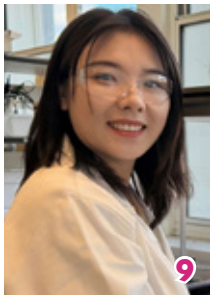
For members of City & Guilds College Association
and The Royal School of Mines Association

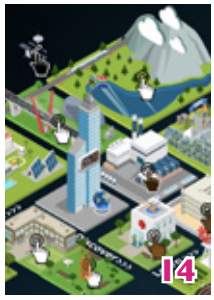
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Autumn 2026

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Cover image: Stunning view of Mont Blanc's snowy peaks bathed in warm sunset hues – Chamonix, France © Manon Ridet

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Roger Preece

It was a great pleasure in June this year to attend the Imperial College Distinguished Alumni Award reception. Each year, Imperial recognises alumni around the world who have made a significant impact. This year, the 2026 award was made to Kalaya Sophonpanich who completed her PhD in Physics in 1970, was a science minister in the Thai government, oversaw major educational projects and is now transforming the environment through a sustainability project that has planted over 20 million trees. It was humbling to meet her and hear of her journey from poverty in a small Thai village to significant world impact and the part that Imperial had to play in her life. It was an alumni in Bangkok who saw her potential and encouraged her to apply to Imperial.

As alumni, we all carry the benefits of an Imperial education and training and it is fascinating how all of us have expressed this in our own unique pathway. It is one of the special pleasures of our alumni gatherings as we meet socially and share stories of learning and impact.

If you haven't yet been in the habit of attending our reunions please put in your diary the reunion lunch on Sat 21st November and our Annual Dinner on 12th March. And even more interesting, why not invite 3 or 4 alumni that maybe you have lost touch with and use these events as a catalyst to reconnect.



This year I celebrate 40 years since my graduation in 1986. I was amazed to see that I still had my graduation photograph on the steps of Queens Tower. It was fun looking again at those faces that sat together for 3 years in lectures, tutorials and lab work. I also found an address list with home addresses. My

Continues overleaf…

PRESIDENTS REPORT



Paul Holmes

Looking Back with Pride, Looking Forward with Confidence

A new academic year always brings a special sense of possibility. For our newest students, it marks the beginning of an academic journey, but also something broader: the chance to live independently, discover new interests and form friendships that may last a lifetime. For those of us who studied at the Royal School of Mines in earlier years, their arrival is a welcome reminder of our own first days and of the experiences that continue to connect generations of RSM alumni.

This year gives us even more reason to reflect. The Royal School of Mines is celebrating its 175th anniversary, while the Department of Earth Science and Engineering (ESE) marks its 25th year. The departments of ESE and Materials will be holding a full day of activities within the college and Alumni can register to attend via the promotional information sent out by the departments. Members of the RSMA committee will be in attendance throughout the day.

These milestones invite us to recognise a remarkable history, but they also encourage us to look ahead. The RSM has always evolved to meet the needs of its students and society, while retaining the distinctive character and sense of community that make it so important to us.

Subjects with enduring relevance

The disciplines represented across the RSM, including geology, earth science and materials, have rarely felt more relevant. Climate change, resource resilience and energy security are challenges that affect every generation. Addressing them will require technical knowledge, intellectual curiosity and a willingness to work across traditional boundaries. The familiar saying, "If you can't grow it, you have to mine it," remains a useful reminder of how closely modern life depends upon the responsible use of the Earth's resources.

Today's students will help shape the answers to some of the defining questions of our time. Their education will equip them not only to understand complex problems, but also to develop practical, sustainable solutions. That is a responsibility, but it is also an exciting opportunity, and one in which the entire RSM community can take pride.

Supporting the whole student experience

University life, of course, is about much more than lectures and laboratories. Clubs, societies, sport and shared traditions help students build confidence, develop leadership skills and create a sense of belonging. These experiences are a vital part of what makes the RSM community distinctive.

The Royal School of Mines Association continues to work closely with the RSM Union and the academic departments to support this wider student experience. As central funding becomes more constrained, the Association is playing an increasingly important

Continues overleaf…

Roger Preece, continued from page 3
own address would still have connected to me as my parents are still alive and haven't yet left my old family home but I am not sure how many others would still work. Can you believe we didn't even have email or mobile phones in the mid 80s never mind Linkedin. Elec Eng class of 86 and 4 year students class of 87 if you are out there – come and join the dinner in November ! Let's reunite and share stories !





At the distinguished alumni event. (L) Professor Hugh Brady listening to the guest lecturer Shamsuddeen Muhammad. (R) The 2026 winner, H E Khunying Kalaya Sophonpanich.

Paul Holmes, continued from page 3
role in helping departmental societies and sports clubs to thrive. The RSMA Committee has therefore agreed to increase its support, helping to ensure that these activities remain part of RSM life and that the spirit familiar to generations of students is carried forward.

Our support also includes grants, awards and assistance for students facing financial hardship. One initiative of which we are especially proud is the RSMA 100 Club Final Year Student Bursary Prize. This year, ten students applied and four bursaries of £1,500 are being awarded to students entering their final year. The awards recognise a broad range of achievement, including academic excellence, community involvement, contributions to the RSM Union, sporting endeavour and financial need.

The bursaries are made possible by the generosity of our alumni and the continuing strength of the 100 Club. To everyone who contributes, thank you. Your support has a direct and meaningful impact on students at an important stage in their studies.

Celebrating together

Preparations are well under way for the RSMA Annual Dinner on Friday, 27 November 2026, at the Rembrandt Hotel in Knightsbridge. The dinner will bring alumni, students and staff together to celebrate the enduring spirit of the RSM. It will also provide a fitting conclusion to the RSM's 175th anniversary and ESE's 25th anniversary celebrations taking place on campus earlier that day.

We are honoured that Sir John Egan will be our guest speaker. A Royal School of Mines graduate in Petroleum Engineering, Sir John is one of Britain's most distinguished industrial leaders. After beginning his career with Shell, he held senior positions in the automotive industry and became widely known for leading the revival of Jaguar Cars in the 1980s. He later served as Chief Executive of BAA plc and made a lasting contribution to British industry through Rethinking Construction, the influential 1998 Egan Report. His career reflects the combination of engineering insight, leadership and ambition that will resonate strongly across our community.

Strengthening connections across generations

I am also delighted to welcome this year's RSMU President, Rhys Jones, and Honorary Secretary, Louis Cronin. Both have already shown great commitment as members of the RSMA Committee, and I look forward to working with them to strengthen the relationship between today's students and our worldwide alumni community.

My sincere thanks go to every member of the RSMA Committee for their energy and dedication. Our purpose is simple, even if the work behind it is not: to sustain lasting connections, encourage mutual support and ensure that the Association remains relevant to alumni and students at every stage of life.

As this new academic year begins, we can look back with pride and forward with confidence. The RSM community spans many countries, professions and generations, yet we remain connected by shared experiences, enduring friendships and a commitment to the future. I hope to see many of you at the Annual Dinner and, wherever you are in the world, that you will continue to take part in the life of the Association.

The 2026 CGCA AGM



The 2026 CGCA AGM was held on Saturday, 6th June, in room 427, Skempton Building (aka Civ Eng) on the Imperial South Kensington Campus. The meeting came to order just after 11:00 am UK time. The agenda covered:

- A review of the last year by Kelvin Higgins our past president;
- Presentation of the Accounts for 2025;
- The hand-over of Presidency to Roger;
- Election of Honorary Secretary and Honorary Treasurer for 2026–27;
- Election of CGCA Officers for 2026–27.

Kelvin opened the meeting and worked through the agenda. For the first item, he proposed the meeting approve the minutes of the 2025 AGM which was accepted unanimously. Kelvin then moved on to his review of the past year. He thanked Peter Chase for organising the Reunion lunch in November 2025. This event had attracted a graduate from 1955 as well as some 35 other alumni. Kelvin also covered the Annual Dinner in February 2026. This turned out to be a sell out and he thanked Geoff Fowler and Martin Holloway for their efforts in organising a splendid evening.

During the year, the Committee had reviewed the Annual and Student Membership fees and agreed that the Annual Membership should rise to £30 per annum, and Student fees to £1 (A review of this amount was subsequently agreed to) and that both should be collected by Direct Debit.

Efforts to build a more direct link between the Association and individual departments had not been so successful and this will be a focus of the Association looking forward. Equally, the survey of members' data has been lost to us as the people driving the survey had left the Association due to pressures of work.

The Accounts for 2025 were presented by the Hon Treasurer, Allan Lee. These Accounts were in final draft status awaiting a formal signoff by the Accountants. Subscriptions stood at £14K, and the operating loss for the year was £22K. This loss was covered by a drawdown from investments. Despite this, the value of the Association's investments rose in the year. It was noted that the Association's banking services are in the process of change to become a fully business account.

Kelvin then handed over the Presidency to Roger Preece. Roger will serve as President for the next two years. In accepting the Presidency, Roger thanked Kelvin for his efforts in leading the Association through a difficult time. He also introduced Barney Rhys Jones, who has taken on the post of Senior Vice President.

The election of Officers followed, with Nigel Cresswell elected as Honorary Secretary and Allan Lee as Honorary Treasurer. Other posts were also confirmed, as shown in the table below. Posts not mentioned remain as vacancies.

As the combined number of attendees present in the room and those joining via the ZOOM service did not reach the quorum as stated in our Articles of Association, the draft minutes of the proceedings, including the election of officers for 2026 – 27, were circulated to all members for whom we have an email address. They were asked to review the minutes and raise any objection/comment by Friday, 25th September 2026. While clarifications were raised, there were no unresolvable issues and minutes were declared final.

The Alumni Lounge at the Great Exhibition Road Festival

On the same day as the AGM, CGCA teamed up with Royal College of Science Association, RCSA, to sponsor an open invite lounge in Eastside to provide Alumni, and particularly members of both Associations, with a chance to recharge away from the Festival. Unfortunately RSMA were otherwise engaged on the day.

The lounge provided seating/tables for attendees to have their lunch; croissants, sandwiches, teas & coffees were served free throughout the day, and there was a cash bar available.

Attendance was good throughout the day, with various groups of Alumni rediscovering friends and acquaintances across departments and years.

Following on from our AGM, Roger Preece gave a talk about aspects of Mentoring, heavily based on his own experiences. The talk was summarised in the last issue of Imperial ENGINEER.

The event was a great success, with a casual but appreciated ambience all day, and we are planning to repeat this next year on 19th June 2027 – so please mark the date. It is a great opportunity to see all the work of the college displayed to the public as well as a chance to visit departments. We will also hold our AGM that morning.



Eastside

CGCA Officers elected

Honorary Secretary:	Nigel Cresswell
Honorary Treasurer:	Allan Lee
Membership Secretary:	James White
Dep Hon Treasurer:	James White
Younger Members Secretary:	Tim Munday
Decade Reunion Event Manager:	Peter Chase
Managing Editor IE:	Peter Buck
Representatives:	
IC Exploration Board:	Colonel Kevin Oliver
Departmental:	
Chemical Engineering:	Andrew Pettmen*, James White
Civil & Environmental Engineering:	Colin Kerr, Tim Munday
Computing:	Rajiv Dalal
Mechanical Engineering:	Owen Heaney.

*(*subject to becoming a member)*

DIARY

RSMA Toronto, Canada
Informal RSM meeting
Last Friday of every month, noon.
Jason George Pub,
100 Front Street East, Toronto
Contact: rsma.1851@gmail.com

RSMA Perth, Australia
Monthly Sundowner
First Friday of every month.
The Celtic Club,
48 Ord St, West Perth, WA, 6005
Contact:
Alan Dickson – alan@dickson.com.au
John Sykes – johnpsykes@gmail.com

Imperial Alumni, Houston, US
Alumni social
Third Thursday of every month, 6pm
Capital Grille, 840 West Sam Houston Pkwy N, Houston, TX 77024
Contact: Matt Bell – matt@in2oilandgas.com

Imperial Engineering Alumni, Johannesburg, South Africa
Quarterly Johannesburg Lunch
(18th Nov, 17th Feb, 19th May, 18th Aug)
Baron & Quail, Woodmead, Johannesburg, South Africa
Contact: Richard Gundersen – Gundersen@yebo.co.za

CGCA/RSMA
Traditional Reunion Luncheon
Saturday 21st Nov, 12:30 for 13:00
Rembrandt Hotel, Sth. Ken. SW7 2RS
For all Imperial engineers who graduated in a year ending in a '6' or a '1' or groups from any set of years.
Visit https://www.cgca.org.uk/ for more details.

RSM
RSM175: Day of Celebration
Celebrating 175th Anniversary of founding of RSM
Friday, 27th Nov, 10:00-17:00
Multiple rooms, Royal School Of Mines, South Kensington Campus
Open to all, free
Must register in advance at https://dub.sh/IE45-RSM-Day

RSMA
141st Annual Dinner
Friday, 27th Nov, 19:00 for 19:30
Rembrandt Hotel, Sth. Ken. SW7 2RS

CGCA
113th Annual Dinner
Friday, 12th Mar 2027
Gray's Inn
Guest speaker: Sir John Lazar CBE FREng.
Booking form included with this issue.
Visit https://www.cgca.org.uk/ for more details

CGCA
AGM
Saturday, 19th Jun 2027
South Ken Campus

An up-to-date calendar of events is always available on the CGCA and RSMA websites.

Imperial College maintains a calendar of college events at bit.ly/IE-WhatsOn

The Friends of Imperial College regularly organise events of interest to alumni (see bit.ly/IE-FoI)

Please note that while many of these events are open to all and often free, they usually require registration in advance. Follow links in the entry for more information, if and how to register and if there is any cost.

For more information follow links, or see page 2 for contact details

Who are we? … We are We are C and G … Ooay ooay oo ay…!

CGCA President Roger Preece invites discussion on the identity of City and Guilds

I hope we all remember our College chant, the Boomalaka, our high energy, rousing chant … a ritual of togetherness and identity! It is fun to do it whenever we gather and I remember chanting in full voice on the steps of the Albert Memorial when I became Guilds Union President in 1985 alongside a trouser-less boat race (if you don't know, best to leave it to your worst imagination).

Today, the City and Guilds identity has been largely lost from the Imperial Student body and for most engineering graduates, they would not really be aware that they are C&G! And of course 2 out of ten of our Engineering Faculty departments are part of the Royal School of Mines.

The historic identity of City and Guilds is retained in the name of the Exhibition Road formerly Mech Eng building and through the Guilds student union which in recent years has done a great job of promoting the City and Guilds name, but it is an uphill struggle when the college itself is invested only in Imperial as a global brand and the departments as building lower level connections. We can be proud of our history and the Associateship of City and Guilds Institute which is awarded alongside our degrees (ACGI) but as an association of alumni, students and staff maybe it is time to look afresh at our history and our modern identity in terms of attracting students and alumni to join and also to be able to be a global force for good work, philanthropy and to support our college as it develops around the world.

From the University perspective, there is no City and Guilds College or Dean of City and Guilds as we had in the past. There is a Faculty of Engineering and a Dean to lead it.

Up until the late 1980s, our association was called the Old Centralians, linking back to the Central School that was the original foundation of City and Guilds. The Association was willing to change its name in order to create greater awareness, identity and belonging.

We changed the name of our magazine from *The Central* to *Imperial College Engineer* to allow people to identify with it better and then to *Imperial ENGINEER* as part of combining with the *RSMA Update*.

I was wondering if, as we review the offerings of our Association and also look to the future of Imperial, we might look afresh at our identity and our name. We need to treasure our history and connections with the Central School, the City of London and the founding livery companies – the Guilds that became City and Guilds College. But I wonder if we need also need to develop a stronger identity as the association of those who have studied engineering at Imperial.

I recognise that some members may be shocked at the thought of reviewing our name, but all organisations that value tradition, need to also look at their future identity and how they build and connect. I also recognise, this might create a problem for the departments that identify with the RSMA.

I was interested to notice that even the President of City and Guilds Union has the email address as engineering.president@… I wonder if, in the same way that we changed our magazine name to *Imperial ENGINEER* in 2004, we might adapt our association brand to being more aligned to be Imperial Engineers (formerly known as CGCA and OCs !). I think this will help us connect better with our 8 City and Guilds Departments and also to recruit alumni from around the world who have perhaps lost touch with us.

But then would we need to update the Boomalaka ? Perhaps this would be a step too far.

Who are we ? … we are, we are I E … !

I wonder …

Staff, students and alumni who have ideas on this would be welcome to send in their thoughts please.

Roger Preece

Want to join the team… operating and shaping City & Guilds College Association?

We are creating a new director* level role of Communications Officer and are looking for a volunteer to take this on immediately. In line with other CGCA Committee roles, this is a voluntary/honorary role, and no set remuneration is offered.

Interested? Send your details to guildshs2018@outlook.com

Why now?

CGCA needs to take on the world of multi-channel communications to/from its members and needs to do it in an organised, consistent and sustainable manner. We have a patchwork of communication processes and your first task would be to harness these and transform them into a coordinated membership communications engine. All Communications need to adhere to GDPR, PECR, DUAA rules. Once in post, forward-looking guidance in the Communication area will be welcomed by the Committee.

This is a role that will build up over time, and the following Activities list maps the full extent of the role. We recognise that someone may be able to take on a defined part of the role and operate as part of a Communications Team that builds up over time. This is certainly acceptable to CGCA.

Main activities:

- Attend CGCA Joint Committee Meetings (5 to 6 per annum) and provide Communications status
- Generally be the 'go to' person for Communications matters
- Finalise and Maintain a Strategic Communications Plan (e.g. We know the Annual Dinner happens so can plan for related communications) and an Operational Calendar (e.g. Planned dates that copy is needed for Newsletters)
- Develop required branding and ensure communications are consistent with branding
- Liaise with others to gather communications content, and mould that into Newsletters, Social Media posts, Website, and, Imperial ENGINEER content
- Manage the creation and maintenance of a CGCA Flyer (Short promotional document to encourage membership) and reflect that into the website.

Core skills

- Underlying interest and abilities in effective communications
- Fluent in written and spoken English
- Effective at using media creation applications (e.g. Word, Powerpoint, video and picture editing or alternatives)
- Knowledgeable on functionality of Websites
- Knowledgeable on Social Media, especially Facebook, Instagram, Linkedin
- An ability to persuasively hassle!

Challenges and Opportunities

- Biggest Challenge: Over 100 years of Association history, 5,000+ opinions of what the Association is/should be, characters that hold sway from beyond the grave… You will learn!
- Biggest Opportunity: Virtually a blank space with little set in stone – it's yours to define.

If you're interested, please send your details to:
guildshs2018@outlook.com

* *The role will carry a directorship of City & Guilds College Association Limited, a Limited by Guarantee Company, registered in the UK, Reg No 11735499. As such you will have to abide by the conditions for UK Company Directors.*
Eligibility criteria to be a Company Director are here: https://www.gov.uk/limited-company-formation/appoint-directors-and-company-secretaries
General responsibilities of a Company Director are here: https://www.gov.uk/guidance/being-a-company-director

DEVELOPMENTS AROUND THE ENGINEERING FACULTY

The year 2026 marks the 175th anniversary of the Royal School of Mines, a milestone that brings together generations of students, alumni, and staff from the Department of Materials and the Department of Earth Science and Engineering, all part of its story. The RSM is a shared identity shaped by collaboration, curiosity and a strong sense of belonging across disciplines and across time. This year's celebrations will be guided by shared themes, including 'Atoms to Planets,' reflecting how Materials and Earth Science and Engineering explore the same fundamental processes across vastly different scales, from the atomic level to planetary systems. Throughout the year, the RSM will be celebrating this spirit through a series of events, activities, and competitions.

Founded in 1851, the RSM was the first school of its kind in the UK. It was one of the three founding colleges of Imperial College. Since then, it has shaped global expertise in mining, materials science and geoscience – advancing disciplines that have been instrumental in revolutionising industry and shaping modern society.

Today, this legacy continues through Imperial's Department of Materials and Department of Earth Science and Engineering, which are tackling the unprecedented challenges of our time through a convergence science approach – an integration of disciplines, convening of cross-sectoral partnerships and delivering of innovative research and teaching.

Emerging as a degree in 1970 alongside Metallurgy, Materials now builds on core traditional strengths to deliver world-leading science and trans-formative engineering solutions to today's pressing challenges in energy, healthcare, security, transport, sustainability and future technologies.

Since its establishment in 2001, the Department of Earth Science and Engineering has excelled in pure science, applied science and engineering solutions across its major research areas: planetary science, energy, climate and environment, geohazards, raw materials, and life and health.

Solving the unprecedented challenges of the 21st century

The world is changing. There is an urgent need for clean energy sources and alternative materials to fuel health and prosperity for all. Research can accelerate solutions that benefit society – such as in healthcare, raw materials, transportation, energy and information systems – while ensuring we still operate responsibly and within our planetary boundaries. The Royal School of Mines is at the forefront of realising this ambition:

Since 2015, the Department of Earth Science and Engineering has transitioned its MSc courses from subjects centred on petroleum into novel computational courses with an emphasis on environmental sustainability and the energy transition. With a goal of gender equality across its computational MSc courses by 2030, the Ada Lovelace Academy is training future scientists and engineers who will maximise the potential of artificial intelligence and data science.

The Department of Materials is a founding partner of major cross-institutional centres with international reach, including the London Centre for Nanotechnology, driving nanoscience and nanotechnology for impact in healthcare, planetcare and IT; and the Thomas Young Centre, which advances theory and multiscale simulation of materials across length-scales.

Through a focus on more sustainable alternatives and integration of data and digital tools, research can support the increasing demands of population growth and climate change while safeguarding the wellbeing of Earth and its inhabitants

Bursaries, prizes and scholarships

Thanks to the generosity of supporters, alumni and corporate partners, we have been able to nurture tomorrow's leaders and invest in priority research areas.

The Rocky Fund is the Department of Earth Science and Engineering's fund to provide bursaries and prizes, made possible thanks to a donation from an Imperial alumnus. It supports generations of students from all backgrounds to study geosciences at Imperial. Scholarship gifts such as the Women in Mining Scholarships and Rio Tinto Scholarships have removed barriers for talented students, ultimately strengthening the knowledge and skills needed across science, business and society to adapt to our changing planet. Philanthropy has been key to securing the academic leadership driving advancements in the field. This includes the Armourers & Brasiers' Chair in Materials Science which champions pioneering research and education to tackle the climate crisis. This professorship post was established through an endowed gift, ensuring a sustained research focus in this key area. Thanks to philanthropic support, we have been able to refurbish the Goldsmith Wing at the South Kensington Campus, creating new teaching and learning facilities and lab spaces for the Department of Materials. This includes state-of-the-art nanoscale characterisation suites that are providing continued scientific leadership and have spurred recent expansion at White City with the Royce Atoms-to-Devices labs

https://dub.sh/IE45-RSM175



In celebration of this year's 175th anniversary of the Royal School of Mines (RSM175), the Department of Earth Science and Engineering and Department of Materials are holding a special flagship event celebrating this important milestone.

Taking place throughout the RSM building on Friday 27th November, this all-day 'Day of Celebration' event will bring together alumni, students, staff, industry partners and friends for a day of discovery, celebration and connection, showcasing the people, research, teaching, innovation and culture that define the RSM today.

You can expect a variety of activities, stalls and demonstrations, under the theme 'From Atoms to Planets', and the opportunity to connect and reconnect with new and old faces alike.

What to expect on the day

- Keynote speeches from Professors Mary Ryan and Nigel Brandon
- Showcasing the best of RSM teaching, research and industry
- Guided tours, exploring the history and heritage of RSM
- A chance to meet Clem, one of the iconic RSM mascots
- Interactive activities and exhibits across the RSM
- The opportunity to network and reconnect with fellow RSM alums, friends and staff

The event is free and open to all, but you must register in advance to get a ticket. To register go to https://www.imperial.ac.uk/events/213405/rsm175-day-of-celebration/

DEVELOPMENTS AROUND THE ENGINEERING FACULTY

CGCU Welcome Dinner 2026

Celebrating the Imperial Engineering Community

On Saturday 10 October 2026, the City & Guilds College Union (CGCU) welcomed 371 students, staff and distinguished guests to the magnificent De Vere Grand Connaught Rooms in London for its 128th Annual Welcome Dinner.

As one of CGCU's flagship events, the Welcome Dinner marks the beginning of the academic year, bringing together students from across the Faculty of Engineering. For freshers, it offers an opportunity to make new friends and become part of the Imperial engineering community, while returning students have the chance to reconnect and celebrate the start of another exciting year.

We were particularly honoured to welcome Professor Omar Matar, Dean of the Faculty of Engineering; Daniel Zhuo, President of Imperial College Union; Roger Preece, Chair of the City & Guilds College Association (CGCA); and Peter Chase, Chair of the OC Trust, who delivered a wonderful and inspiring speech. Their presence highlighted the enduring connections between CGCU, the Faculty, our alumni and the wider Imperial engineering community.

The evening featured a diverse programme of entertainment, including performances by the Imperial Gospel Choir, a cappella groups, the KCL Jazz Group, ribbon dancing, and instrumental musicians. The celebration concluded with the traditional Boomalaka chant, bringing everyone together in a memorable expression of Imperial's engineering spirit.

Behind the scenes, the dinner represented months of preparation and dedication from the CGCU committee and our student volunteers. Organising an event of this scale was no small undertaking, and its success demonstrated what students can achieve through teamwork, commitment and a shared sense of purpose.

As CGCU President, I am incredibly proud of everyone who contributed to making this evening possible. More importantly, I hope the dinner reminded everyone that being an Imperial engineer is about more than academic achievement – it is also about friendship, community and the connections we build throughout our time at Imperial.

We look forward to another exciting year of CGCU activities and to continuing to strengthen the bonds between current students, the Faculty and our alumni community.

Zelin Shao
CGCU President

Photos courtesy of CGCU



DEVELOPMENTS AROUND THE ENGINEERING FACULTY

New Dean



Professor Omar Matar began his term as Dean of the Faculty of Engineering on 1st October 2026. Reporting to the Provost and Deputy President, in this role Professor Matar will be responsible for all aspects of the Faculty's strategy, operations, and finances. As a senior member of the University Management Board, he will also make a significant contribution to the strategic direction, management, and development of Imperial as a whole.

An Imperial alumnus, Professor Matar joined as a Lecturer in Chemical Engineering in 1998 after completing his PhD at Princeton University. Since then, he has held leadership roles as Vice Dean (Education) for the Faculty and as Head of the Department of Chemical Engineering.

Professor Matar leads the Matar Fluids Group, which focuses on multiphase flows, computational fluid dynamics, and emerging technologies including machine learning and immersive tools. He was co-founding CEO of the Imperial-Turing spin-off Quaisr in 2020 and also co-founded 2D Nano in 2023.

On starting his new role he said: "My ambition as Dean is to help ensure that Engineering at Imperial leads boldly on the defining challenges of our time, through outstanding education, transformative research, and a culture of innovation and enterprise. Central to that ambition is a truly inclusive Faculty, because the best engineering emerges when diverse people, ideas, and experiences come together."

Former Dean Professor Nigel Brandon has taken up a new role as Vice-President (Corporate Engagement) and Professor Jason Hallett began his term as Head of the Department of Chemical Engineering.

https://dub.sh/IE45-Dean

RAEng Young Engineer of the Year Award



Dr Aakeen Parikh, Research Manager for the Vehicle Futures Hub at Imperial College London has been named a Royal Academy of Engineering (RAEng) Engineers Trust Young Engineer of the Year.

The award recognises early-career excellence in contributions to engineering and includes a £3,000 prize.

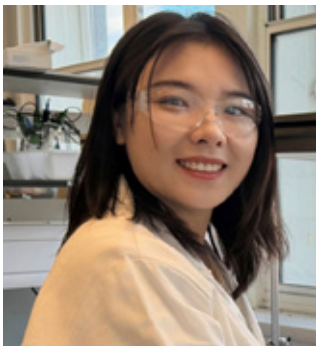
At the Vehicle Futures Hub, which aims to accelerate innovative vehicle technologies, Dr Parikh's work supports the transition to cleaner, more sustainable transport. Beyond her role at Imperial, Dr Parikh applies engineering to tackle global challenges in health and equality. She is a founder of The Minazi Impact, a social enterprise developing solutions for women's health and wellbeing. She also leads on the Sanitary Pad Project in Rwanda, producing reusable sanitary pads from locally sourced waste materials in partnership with grassroots NGO Dufatanye Organisation, as we featured in IE40 Spring 2024 (q.v.)

Dr Parikh said: "Receiving the Young Engineer of the Year award is an incredible pinch-me moment. I have always believed that engineering has the power to bring necessary innovation to the world, improve lives, develop equitable solutions, and protect our natural environment. Engineers are key to addressing the biggest challenges facing our future and I want to use this platform to highlight the importance of engineering the right solutions."

Read an interview with Aakeen on Imperial News at the link below:

https://dub.sh/IE45-Aakeen

Faraday Institution Entrepreneurial Fellowship and ESG Women of the Future Rising Star



It's been a busy couple of months for Dr Xiaochu Wei, a Research Associate in the Department of Chemical Engineering and part of the ChemEng Enterprise family. In September she was awarded one of only three new Faraday Institution Entrepreneurial Fellowships, to advance battery recycling technology. In October, she was named one of the Women of the Future 50 Rising Stars in the Environmental, Social and Governance (ESG) Awards 2026.

Xiaochu leads E-Rebat, a planned Imperial spinout developing an electro-recycling system to recover critical materials from end-of-life lithium-ion batteries. The fellowship will support the all-female team in scaling its technology, expanding validation with industrial waste and preparing for commercialisation.

E-Rebat's patent-pending technology recovers materials including lithium, nickel, manganese, copper and cobalt from lithium-ion batteries at the end of their useful life.

Operating in a water-based environment near ambient temperature, the process uses controlled electrochemical reactions to deposit metals sequentially as high-purity metal products or alloys, in a high yield process.

This approach avoids the need for costly pre-sorting, is compatible with mixed feedstocks and adaptable to future battery chemistries, including sodium-ion batteries.

On the Faraday Institution Fellowship, Xiaochu said: "This fellowship is an exciting milestone in my journey from researcher to entrepreneur. Support from the Faraday Institution will provide invaluable opportunities to strengthen E-Rebat's business plan, build relationships with customers and investors, and help bring our sustainable critical-mineral recovery technology closer to industrial deployment."

The Women of the Future 50 Rising Stars in the Environmental, Social and Governance (ESG) is an initiative that celebrates emerging leaders who are driving positive environmental, social and governance impact through innovation, leadership and action. Dr Wei was recognised in the Planet (Environmental) category for her work advancing sustainable critical-mineral recovery technologies and supporting the development of circular battery supply chains.

Dr Wei said: "I'm honoured to be named one of the Women of the Future 50 Rising Stars in ESG 2026. This recognition encourages me to keep advancing cleaner technologies for critical-mineral recovery and turning research into practical impact. There is still a long way to go, and I'm grateful to Women of the Future and Imperial for their support."

Reflecting on the importance of ESG, Dr Wei said: "To me, ESG means using science and innovation to create lasting value for society as well as the economy. I have always been committed to translating scientific research into technologies that deliver real-world impact. As the transition to clean energy accelerates, it is not enough to develop new technologies. We must also ensure that the critical minerals underpinning this transition are sourced, recovered and refined sustainably."

She added that the journey of translating fundamental research into a commercial technology had reinforced her belief that scientific success should be measured not only by research excellence, but also by the positive impact it delivers for people, industry and the planet.

Her inclusion in the Women of the Future 50 Rising Stars in ESG 2026 highlights the growing contribution of early-career researchers and entrepreneurs in developing solutions that support a more sustainable and resilient future.

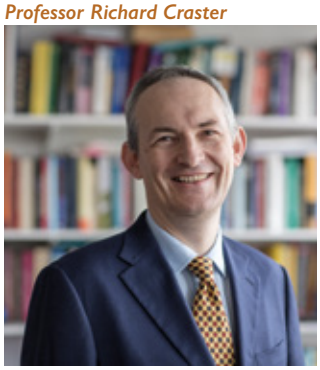
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https://dub.sh/IE45-50Women

DEVELOPMENTS AROUND THE ENGINEERING FACULTY

Royal Academy of Engineering Fellowships

Academics from Imperial have been elected as RAEng Fellows in recognition of their outstanding and continuing contributions to the profession.

Professor Richard Craster



Professor Craster is the Dean of the Faculty of Natural Sciences. He said: "I am delighted to be elected to being a Fellow of the Royal Academy of Engineering. It is a huge honour, particularly as I am a mathematician by training.

"Imperial, and especially my colleagues, students and collaborators, have been an essential part of everything I have done. They have inspired and driven our work, taking mathematical ideas into engineering and wave physics, from new start-ups to real-world inspection techniques for finding cracks in nuclear reactors, and much more besides."

Professor Alastair Donaldson



Professor Donaldson is Professor of Programming Languages in the Department of Computing. He said: "It is a great honour to be elected as a Fellow of the Royal Academy of Engineering – the home of engineering in the UK. In today's digital world, software engineering is one of the most important engineering disciplines, and it is undergoing seismic change with the rise of AI. I am excited to contribute to the Academy's work in understanding and shaping what these changes mean for software engineering, and for the future of engineering more broadly."

Professor Paul Fennell



Professor Fennell is Professor of Clean Energy in the Department of Chemical Engineering. He said: "I am delighted to have been elected as a Fellow of the Royal Academy of Engineering. I look forward to helping out with their important work, in particular within the areas of climate change mitigation and policy. I would like to thank my current and previous students and co-workers for their hard work and support along the way"

Professor Lidija Zdravkovic



Professor Zdravkovic is Professor of Computational Geomechanics in the Department of Civil and Environmental Engineering. She said: "I am deeply honoured to have been elected a Fellow of the Royal Academy of Engineering and excited about what we can achieve together. As a civil engineer specialising in geotechnical engineering, I see both significant challenges and unprecedented opportunities for engineers to make a lasting impact through the creation and stewardship of infrastructure that supports a more sustainable and resilient society."

Dr Raul Vazquez-Diaz

Dr Vazquez-Diaz is a Visiting Professor in the Department of Aeronautics; Engineering Fellow in Aerodynamics and Chief of Aerothermal Technology at Rolls-Royce; and Fellow of the Royal Aeronautical Society.

https://dub.sh/IE45-RAEng

Amelia Earhart Fellowship

Aeronautics PhD student Xiaochen (Erin) Yu has been awarded a prestigious Amelia Earhart Fellowship. The Zonta International Amelia Earhart Fellowship, established in 1938 in honour of the famed pilot Amelia Earhart, recognises up to 30 women annually pursuing doctoral degrees in aerospace or space sciences. The internationally recognised award celebrates outstanding research achievements while helping fellows advance their work through research funding, networking opportunities and professional development. Each fellow receives $10,000 to support their research and academic endeavours.

For Erin, receiving the fellowship was both a significant honour and an encouragement to continue pursuing research with real-world impact. She said: "I feel deeply honoured to receive this prestigious award. It recognises my research achievements and encourages me to continue creating meaningful impact within the aerospace community."

Erin's PhD research focuses on the data-driven design optimisation of architected materials, bringing together computational mechanics, machine learning and advanced manufacturing technologies to develop innovative solutions for future aerospace structures.



Her work aims to transform how aircraft components are designed by using data-driven approaches to explore vast design possibilities more efficiently than traditional methods.

The potential impact of Erin's research extends beyond the design process itself. She hopes her work will enable lightweight structures that use materials more efficiently while delivering multiple functions within a single component. Such advances could contribute to reducing aircraft operating costs and lowering environmental emissions.

At the same time, the computational tools being developed through her research could significantly accelerate design exploration and iteration, helping engineers bring innovative aerospace concepts from idea to reality more quickly and effectively.

https://dub.sh/IE45-Earhart

University of the Year 2027

Imperial has been named University of the Year 2027 by *The Times and Sunday Times Good University Guide*, in recognition of its student experience and graduate prospects. Imperial ranked third in the UK in the rankings overall.

Alongside the flagship award, Imperial was also named Medical School of the Year and University of the Year for Graduate Employment and was highly commended as Russell Group University of the Year. The university was also recognised as runner-up for London University of the Year 2027.

Professor Hugh Brady, President of Imperial College, said: "It is fantastic to see the hard work of our community recognised with this honour.

"Imperial has a special place in the UK's higher education sector – through our unique STEMB focus, our highly collaborative multidisciplinary teaching and research environment, and our commitment to putting innovation and impact at the heart of what we do.

"As a London university, we are fortunate to be based in one of the world's greatest cities and sit at the nexus of the UK's knowledge ecosystem. Our deep connections to complementary clusters of research, innovation and education excellence across the UK are combined with a highly international outlook – welcoming a student body drawn from over 140 countries with strong links to leading universities, knowledge organisations and industry across the globe."

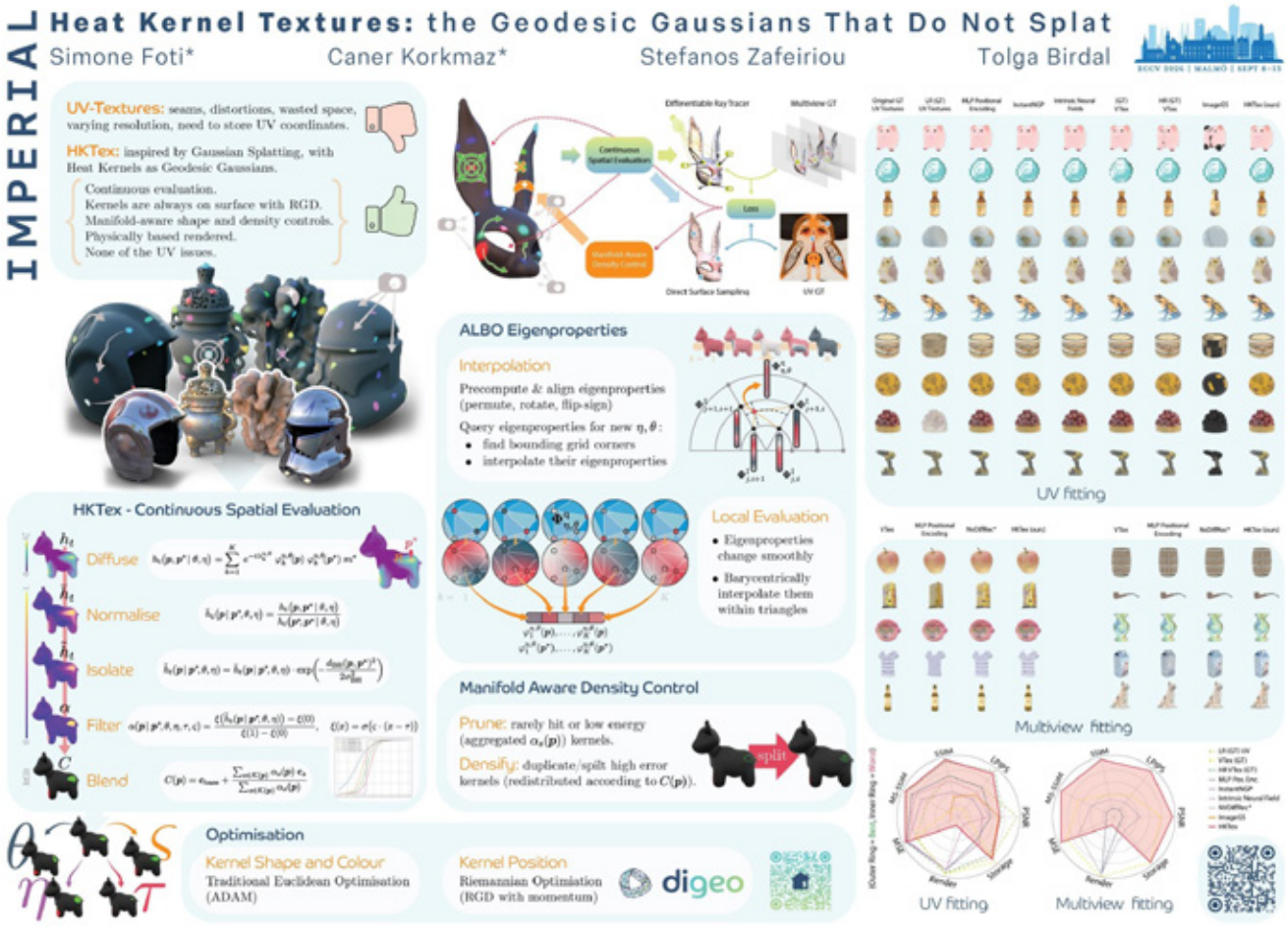
Imperial was recently named fifth in the UK in *The Guardian University Guide*, with Aerospace Engineering, Computer Science, Mechanical Engineering and Medicine ranking first in their subject rankings.

In the National Student Survey 2026, Imperial ranked number two for overall satisfaction amongst Russell Group providers and number one for Russell Group providers in London.

https://dub.sh/IE45-Ranking

DEVELOPMENTS AROUND THE ENGINEERING FACULTY

Award for "neat… novel…elegant" Computer Vision paper



Department of Computing researchers Dr Simone Foti, Caner Korkmaz, Professor Stefanos Zafeiriou and Dr Tolga Birdal, received the Best Paper Award at the European Conference on Computer Vision (ECCV) 2026 in Malmö, for their paper *Heat Kernel Textures (HKTex)*, selected from more than 10,000 submissions and praised for "neat and novel contribution to surface texture representation".

Heat Kernel Textures (HKTex) introduces a new mathematical framework for representing the surface appearance of 3D objects. For decades, computer graphics and vision applications have relied on UV mapping, which requires a three-dimensional object to be "unwrapped" into a two-dimensional surface before textures can be applied. HKTex removes the need for UV mapping altogether. It uses anisotropic heat kernels as geodesic equivalents of Gaussians, enabling texture information to be stored and optimised intrinsically on curved surfaces.

https://dub.sh/IE45-HKTex

Materials researchers develop new ways to image atoms at ultra-low temperatures

PhD student Mariana Palos in the Department of Materials has developed new approaches to atomic-resolution electron microscopy at very low temperatures, allowing researchers to study materials as new physical properties emerge.

Mariana first joined Imperial as an MSc student, before staying on for a PhD in Dr Shelly Conroy's group in the Department of Materials, funded by the Royal Society.

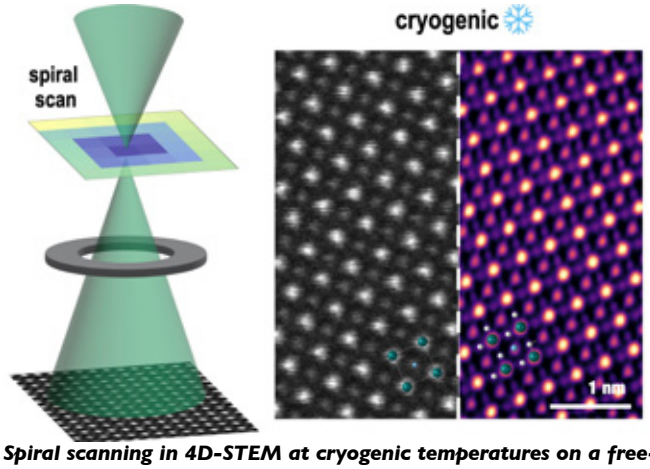
Her first paper explored how changing the way we traditionally scan a sample on an electron microscope could address two persistent challenges in electron microscopy: sample movement during atomic-resolution imaging and damage caused by the electron beam. Both challenges become particularly important at very low temperatures, where maintaining a stable sample and controlling electron-beam exposure can be especially difficult.

Mariana programmed the microscope to scan in different ways, including spiral patterns, and found that the direction of the scan could help improve stability and reduce beam damage.

While finishing that work at liquid-nitrogen temperatures, Mariana was already working with Dr Noah Schnitzer on the next challenge: ptychography at liquid-helium temperatures?

Mariana and Noah became joint first authors on the first demonstration in the world of atomic-resolution electron ptychography at around 20 K.

The work is important because many quantum material properties only appear when they are very cold. To understand why these materials behave as they do, we need to be able to see their atoms at the temperatures at which the interesting physics is actually happening.



Spiral scanning in 4D-STEM at cryogenic temperatures on a free-standing barium titanate ($BaTiO_3$) thin film, with the corresponding ptychographic reconstruction resolving oxygen atomic columns.

https://dub.sh/IE45-ptychography

Money Doesn't Grow on Trees… Does It?

This essay by Alice Choubry is the winner of the 2026 RSMA Illing Essay Competition.

We have all heard the saying that money does not grow on trees. Yet in parts of Australia, researchers have shown that plants can be used to harvest gold from the soil beneath them. In one study, a crop of Indian mustard was estimated to generate around AU$26,000 per hectare per harvest by extracting gold from treated soils. While no one will be replacing gold mines with fields overnight, this remarkable idea forms the basis of an emerging technology known as phytomining.

Although gold may capture the imagination, it is far from the metal for which phytomining shows the greatest promise. As demand for critical minerals such as nickel and rare earth elements continues to rise, researchers are increasingly investigating whether plants could help supply the materials needed for the green transition without many of the environmental costs associated with conventional mining. Ironically, building a low-carbon future requires extracting enormous quantities of metals. The International Energy Agency estimates that demand for minerals such as nickel, cobalt and rare earth elements will increase substantially as electric vehicles and renewable energy technologies become more widespread. The challenge is therefore not simply producing more metals, but producing them more sustainably.

Traditional mining comes at a significant cost. Open-pit mines often require large-scale deforestation, destroy habitats and accelerate soil erosion, while the extraction and smelting of ores release substantial amounts of greenhouse gases. Mining also generates vast quantities of contaminated wastewater, solid waste and airborne pollutants that can spread well beyond the mine itself, affecting both ecosystems and nearby communities. In many regions, mining is additionally associated with poor working conditions and human rights concerns. Although these environmental impacts are often accepted as the price of obtaining the metals needed for a greener future, researchers are increasingly exploring more sustainable alternatives.

Among several biologically based extraction methods, including mycomining using fungi and phycomining using algae, phytomining has emerged as one of the most promising. Rather than digging metals from the ground, phytomining takes advantage of certain plants that naturally accumulate exceptionally high concentrations of metals within their tissues.

While phytomining is unlikely to replace conventional mining entirely, it has the potential to become a valuable complementary technology by recovering metals with a much smaller environmental footprint while simultaneously restoring contaminated land.

The principle behind phytomining is surprisingly simple. Some plants, known as hyperaccumulators, have evolved the ability to absorb and store unusually large amounts of metals that would normally be toxic to other species. These include nickel, cobalt, zinc, manganese, copper, selenium and, in a few cases, even rare earth elements.

To be classified as a hyperaccumulator, a plant typically stores metal concentrations hundreds of times greater than those found in ordinary plants. After absorbing dissolved metal ions through their roots, specialised transport systems move these metals into the stems and leaves, where they are safely stored without harming the plant. Once the plants have reached maturity, they are harvested and dried before being burned or subjected to pyrolysis. This removes the organic material and leaves behind a metal-rich ash, often referred to as bio-ore. Conventional metallurgical techniques can then recover the desired metal from this concentrated residue.

Unlike traditional mining, phytomining is particularly suited to low-grade ores or contaminated soils where extracting metals using conventional methods would be uneconomical or environmentally damaging.

Perhaps the greatest strength of phytomining is that it can recover valuable resources while improving the environment rather than degrading it. Many hyperaccumulator species are able to grow on polluted land that is unsuitable for agriculture. As they remove metals from the soil, they gradually reduce contamination, making phytomining both a method of resource extraction and a form of environmental remediation. This could prove particularly useful on abandoned mine sites and industrial brownfields that would otherwise remain hazardous for decades.

Compared with open-pit mining, phytomining also causes far less disruption to the landscape. It avoids extensive excavation, produces no enormous waste rock piles or tailings dams, and greatly reduces problems such as acid mine drainage, one of the most persistent sources of water pollution around mines.

Although processing the harvested biomass still requires energy, the overall carbon footprint is generally much lower than that of conventional mining. The plants absorb carbon dioxide while growing, and phytomining eliminates much of the heavy machinery, ore transport and energy-intensive processing associated with traditional extraction. As a result, it offers a considerably lower-emission route for recovering certain metals.

Despite these advantages, phytomining is far from a universal solution.

The biggest limitation is productivity. Even the best-performing hyperaccumulators typically recover only tens of grams of metal per kilogram of dry biomass, meaning large areas of land are needed to produce commercially significant quantities of metal. Plant growth also takes months rather than days, making the process much slower than conventional mining.

At present, phytomining is only practical for a relatively small number of elements. Nickel has received the greatest attention because several plant species accumulate it exceptionally well, with some containing over 30 grams of nickel per kilogram of dry biomass. This is particularly encouraging given nickel's growing importance in battery technologies.

Other metals present greater challenges. Although gold phyto-

mining has attracted considerable interest, gold is naturally much less soluble than many other metals. To encourage uptake, chemicals are often added to the soil to dissolve the gold. Even with these treatments, gold concentrations in plants remain much lower than those achieved for nickel. However, the need to add chelating agents for metals such as gold illustrates an important trade-off. Although these chemicals increase metal uptake, they also increase the risk of dissolved metals entering nearby waterways if not carefully managed. This highlights a broader challenge in sustainable engineering: environmentally friendly technologies are rarely impact-free, and success often depends on balancing competing priorities rather than eliminating them entirely

Rare earth elements represent another promising target, yet relatively few known hyperaccumulator species are capable of concentrating them efficiently. Factors such as soil chemistry, microbial communities and local climate also strongly influence how well phytomining works, and many of these interactions are still not fully understood.

Economic viability remains another major challenge. The profitability of phytomining depends on numerous variables, including biomass yield, the concentration of metals in both soil and plants, recovery efficiency, labour costs and market prices. While several studies suggest that phytomining could generate substantial profits for high-value metals under favourable conditions, these results are often site-specific and difficult to generalise.

Furthermore, phytomining is not completely impact-free. Fertilisers, chelating agents and energy used during drying and biomass processing all contribute to its environmental footprint. However, many of these impacts resemble those of conventional agriculture and can be reduced through practices such as recycling plant residues as fertiliser, using renewable electricity and recovering heat generated during biomass combustion.

When compared directly with conventional mining, phytomining clearly sacrifices productivity in exchange for sustainability. Metal yields remain significantly lower, and current techniques cannot meet global demand on their own. However, phytomining is still a relatively young field of research, whereas conventional mining has been refined over centuries. Advances in plant breeding, genetics and biotechnology could substantially improve extraction efficiency in the future.

Perhaps the strongest argument for phytomining is not that it replaces mining, but that it makes use of land that would otherwise have little economic value. Contaminated mine sites, abandoned industrial land and low-grade ore deposits could all become productive while simultaneously being cleaned up. In some regions, phytomining could even be integrated with agriculture, providing farmers with an additional source of income. The leftover biomass may also be used to generate heat or biofuel, further increasing the value of the process.

Phytomining demonstrates that plants can do far more than simply grow on contaminated land: they can actively recover valuable metals while helping restore damaged environments. Although its slow growth rates, limited range of target metals and uncertain economics currently prevent it from replacing conventional mining, it has enormous potential as a complementary technology. Rather than replacing conventional mines, phytomining is likely to find its niche in situations where traditional mining performs poorly. Low-grade ores that would otherwise be uneconomical, abandoned mine sites, industrial brownfields and contaminated agricultural land all represent ideal candidates. In these settings, phytomining creates value from land that is currently considered a liability, simultaneously recovering metals while restoring ecosystems.

Realising this potential will require collaboration across plant biology, materials science, engineering and data science. Researchers are still discovering new hyperaccumulator species, particularly those capable of concentrating rare earth elements, while advances in genetics could produce plants with even greater extraction capacities. As demand for critical metals continues to grow, the future of mining is unlikely to rely on a single solution. Instead, phytomining could become one important part of a broader, more sustainable approach to securing the resources needed for the green transition.

Money may never grow on trees, but perhaps that's the wrong question to ask. If plants can help us recover critical metals while restoring damaged landscapes, then the future of mining may look less like digging deeper into the Earth and more like learning from the organisms already growing on its surface.

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Alice Choubry is a third-year MEng Materials Science and Engineering student. Originally from France and Czech Republic, she is particularly interested in sustainable materials and the role of materials science in addressing environmental challenges. Alongside her studies, she enjoys writing about science, technology and sustainability, and has contributed to student publications on topics ranging from chemistry and materials innovation to the future of cement and construction. Her interests lie at the intersection of materials science, sustainability and science communication.

If a picture paints a thousand words, then a website – millions!

Richard Gundersen (Elec Eng 73-76) provides us with a progress report on STEMulator and encourages alumni to try it for themselves, then recommend it to parents, teachers, schools and children.

Have you taken STEMulator for a test-drive lately?

Imagine a world of science and engineering that you can explore simply by clicking on a picture. No complicated menus, no typing, no language barrier. Just follow your curiosity and discover what lies beneath the surface.

That is the idea behind STEMulator.org, a free South African educational resource designed to spark children's interest in science, technology, engineering and mathematics. But when did you last take it for a test-drive? You might be surprised by how much it has grown.



Click any tile. Let curiosity be your guide

Forget the textbook. Follow your curiosity.

STEMulator isn't an online textbook. It's a visual landscape in which children explore the science and engineering hidden in the world around them. A click reveals another layer of discovery, leading from the familiar to the unexpected.

The possibilities are remarkably varied. From geological formations to bridges, crops, domestic appliances and medical technology, familiar subjects become doorways into science, engineering and potential careers. There is no prescribed route through the landscape. Curiosity does the work.

Since our last IE update in 2024, STEMulator has added around 100 pages of content and twenty additional STEM career options.



Career guidance: from mountains to volcanologist



... and from MRI to radiologist

More ways to explore.

In June 2025, STEMulator launched its app. A year later, gamification introduced scoring and leaderboards, rewarding users for exploring wider and deeper, spending time discovering each page's content and answering questions.

These features encourage deeper engagement rather than a fleeting visit. Registered users can receive updates, while the resulting user-profiles can provide useful statistics on user interests, augmenting psychometric analysis.

The objective remains unchanged: to encourage young people to persevere with mathematics and science, discover the excitement of STEM and consider the careers that await them.

A world of discovery — but are the children finding it?

Creating a resource is one thing. Getting it into the hands of the children who could benefit from it is another.

STEMulator is free to users and carries no advertising. Its content is available online, with offline options extending its reach into areas with limited connectivity. Yet being available does not guarantee being discovered.

Children are the intended audience, but someone has to introduce them to it. Parents, teachers and other adults are the essential links between STEMulator and the young minds it was created to inspire.

Imagine several pantechnicons loaded with free textbooks, ready for distribution to schools across the country. Now imagine that those books could simply be delivered through the cloud, without the trucks or a physical distribution network.

That is the opportunity STEMulator represents. The resource exists; the challenge is to get it to its intended audience – the kids.

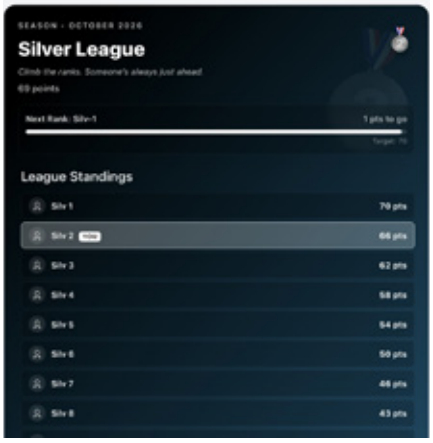
Building an audience as well as a resource.

We are tackling that challenge on several fronts: sponsored advertising on Meta is putting STEMulator before new audiences; gamification encourages users to explore and register, allowing us to keep in touch with them; and new monthly public webinars demonstrate STEMulator and give teachers an opportunity to share their classroom experiences.



"My classroom comes alive with the STEMulator."

Our first webinar attracted 85 participants, mainly teachers. Among our recent advocates is an award-winning teacher whose enthusiasm for STEMulator illustrates the potential of bringing this resource into the classroom.



New scoring incentive

Keeping the engine running.

A resource that is free to its users is not free to create, maintain and promote. Wikipedia is a familiar example: a public resource, freely available but requiring an engine room to keep it going.

STEMulator depends on continued development, maintenance and the means to reach more people. Its future impact will depend not only on what we build, but also on how effectively we connect it with children, parents and teachers.

Your turn to discover it.

Before recommending STEMulator to anyone, take a few minutes to explore it yourself: find the human heart; discover the olive-harvesting machine; follow a link that catches your eye and see where it leads.

Then, think of all the children that could benefit, tell a parent, teacher or school about it, and share it through your own networks.

The more people who discover STEMulator, the more children can discover the world of STEM.



Know what this is? Try Farm > Orchard > Olives. Just three clicks!

TAKE A QUICK TEST-DRIVE
STEMulator.org
or download the app.

Explore. Discover. Learn.
Click and Reveal.
From Childhood to Career.

A free, interactive visual landscape of science, technology, engineering and mathematics.

Follow your curiosity. See what you discover. Then pass it on.

Réunion Traverse Expedition

In the summer of 2026, two Imperial students, Barna Bérczy and Vilmos Turányi, traversed Réunion Island by foot along the GRR2 and GRR1 long-distance trails, covering about 158 km and including the highest point in the Indian Ocean. They had financial support from both the RSMA Trust and the OC Trust.

This expedition was a self-supported traverse of Réunion Island, the volcanic French department in the Indian Ocean, on foot along the island's two great long-distance trails, the GRR2 and the GRR1. Over nine days we crossed the island from the heights above the capital, Saint-Denis, through the cirques of Mafate and Cilaos and over the Piton des Neiges massif, summited both of the island's volcanoes, and finished at the caldera of the active Piton de la Fournaise, before spending a further three days exploring the coast and the island's volcanic and cultural sites. Having completed this journey, we believe it has greatly developed our skills in mountaineering, self-sufficiency and expedition planning, as well as our resilience and independence. The funding we received gave us a unique opportunity to take on a demanding and inspiring challenge, to strengthen friendships, and to encourage others in the Imperial community to take on their own expeditions.

The Expedition

General Objectives

- To traverse Réunion on foot from north to south, crossing the cirques and summiting both Piton des Neiges and the Piton de la Fournaise, within about two weeks.
- To be as self-sufficient as possible in food, water and shelter, while keeping our environmental footprint low.
- To take on and complete a genuinely challenging goal, and to report on it so as to inspire the Imperial community and the wider public.
- To deepen our understanding of volcanic and erosional landscapes at first hand, since we study Earth Science.

Personal Objectives

- To experience one of the most geologically dramatic islands on Earth, from cloud forest to an active volcano.
- To test ourselves on a long, unsupported mountain traverse in an unfamiliar environment.

Ethos

The expedition was lightweight, unsupported and self-sufficient. We carried our own food, shelter and equipment, slept in gîtes and wild camps, and made every effort to travel responsibly and to leave no trace, following the principles of the Parc national de La Réunion, especially given the fragility of the island's endemic ecosystems.



Artwork and photos courtesy of Barna Bérczy and Vilmos Turányi

Background

Réunion is a small, intensely mountainous island east of Madagascar, a French overseas department built entirely by volcanoes. Its interior is dominated by the deeply eroded shield of Piton des Neiges (3,070 m) and the three great cirques carved into its flanks, Mafate, Cilaos and Salazie, together with the younger and highly active Piton de la Fournaise. The island is crossed by an outstanding network of waymarked trails, of which the GRR2 (a long traverse of the interior) and the GRR1 (a loop of the cirques) are the best known. Our expedition linked these into a continuous north-to-south traverse on foot, crossing the cirques and both volcanoes, a route that packs an enormous range of terrain, climate and scenery into a very compact area.

Trip Diary

Completed Route

Over the course of the traverse, we covered a varied and demanding route across the interior of Réunion, combining forest trails, the roadless cirque of Mafate, high mountain passes, two volcanic summits and a stretch of bare volcanic desert. The recorded route came to roughly 158 km with close to 8,650 m of ascent and a similar amount of descent, ranging from about 355 m to a high point of 3,070 m at the summit of Piton des Neiges. The nine days on foot took us from the heights above Saint-Denis, through Mafate and Cilaos, over Piton des Neiges, across the Plaine des Cafres and out to the Piton de la Fournaise; a further three days were spent exploring the island off the trail. The route presented a full range of physical and logistical challenges, from the relentless up-and-down of Mafate to sub-zero nights at altitude and a hailstorm on the volcano, but careful planning, good navigation and a well-tested kit list allowed us to handle them.

Summits and high points

- Roche Écrite (2,276 m): the first high point on the GRR2, above the Plaine des Chicots, with panoramic views over the cirques of Mafate and Salazie.
- Col du Taïbit (2,081 m): the high pass linking the cirques of Mafate and Cilaos, and the crossing point onto the GRR1.
- Piton des Neiges (3,070 m): the summit of the island and the highest point in the Indian Ocean, reached from the Gîte de la Caverne Dufour.
- Piton de la Fournaise, Dolomieu crater rim (about 2,632 m): the active volcano, reached across the floor of the Enclos Fouqué.

Changes from the original plan

Our expedition was completed as a shorter, adapted version of the route set out in the proposal. We had planned the full loop of all three cirques (Mafate, Cilaos and Salazie) via the GRR1, about 230 km over 14 to 16 days; in the event we traversed Mafate and Cilaos, summited Piton des Neiges, and then descended directly toward Bourg-Murat and the volcano, covering about 158 km over nine walking days. The Salazie loop, including La Nouvelle, Hellbourg and Bélouve, was not undertaken.

We also finished differently: rather than walking the full GRR2 to Basse Vallée or Saint-Philippe, we descended from the Piton de la Fournaise and hitchhiked to Saint-Pierre, then spent three days exploring the south-east coast and the island's volcanic sites. These changes were made in response to available time, weather and cumulative fatigue, and are consistent with the principle we set out in the proposal of prioritising safety and sound judgement over completing every planned kilometre.

Day 0: Travel to Réunion

Our expedition began with the journey south. To keep costs down, Barna travelled out through Brussels Charleroi and spent the day of the 24th exploring Lille, while Vilmos used the day to discover Paris; we met that evening at Paris Charles de Gaulle for our overnight flight. The flight was pleasant and took around eleven hours, carrying us from the European autumn into the tropical spring of the southern hemisphere. We landed at Roland Garros airport on the north coast, near the capital Saint-Denis, and made our way up to the trailhead in the forested heights above the city, ready to start walking.



Setting off

Day 1: Saint-Denis to the Roche Écrite

From the forested heights above Saint-Denis, around Le Brûlé, we started climbing almost immediately. The GRR2 leaves the coast and gains height quickly, first through plantations of Cryptomeria and then into native tamarind forest, the air cooling and the vegetation thickening into montane cloud forest as we rose. The trail is well graded but relentless underfoot, a long staircase of roots and volcanic rock. We passed onto the Plaine des Chicots, a quiet upland shelf of heather and endemic woodland that is one of the last refuges of the tuit-tuit, the critically endangered Réunion cuckooshrike, and earned our first sweeping views back over Saint-Denis and out to the Indian Ocean. We spent the first night wild camping close to the Gîte de la Roche Écrite, settling into the rhythm of the trail and the altitude as the evening cloud rolled in.



Our first campsite on the trail

Day 2: Into the Cirque de Mafate

The second day took us over the lip of the Roche Écrite massif and down into the Cirque de Mafate, the roadless heart of Réunion: an immense collapsed amphitheatre reachable only on foot or by helicopter. The descent was steep and dramatic, switchbacking down ravine walls with the whole cirque opening beneath us, a maze of ridges, gorges and perched îlets, the small inhabited plateaus that cling to the terraces above the Rivière des Galets. We crossed deep gullies on footbridges, among them the Oussy footbridge, and threaded our way toward Îlet à Malheur in Les Hauts. That night a local ultrarunner kindly offered us a corner of his garden, and let us use his garden hose for the first, ceremonial shower of the trip, a small luxury that felt enormous after two days on the trail.

Day 3: Across Mafate to Roche Plate

Crossing Mafate proved far tougher than the distance suggested, and this became one of the hardest days of the whole traverse. There is almost no flat ground in the cirque: the path drops to cross a ravine, then claws its way back up to the next îlet, again and again, on dusty, sun-exposed trails. We moved from îlet to îlet with the great rampart of the Maïdo towering to the west and the summit of Piton des Neiges rising ahead, crossing the braided bed of the Rivière des Galets along the way. By the time we reached Roche Plate, an îlet set beneath the sheer Maïdo cliff, we were very glad of a gîte, a roof and a proper bed for the night.

Day 4: Over the Col du Taïbit to Cilaos

Leaving Mafate meant climbing out of it. From the upper îlets we ground our way up to the Col du Taïbit at just over 2,000 m, the high pass that

separates the cirque of Mafate from the cirque of Cilaos. The ascent was long, but the reward was one of the finest panoramas of the trip: a last look back across the whole of Mafate, and a first view forward into Cilaos, ringed by its own wall of ramparts. A steep, knee-testing descent then dropped us into the spa town of Cilaos, the only real town in the interior. We took a gîte, washed properly, and restocked our food for the demanding second half of the route.

Day 5: The Piton des Neiges

This was one of the hardest and most rewarding days of the expedition. From Cilaos we climbed relentlessly, gaining well over a thousand metres up steep forested slopes that gave way, above the treeline, to open volcanic terrain of scree and hardy alpine plants. We reached the Gîte de la Caverne Dufour, perched at around 2,480 m below the summit, and pushed on to the top of Piton des Neiges itself at 3,070 m, the highest point of the island and of the whole Indian Ocean. The summit is a bare volcanic cone with the entire island laid out below, the cirques falling away on every side. We had not been sure of a bed at the gîte, but the wardens found us space; the night was bitterly cold, around minus two degrees, shared in a bungalow with six other walkers.

Day 6: Storm off the massif to Bourg-Murat

The descent from the Piton des Neiges massif toward the Plaine des Cafres was the hardest day of the trip, physically and mentally. Rain and wind set in and stayed all day. The trail turned into a running stream and became extremely slippery, and the mud grew as thick as our trekking poles; at times we managed barely a kilometre in an hour. What should have been a straightforward descent became a long, cold, soaking battle down through the forest. We were enormously relieved to reach a gîte at Bourg-Murat, on the high plateau of the Plaine des Cafres, where we could finally get warm and dry.

Day 7: Rest day at Bourg-Murat

After six hard days we took a well-earned rest day at Bourg-Murat. We stayed a second night in the gîte, dried out our soaked kit and rested our legs. We used the time to visit the Cité du Volcan, the excellent volcano museum in the village, which tells the story of the Piton de la Fournaise and the geology of the island: good preparation for walking up to the volcano the following day.

Day 8: The Martian road to the Fournaise

One of the most spectacular days of the whole trip. Setting out from the Plaine des Cafres, we crossed the high plateau and out onto the Plaine des Sables, an astonishing ochre-red desert of ash and lava that feels like another planet and has stood in for Mars on film. As we walked toward the Piton de la Fournaise the last vegetation thinned and then vanished entirely, leaving bare rock in reds, blacks and rust. We reached the rim of the vast Enclos Fouqué caldera at the Pas de Bellecombe and made camp near the edge. Overnight a massive hailstorm hit us, with freezing temperatures, constant rain and relentless wind that soaked all of our equipment.

Day 9: Dawn summit, descent to Saint-Pierre

We woke at 3:30 in the morning to climb the volcano. From the Pas de Bellecombe the route drops down into the caldera and crosses the floor of the Enclos, past the small scoria cone of Formica Leo and over old lava flows, before climbing to the rim of the Dolomieu crater at around 2,632 m. We made the ascent in pitch dark and hail, in full storm conditions and with soaked gear, reaching the summit for a wild, hard-won dawn. Back at the tent we decided to hitchhike down to Saint-Pierre on the south coast. Getting a ride proved harder than expected, as local drivers here rarely stop for hitchhikers; in the end a lovely visiting French couple picked us up. The long, steep descent and some heavy braking left their car's brakes smoking, forcing a 45-minute stop to let them cool before we finally reached the coast.

Days 10 to 12: Around the island

With the traverse complete, we spent our last three days discovering the rest of Réunion. We walked around Saint-Pierre and visited Maison Isautier, the island's oldest distillery, founded in 1845 and run by the same family for seven generations, where we tried the local rhum arrangé. Along the wild south-east coast we saw the church at Sainte-Rose that the 1977 lava flow parted and spared (Notre-Dame des Laves), the Anse des Cascades, the vast lava fields of Le Grand Brûlé where recent eruptions have reached the sea, and the wreck of the Tresta Star. We explored Saint-Benoît on the east coast, and Saint-Paul and Le Port in the west, and took a full rest day on the lagoon beach at L'Hermitage. We finished with a whale-watching boat trip from Le Port: we saw dolphins rather than whales, but it was great fun and a perfect, relaxed way to end the expedition.

Environmental and Social Impact Assessment

The expedition was planned to minimise its environmental impact and to respect local communities. We travelled entirely on foot along established, waymarked trails, camped responsibly at gîtes and permitted wild camps, and carried out all of our litter. Much of the route lies within the Parc national de La Réunion and its UNESCO World Heritage area, home to many species found nowhere else, so staying on marked paths and following the park's rules was essential to protect fragile habitats and endemic wildlife. We sourced water responsibly and treated it as needed.

We supported local businesses by



buying food, refreshments and gîte accommodation along the way, and by visiting local sites such as the Cité du Volcan and Maison Isautier, and we tried at all times to interact respectfully with the residents and fellow walkers we met, whose kindness was one of the highlights of the trip. Our carbon footprint was dominated by the international flights; we kept the on-island travel almost entirely human-powered to limit further impact.

Conclusion and Recommendations for Future Trips

Recommendations

Based on our experience, we offer the following recommendations for future trips.

Practical tips:

- Book the Gîte de la Caverne Dufour, and the other interior gîtes, well in advance; a bed below the summit should not be left to chance.
- Pack for cold and wet even in the tropics; nights near minus two degrees and a full hailstorm on the volcano show how fast conditions change at altitude.
- Waterproof everything and dry-bag your sleep system; ours was soaked before the dawn volcano summit.
- Do not underestimate Mafate; the îlet-to-îlet days are relentless and far harder than the map suggests.
- Restock in Cilaos, the one substantial town on the route, and carry a tent as backup even if you plan to use gîtes.
- Start each day early to beat the midday cloud, and do not count on hitchhiking with locals; carry some cash and learn a little French.
- Above all, a backpack can never be light enough.

Motivational advice:

- Take on the challenge; the hardest days, the storm on the volcano above all, became the ones we are proudest of.
- Talk to the people you meet; the generosity of strangers, from an ultrarunner's garden hose to a lift down the mountain, made the trip.

Conclusion

The traverse was a challenging, rewarding and unforgettable expedition that tested our endurance, resilience and teamwork across an extraordinary range of terrain and weather. Over roughly 158 km and close to 8,650 m of ascent we crossed the cirques, summited both of Réunion's volcanoes, and walked from cloud forest to an active caldera, before rounding off the trip with three days on the island's coast and volcanic sites. Through careful planning, sound navigation and a good deal of humour in bad weather, we completed everything we set out to do, and came away with stronger expedition skills, a deep appreciation for one of the most remarkable islands on Earth, and plenty of inspiration for what comes next.

Acknowledgments

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We would also like to thank:

- The wardens of the gîtes across the cirques
- The ultrarunner near Îlet à Malheur who gave us his garden and his hose
- The French couple who drove us down from the volcano
- The many hikers, and the French friend we kept meeting on the trail
- The people of Réunion, for their warmth throughout
- Our families and everyone who supported the planning

Team Biographies

Barna Bérczy

Academic Background: 2024 to present, studying towards an MSci in Earth and Planetary Sciences, Department of Earth Science and Engineering.

Experience: Barna is from Budapest, Hungary, and has a deep, longstanding passion for travel and the outdoors, particularly cycling, bikepacking and mountain trekking. He rekindled a childhood love of cycling after the pandemic and has since taken on a number of self-organised bikepacking and trekking journeys across Europe. In 2025 he cycled and climbed the Three Peaks of Britain (Ben Nevis, Scafell Pike and Snowdon) as part of an unsupported bikepacking expedition, and he has a strong grounding in wild camping and self-sufficiency from years of nomadic summer camps. He brought route-planning, navigation and expedition organisation experience to the team. On the expedition, Barna was responsible for navigation, food and medication.

Vilmos Turányi

Academic Background: studying towards an MEng/MSci in Chemical Engineering.

Experience: Vilmos served as the expedition's team leader, with responsibility for communication and gear. He shares with Barna a strong background in multi-day, self-sufficient trekking and expedition travel, including sections of the Hungarian Kéktúra and the Transcaucasian Trail, an alpine tour around Weissmies, multi-day treks in Slovakia and France, and bikepacking across Austria and Germany. He holds outdoor first-aid certification through Marlin Training Ltd, and brought careful, safety-conscious planning and strong organisation to the team.



CGCU Makeathon Robotic Competition Final Stage Trip (Mt. Blanc, France)

The 2026 CGCU Makeathon 2026, a student-led engineering competition organised by the City & Guilds College Union (CGCU), took place from 21 to 22 February 2026, with approximately 120 students participating. The competition challenged students to design and prototype engineering solutions for snowfield rescue in extreme environments, while also introducing them to early-stage product development, testing, and enterprise thinking.

Following the main competition, selected winning teams progressed to a final stage in which their designs were tested and reviewed in a realistic cold-weather environment, to enable students to evaluate how their prototypes perform outside the workshop, under controlled but representative environmental conditions. This stage was important in helping students understand the gap between designing a concept and validating it in practice, which is a key part of real engineering development. Zelin Shao (Civ Eng 2022-26, and current CGCU President) has written an introduction to the competition, and the representatives of each of the three winning teams tell us about the experience.

The field-testing took place in Chamonix, France, within the town area beneath the Mont Blanc ski region. This location was chosen because it offers access to snow and low-temperature conditions while allowing the activity to remain within a controlled, accessible, and lower-risk town setting, rather than in remote or hazardous mountain terrain. The intention was to provide a realistic testing environment without exposing students to unnecessary danger.

The prototypes themselves have also been designed with practicality and safety in mind. Each design is required to remain compact and portable, within the size of a standard suitcase and under 20 kg, reducing transport and manual-handling risks and making the testing process easier to manage safely.

The field-testing was structured around the three winning prototype tracks from the Makeathon, with each team carrying out a controlled validation exercise relevant to its design.

The first track is a rescue tracking device, designed to help locate an individual in a snowfield rescue scenario. Testing involved placing the device beneath snow simulating burial conditions, and assessing the reliability and range of the tracking signal in a realistic outdoor environment. This allowed the team to evaluate how well the device performs when covered by snow and how effectively it may work over distance.

The second track is a mobility prototype intended to move across difficult terrain. This was tested through a controlled route in the designated open area, using a carefully arranged obstacle course to simulate uneven snowy ground and rough conditions. The purpose was to assess speed, stability, payload capacity, and general robustness in a setting that is more realistic than an indoor workshop.

The third track is a survival or thermal support kit, intended to provide emergency warmth in a snowfield rescue situation. Testing assessed how effectively the device can retain or provide heat over a defined period in low-temperature outdoor conditions.

Following the practical testing, students took part in a structured reflection and presentation session to review performance, identify limitations, and discuss how their designs could be improved in future iterations. This reflective stage is an important part of the learning value of the trip, as it connects field observations back to engineering design decisions.

The travel group consisted of:

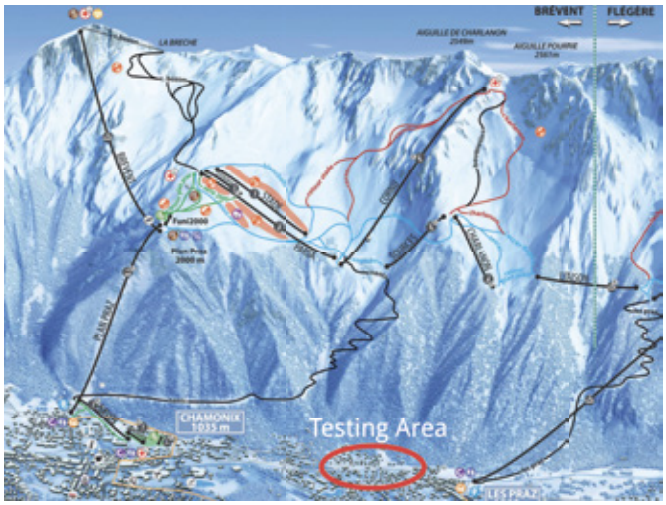
Tariq Abdullah – Track 1 rep-resentative, Mechanical Engineering Year 1;

Xavier Goff – Track 2 representative, Design Engineering Year 1;

Ved Pahariya – Track 3 rep-resentative, Civil Engineering Year 1;

Jack Crane – Imperial College Robotics Society representative and technical support lead, responsible for engineering guidance and oversight of equipment use;

Zhehan (Sky) Wang – CGCU Committee member, responsible for on-site safety management, risk awareness, and acting as first aider and first point of contact in the event of an emergency.





Activity Delivery and Outcomes

The field-testing trip was delivered successfully and closely followed the original programme plan. Student teams completed the development and testing of their prototypes in real outdoor conditions, gaining valuable experience in applying engineering concepts beyond the laboratory environment. The activity enabled participants to evaluate the performance of their devices under low-temperature and snow conditions, identify practical limitations, and propose improvements based on real testing data. Overall, the trip achieved its intended educational and technical objectives, providing meaningful hands-on learning opportunities and strengthening students' confidence in engineering design and problem-solving.

The testing process highlighted the importance of iterative design, system reliability, and environmental considerations in engineering practice. Students encountered real-world challenges related to power performance, mechanical stability, and environmental durability. These experiences provided valuable insights that cannot be replicated in a purely classroom-based setting and reinforced the importance of testing, troubleshooting, and continuous improvement in engineering development.

Overall, the activity was completed safely, on schedule, and in line with the intended objectives. Students demonstrated strong engagement throughout the programme and successfully translated theoretical concepts into functional prototypes.

Track 1 – Tariq Abdullah (Mechanical Engineering Year 1)

Problem:

Extreme conditions at high altitudes can cause a lot of snow to accumulate relatively quickly, which can cause people to get stuck. Also slipping on the snow could lead to a fall which may knock the person unconscious.

Due to the low temperatures and extreme conditions, it would be difficult to locate the person accurately, especially if they are unconscious, which could prolong the rescue. If the rescue takes too long it could lead to hypothermia which if left untreated could cause death. What could be done to aid the rescuers in locating the person?

How we solved this problem:

Our device uses an ESP32, an MPU6500, a buzzer, a Bluetooth device tracker and a battery pack. The device is housed inside a 3d printed plastic case which can be attached to a belt.

If the user falls, the MPU detects a sudden change in acceleration and the device starts beeping. This beeping continues for 60s and can be stopped by pressing a button telling the device the user is conscious after the fall.

If the user is unresponsive (no change in accelerometer readings), after 60s the beeping shifts to a longer beep at which the location of the user is sent to the application running on rescuers' device, and it allows them to set their location, generate a 3d map of the region and display a path to get to the user.

Given more time we would have included:

The program generates 3d plots via geotiff files, and these aren't available for all locations. It could be improved by having fallback to an algorithm generating 3d maps through contour plots as they are generally more readily available.

Currently, the device doesn't have a functioning long range radio communication with the application and instead the location is just sent via bluetooth (short range) to a third party app and manually typed in the application. This would be fixed by making a fully functional long range radio sender and receiver system.

Test Objectives:

1. Device easily attached to the belt and secured by grips so it doesn't fall off with sudden movements.
2. Sudden change in acceleration cause beep to trigger and stops beeping if button pressed or continued movement after the beeping.
3. Application working as intended after receiving coordinates.

Test Results:

1. The grips worked as intended and the case didn't fall off however the cover of the opening through which we put the electronics was flapping around so had to be taped.
2. Sudden jerks caused beep to trigger but it only stopped with button press and wouldn't stop with continued movement, and the acceleration threshold in the code was too small that even tiny steps were triggering the beep.
3. The code for the app worked as intended.

Why trip was good:

I now realise snow gets quite wet as it was an issue to keep the wires completely dry especially the one connecting to the battery. The electronics were just in a 3d printed box with holes and considering it would be used in situations where you could even be under the snow, it makes more sense to use a sealed impermeable container.

Also, it would be better to use a box with a much smaller profile, just barely enough to fit the core electronics placed inside something like a Ziploc bag or envelop shape filled with anti-static foam. This is because the 3d printed big box is quite stiff and could damage the user if they fall directly on it. The bag could be sewn to a piece of clothing instead of attached to the belt.



Photos courtesy of CGCU

Track 2 – Xavier Goff (Design Engineering Year 1)

Problem tackled:

Delivering necessary payloads (food, thermal blankets, water) to people in need of rescue in extreme snow/ cold conditions. Specifically, the last ~800m of the journey when walking is too dangerous/ difficult.

How we solved this problem:

We made a Robot / Rover with the capability to drive autonomously and controller operated. The rover is designed to hold a 2-4kg payload in a sealed-off section. It uses a cytron motor driver, 2 pololu DC motors, an ESP 32 paired with a 12V battery as its control system architecture. The robot itself is designed to both withstand the cold, and wet conditions, being water tight and containing PVA foam as an insulator. The treads' width was calculated in order to guarantee minimal sinking in powdered snow. Additionally the parallelogram shape is designed to be able to continue staying above the snow as well as to enable it to tip without preventing its ability to drive.

Given more time we would have:

The current system is drivable from up to 1.4km away using long range radio signals, that being said it would be hard to see/drive properly across that distance. Due to this limitation I would've added a camera or some sort of vision that allowed the driver to see from the eyes of the robot and be able to drive from a further distance.

Additionally, there was a critical component that we later regretted not having that I had run out of time to add, this being a tensioner for one of the pulleys. This would reduce the likelihood of skipping when driving the treads.

Potential problems we predicted might come up:

Before going into testing we identified a variety of problems that could arise. Firstly we were worried about water getting into the robot through badly sealed parts, leading to a short and destroying our robot completely. What we did was order some silicon tubes that we applied at the intersections between the polycarbonate panels, applying extra to the zones where snow touched the robot. We were also concerned about the possibility of the robot sinking into powdered snow. In order to prevent this, we did extensive calculations and implemented a



safety factor to decide the width and therefore the surface area of the treads. Additionally we were worried about the treads not being tensioned properly with the pulleys, and skipping. Unfortunately I shrugged it off, feeling as though it would work just fine, and this was definitely a big learning point for me.

Test objectives:

1. Seeing if the robot sunk/slid on different types of ice/snow and different inclines.
2. Testing the electronics in cold conditions.
3. Will the robot drive.

Test results:

1. We found that the robot didn't sink in either powdered snow, or harder icy snow. Unfortunately though, on icy snow especially the robot did tend to slip even on manageable inclines.
2. During our various attempts to drive the robot we had little to no issues with the electronics, the ESP fid seemed to briefly turn off at one point but overall it worked well.
3. This part was particularly heart-breaking as it was so close to perfection. Two major problems arose that basically prevented the robot from properly driving, both of which most likely could have been foreseen. The first problem was the treads not actually sinking into icy snow, although it still would have worked if the second problem wasn't present. Regardless of the type of snow we drove on, the treads were slightly loose and ended up continuously skipping on the pulleys. This just led to the robot often barely moving or being stationary with the pulleys just rotating on their own.

What we should change based on test results:

Firstly and most importantly, adding a tensioner to the pulleys is essential. This could be done by either using a spring to apply force outwards on the treads, or by using an adjustable linkage that could be tightened.

Properly sealing everything making it fully water-tight.

Creating a hatch/window to access electronics, and furthermore mounting the antennae/electronics more effectively.

Creating a professional PCB for the robot, preventing disconnection due to bad soldering.

Not having the plows extend the entire length of the tread but instead have sections of plow spaced apart reducing surface area and increasing the likelihood of them sinking into the snow and providing traction.

Why the trip was beneficial:

Firstly, the trip was a blast. We got to do some really cool sightseeing, seeing Mont Blanc and getting to go up to the needle mountain. We got to do a mountain roller coaster which was a blast, and also the hotel and travel was very well planned.

The other side of the benefit had many aspects to it. Although I have done robotics my whole life, I have never done anything electrical, focusing mostly on mechanical design. Being the person in the team to take it forward I was forced to learn the electronics and control system skills I needed. I improved at soldering, electronic architecture and vibecoding. I also learned a lot from the testing itself, I reminded myself of the importance of proper tensioning. I also think due to the tests, I will now take convenience more into account during my design process. Things like adding a window to work on electronics in the snow if something goes wrong, or even things like adding ways to carry it better. These are things I kind of waved aside while CADing, but I think it would've been very beneficial if I had thought more about it.

If it were to happen again though, I would go earlier when there is more snow near the hotel. It would make testing much easier and prevent carrying it all for a long time (which was extremely difficult by the end of it).

Track 3 – Ved Pahariya (Civil Engineering Year 1)

Problem tackled:

Maintaining a safe and stable body temperature in extreme cold environments is really important, especially for people who have to spend long periods in freezing conditions. Without some kind of active regulation, body temperature can drop quickly, raising the risk of hypothermia, reduced performance, and in serious cases, life-threatening situations. The existing solutions, like basic passive insulation or simple heated clothing, just don't adapt to what the user's body actually needs in real time.



How we solved this problem:

We built a device that actively regulates body temperature using an Arduino Nano microcontroller, multiple temperature sensors, heating pads, and MOSFETs to control the power. We placed temperature sensors at key spots like the chest and underarm to keep track of the user's thermal state. The system reads that data and, based on set thresholds, turns on heating pads in different zones of the vest exactly when and where they're needed.

To make it safer and more comfortable, we added PWM control so the heating ramps up gradually instead of blasting on suddenly. We also used different temperature thresholds for various body regions to focus on warming the core first, plus a safety cutoff that shuts everything off if temperatures get too high. This gives us responsive, zoned heating instead of just blasting constant power all the time.

Given more time we would have included:

If we had more time, we would have added a proper closed-loop control system for much more precise temperature regulation. We also wanted to do better sensor calibration and test different placements to make sure we were getting accurate body temperature readings. A more robust power system with cold-resistant batteries would have helped a lot for consistent performance in low temperatures. Wireless connectivity for data logging and remote monitoring, plus a much cleaner enclosure and wiring layout, would have improved both durability and comfort.

Potential problems we predicted might come up:

We knew there could be uneven heating because of differences in sensor placement and how well they contact the body. Power limitations in the cold could reduce battery efficiency, and we worried about electrical reliability with all the connections and soldered joints. False readings from external environmental factors instead of actual body temperature were another concern, along with the risk of overheating if the control logic failed. That's why we made sure to build in strong safety cutoffs.

Test Objectives:

We set out to:

1. Check that the temperature sensors gave consistent and reasonable readings.
2. Confirm that the heating pads turned on correctly when the temperature thresholds were hit.
3. See if the system could actually maintain or raise temperature under cold conditions.

Test Results:

The sensor readings were generally responsive, but we saw some inconsistencies depending on exactly where we placed them and how well they stayed in contact with the body. This showed us we definitely need better calibration and positioning.

The heating pads did activate based on the thresholds, though some zones worked more reliably than others because of small differences in wiring and control.

The system was able to generate heat, but power delivery felt inconsistent when we switched to battery power compared to a stable wired supply, which highlighted the limitations in our power setup.

Why the trip was beneficial:

This project gave me a huge amount of real-world insight into how hard it can be to take a theoretical design and turn it into something that actually works in practice. While the idea of controlled heating sounds pretty straightforward on paper, building it revealed all sorts of practical engineering challenges around electronics integration, power management, and overall system reliability.

The whole development and testing process really drove home the value of iterative design. We had to troubleshoot, replace, or redesign multiple components along the way, whether it was sensors, power delivery, or circuit stability.

It taught me the importance of being resilient and adaptable when things don't go exactly as planned. Working under tight time constraints and with limited resources also sharpened my ability to prioritise and make practical decisions, focusing on getting a working prototype rather than chasing perfection.

On top of that, it showed me how mechanical, electrical, and software engineering all have to come together to create one cohesive system.

Overall, the project really boosted my problem-solving skills, gave me a lot more technical confidence, and helped me see how to apply engineering principles in messy, unpredictable real-world situations. It was genuinely valuable.

AI – Paying the entropy bill

AI is sold to us as weightless. The Second Law begs to differ, and engineers are unusually well placed to send the invoice. A thought-provoking item by Barney Rhys Jones (Civ Eng 1994), Head of Data and Technology at Octopus Energy Generation, and Senior Vice President of CGCA.

Order is never free.

Most of us first met that idea in a first-year thermodynamics lecture, at an hour better suited to sleep. We filed it with everything else learnt for an exam. I left engineering proper long ago for the messy business of changing how organisations work, which these days means renewable energy and a great deal of data. Of the many things South Kensington taught me, that lecture has proved a most serviceable lens for thinking about technology.

The Second Law has no interest in hype. Create order in one place and the universe invoices you elsewhere, often with interest. A trained model is order of a peculiarly concentrated kind: pattern teased out of noise, structure wrung from chaos. The bill is settled in heat rejected from cooling towers, electricity drawn from regional grids and water evaporated into the air. None of it appears on the launch slide.

A weightless cloud of considerable mass

The technology industry has long cultivated the notion that computing is weightless. "The cloud" is a masterpiece of branding: soft, distant, faintly celestial and free. Walk into a hyperscale facility and the conceit evaporates faster than the cooling water: fan arrays, transformers and row upon row of liquid-cooled GPUs at power densities that would have seemed fanciful a decade ago.

The figures have begun to catch up with the marketing department. The International Energy Agency puts data-centre electricity use at around 415 TWh in 2024, roughly 1.5% of global demand, and expects it to more than double to around 945 TWh by 2030. That is a little more than Japan uses in a year. Google's latest environmental report puts its emissions 81% above its 2019 baseline, with its own sustainability chief conceding that the AI build-out is outpacing the decarbonisation of the grid.

Nor is this someone else's problem. Every time one of us asks a chatbot to draft an email we could have written in the time it took to type the prompt, a cooling tower somewhere sheds a little more water. Multiply that by a few billion requests a day and the total stops being trivial.

All of which raises a rather old-fashioned engineering question. Is the intelligence worth the bill?

Neither angel nor arsonist

Public debate has settled, as it tends to, into two camps: AI will deliver us from climate change, or AI is pouring petrol on it. Both make stirring headlines; neither survives much contact with how systems behave.

I find it more useful to think of AI as an amplifier. It magnifies whatever incentives, habits and infrastructure it happens to be wired into. Turn the most capable computing ever built on synthetic clickbait and advertising optimisation, and you have contrived an extraordinarily expensive way of warming the atmosphere. Turn it on the physical friction of industry, grids and buildings, and the arithmetic looks a good deal more respectable.

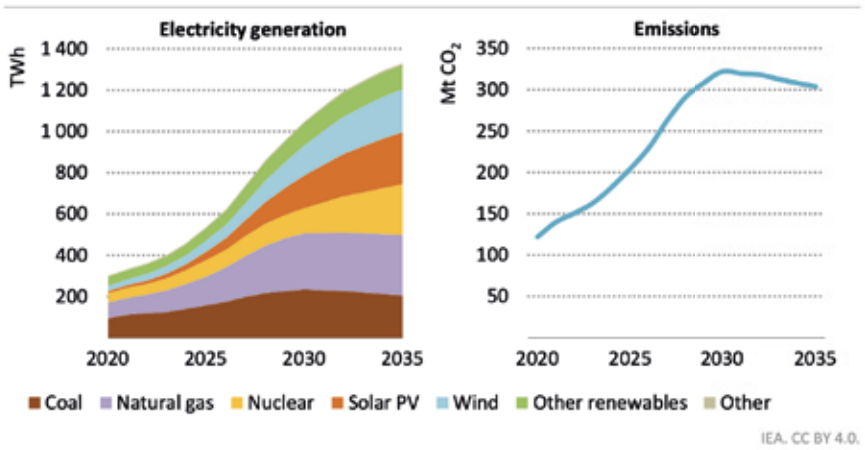
That suggests a test, and a thermodynamic one at that. For AI to justify itself, it has to save more energy across the wider economy than it consumes in compute. Intelligence ought to pay its own entropy bill.

Nobody, as far as I can tell, has yet drawn up that ledger. The consumption is concentrated, growing and increasingly reported. The savings are scattered across thousands of plants, substations and office blocks, measured inconsistently or not at all. Until somebody balances the books, the claim that AI is good for the climate remains an act of faith, which is a curious position for a profession built on measurement.

There is, at least, evidence for the credit side.

Where the bill gets paid

The grid. A new transmission line in Britain takes twelve to fourteen years from conception to energisation, according to the government's own electricity networks commissioner, and most of that is spent in the purgatory of consents, not construction. Meanwhile, existing lines are rated on worst-case assumptions about the weather. Dynamic line rating replaces those assumptions with live sensing and can safely coax 10-30% more capacity out of wires already strung between pylons. Wind and sunshine are notoriously indifferent to the needs of a control room, but DeepMind's work on Google's wind fleet, predicting output 36 hours ahead, lifted the value of that energy by around 20%. Every gain in prediction means less gas idling in reserve as insurance against a bad guess.



Global electricity generation for data centres and the associated CO_2 emissions, 2020-2035 – Source: Energy and AI, IEA, 2025

Industry. Heavy industry is where the joules are. Whole-plant optimisation considers chillers, pumps and furnaces together instead of fettling each in isolation, and sometimes reaches conclusions that offend engineering instinct, such as running more chillers at lower load. In steel and cement the gains are humbler, a few per cent at a time, but a few per cent of a blast furnace is no small quantity of gas. Predictive maintenance, meanwhile, spots the failing bearing before it becomes a weekend callout.

Buildings. Buildings account for around a third of final energy use, and a good many still run on timetables set years ago by someone long since departed. Controls that learn how a building gains and sheds heat, and respond to weather, occupancy and grid carbon intensity, typically trim HVAC energy by 10-30%.

The same techniques route ships around storms and find methane leaks in satellite imagery far faster than anyone with a clipboard. None of it is glamorous, which may be why it gets so little airtime.

My own industry is hardly blameless. While the technology sector has been busy selling weightlessness, the energy sector presided over a grid connection queue so long that some projects were offered dates in the late 2030s. AI did not create that inertia and will not cure it alone, but it does make an extra 20% from existing wires look decidedly attractive.

The data centres, since you ask

None of which lets data centres off the hook. What has shifted is the expectation. They have long behaved as the grid's most demanding tenant, insisting on a flat 99.999% supply whatever the rest of the system is doing. The more interesting proposition is that they might become good neighbours.

Part of that is elementary thermodynamics: waste heat is still heat. Meta's data centre in Odense already pipes it into the town's district heating rather than venting it to the sky, and Microsoft and Fortum are building the same in Finland, aiming eventually to supply around 40% of the Helsinki region's network. Part of it is timing. Training runs and batch analytics have no pressing need to happen this instant, and can follow the wind to wherever clean power is abundant, including hours when it is being curtailed for want of anywhere to send it.

Then there is the small matter of candour. Buying annual renewable certificates to cover fossil power drawn at 3am on a still January night is accounting, not physics: a fig leaf with a spreadsheet attached. Hourly matching against local clean generation is harder and far more revealing, which may explain its leisurely adoption.

Hovering over all of it is the ghost of William Stanley Jevons, who observed in 1865 that more efficient steam engines led Britain to burn more coal, not less. Make computing cheaper and we will cheerfully do more of it. Efficiency on its own has a poor record of bending demand; that usually takes structure and a price signal.

Match, meter, move

The heaviest lifting falls to those who build and run the machinery: the hyperscalers, the model developers and the utilities that connect them. For them, it comes down to three verbs.

Match. Pair compute with clean power hour by hour, not once a year on a spreadsheet.

Meter. Measure the whole footprint: electricity, water, energy per query and the carbon embodied in the hardware. What goes unmeasured tends to go unmanaged, and what is managed by press release is seldom measured at all.

Move. Shift workloads in time and place to follow clean supply, and price carbon into compute so the incentives point the right way.

The question for the rest of us

Most organisations will never optimise a blast furnace or bid a data centre into a balancing market. Their AI arrives as a subscription, and its energy bill is settled in someone else's building, filed under Scope 3 and safely out of sight. That doesn't put them beyond the reach of the Second Law. It just changes where their influence lies.

The first lever is purchasing. Buyers make markets. A decade ago few



Photo: Denny Franzkowiak

Google concedes that AI build-out outpaces the decarbonisation of the grid

procurement teams asked suppliers about modern slavery or embodied carbon; now most do, and suppliers have had to find answers. The same could happen here. Where does this run? How much of it is matched hourly with clean power? What does a query cost in energy and water? Providers that can answer will be glad to. Those that can't will tell you something by their silence.

The second lever is restraint. Sending every trivial task to the largest model available is the computational equivalent of heating the kitchen by leaving the oven door open. Smaller, task-specific models are often good enough, at a fraction of the energy.

The harder question concerns entropy of a different kind. Most organisations are not using AI to save energy. They are using it to produce more: more emails, more slides, more reports, more summaries of reports. Claude Shannon would recognise the problem, since information is only worth the uncertainty it removes. A tool that helps a team reach a better decision sooner is creating order. A tool that triples the volume of documents nobody reads is manufacturing disorder on an industrial scale, at machine speed, and paying the electricity bill for the privilege.

So here is a question worth taking into Monday's meeting: is our AI creating order, or merely output? I suspect most organisations, mine included, would struggle to answer with any confidence.

The engineer's question

I spend a fair amount of my working life in organisations where the AI conversation and the grid conversation happen on different floors. Upstairs it is models and agents. Downstairs it is connection queues, constraint payments and curtailment. Occasionally somebody wanders between the two, and in my experience that is when things get interesting.

That gap is where engineers have always proved their worth, usually by asking the question nobody on the conference circuit wants to hear: what does this cost in joules, and what does it buy? The profession has a long habit of taking physical laws that brook no negotiation and building systems to work within them. It has an equally long, and entirely healthy, scepticism of anyone claiming to have found a way around them.

AI will not be the first technology to be oversold, nor the last. Pointed at the right problems, it may yet prove one of the more useful. Whether it settles its entropy bill will not be decided on a stage in San Francisco. It will be decided in substations, control rooms and design reviews, by people who are inclined to actually read the meter.



Photo: Anna Zima

Typical data centre exterior with cooling and ventilation pipes

A note on method

This column went through some forty AI-supported rounds before it reached you. It began last year as preparation for a Bain Alumni panel, "AI: Angel or Arsonist?". For that I gathered around 150 pieces of evidence into NotebookLM and argued with them, with ChatGPT as sparring partner. I then had the tools generate a podcast in which two synthetic hosts took opposing sides. Listening to it, as one might a radio programme, is where the amplifier idea and the entropy bill first surfaced specifically driven from my experience of regulation in the energy sector. (Pressed at the end of the panel, I owned up to being an optimist about which way the amplifier points: a humanist's prerogative.) From there I built the case and the evidence behind it. I worked the draft through several passes with Claude to widen its scope, test facts against primary sources and bring the prose in line my own voice and register (with better spelling). The fact-check caught two claims that were out of date.

Left to its own devices, AI [silently] (insert tearing hair out emoji) tends towards middle of the road, low-insight prose, and a good deal of what now crowds the online landscape 'noisily' proves the point. What it does well is put evidence and threads in front of a person quickly. The spark of an idea, the tone, and the small quirks that make a piece connect still have to come from whoever is holding the pen and putting their name to it. I am also conscious that these tools were built partly from other people's sweat, without their leave. That bill also remains outstanding.

The Triodes 59th Reunion

Saturday the 16th of May 2026, Imperial's Triodes (Electricals graduating in 1973, or thereabouts) held their 59th reunion at the 568 Bar in the Union Building in Beit Quad.

Called 'Triodes', because 'tri' or 'tria' is Greek for three, they graduated in a year ending in three and, of course, a triode is an electrical device. This was their 59th reunion even though it is only 53 years since their graduation because in some years they had more than one reunion. 19 Triodes attended, as shown in the photograph taken outside the Union building:



Back row, L to R: Peter Marlow, Pat Mason, Tony Danks, Graham Castellano, Nick Hiscock, Rut Patel, Alice Spain, Richard Lewis, Surinder Sandu, Sid Seth, Hugh Culverhouse, Jay Yiakoumetti.
Front row, L to R: Martyn Hart, Caroline Danks, Dave Mansfield, Liz Mansfield, Joan Clemow, Peter Wright, Martin Clemow.

The effects of getting old were a common discussion amongst us all. Not just medical, although we are experts at that, or grandparenting, as many are bringing up our children's kids, but the seeming lack of expertise in general. Some of us are still working and finding that both customers and suppliers don't have the expertise in their fields that they used to. Our truly retired members say it is difficult to get answers, not just technically but generally, from insurance to DIY. It's as if actual expertise has been replaced by a veneer of knowledge with "experts" who don't actually know their subject. A veneer perhaps based on a little knowledge and access to Google or AI?

Maybe every generation thinks that about the generations below? Time will tell of course, meanwhile I guess that we should be pleased that out of our cohort of 100 or so students from 1970 to 73, we are actually able to enjoy our reunion!

Hopefully even more of us will be able to join in our 60th reunion on Saturday 15th of May 2027, same place, same time (12 noon) and now Professor Cheung says he will definitely be buying!

Best wishes

Martyn, Arch Triode

News from those who attended:

New Triode: **Surinder Sandhu**

Surinder was unaware of the Triodes' existence until very recently. He says that had he joined us much earlier he wouldn't have had the great difficulty he was having trying to recognise everyone! It has been some 50 years since he last saw us and we were all teenagers then! He tried as hard as he could, alas he could not fit the faces he knew from student days to what he was seeing at the reunion. Nevertheless, he enjoyed the meeting and he is looking forward to next year's.

When Sandhu left Imperial, he went to work for Lucas CAV in Acton, specialising in automotive electronics design for about 10 years. Then he joined a company specialising in standby power (UPS) systems, Emerson Power Systems, later moved to Pillar Power Systems, and finally retired from the industry with Victron Power Systems.

Graham Castellano

Graham's last year has been mainly a continuation of activities from the previous year, taken up with volunteering at Repair Cafe, continuing to walk with the 'Senior Strollers' group of local friends and trying to keep the metal part of his Solo dinghy above the water at all times. The frequent trips to Somerset to look after 2 grandsons have reduced this year as they are both now of school age, but this has been replaced with the addition of a granddaughter who is local, and gets even more attention since she is the only female offspring anywhere in his family tree for many years! Holidays last year have included Spain and French skiing, and he is looking forward to visits to Albania, Anglesey and more French skiing this coming year.

Joan Clemow

Joan looked very well and obviously has recovered from her previous illness. She still has her grandparent duties which keep her very busy.

Martin Clemow

Martin has sold the house in France and so should have plenty of spare time, but he thinks he simply spends more time considering what he should be doing! He is often helping others ('now you're retired'!), including most of the maintenance at the Wookey Hole Social Club, where he is a trustee. He also takes about 30 cars, belonging to friends and family, for their MOTs each year. He says he's come to know the garage mechanics very well!

As for his own cars, Martin now has two MGCs, one on the road, and one completely stripped, waiting for restoration. He is currently rebuilding his 1962 Mk1 Mini. He built his first Mini when he was at college and still has all the documents, so this makes the current rebuild a bit easier. It's also a reminder of what life was like in 1973!

Then there are grandchildren; Martin's oldest is doing his A levels and hoping to go to uni next year. The next is learning to drive and yes, his grandpa has been volunteered to take him out to get plenty of practice! His fifteen-year-old has been introduced to Motorsport and is excelling himself, coming second in a class of fourteen at his last event. The youngest is Martin's only granddaughter and she has been selected to represent her area Scouts at the World Jamboree in Poland next year. This means that she has the task of raising a considerable amount of money to pay for the trip.

Everyone says it doesn't seem possible how fast grandchildren grow up but Martin thinks it's good that his all lead very busy lives and do not spend all day looking at their phones or other screens.

Hugh Culverhouse

Hugh is slowly getting used to having only one leg and is trying to do a few normal things in life again. He uses his crutches for walking and, after over 50 years of "training", this is no big hardship. On the other hand, using his very cumbersome (due to there being no pelvic bone left either) prosthetic leg is just not realistic without permanent help.

He is trying to walk a bit faster and further on his peglegs, as well as trying to get used to his self-built but wobbly four-wheeled bicycle (standard bike plus two stabiliser wheels).

Things are not like in the past, but after his brush with cancer, he is happy to be still around and able to do anything slightly sporty! He also holds great value on meeting up with friends like our Triodes group. At our reunion he said "I need a challenge! I can walk but cannot cycle fast or run fast anymore. So, any other ideas?"

Caroline and Tony Danks

Caroline says that having graduated in Electrical Engineering at Imperial, she is now working with energy fields in a completely different way, in and around the human body, using techniques developed by Dr Jeff Levin called 'Life Alignment'. She says that this has helped her heal herself and others in a profound way: an ongoing process! She and her husband Tony also enjoy geocaching and she has taken up beekeeping in the last year. She adds that there is always something new to discover!

Martyn Hart

Martyn is still slaving on the Parish Council (he actually got extra buses on the local routes and is plotting for more), working on a community energy project and a community shed! So basically, as busy as ever! He still gets some time to see his son in North Carolina and continues thinking about his Noise Cloaking project – maybe one day it will work!

Nick Hiscock

Nick remains very busy as Rear Commodore House of the 1300 member Warsash Sailing Club until November when he hands over the baton. His major remit is keeping the club's properties and facilities operating – if you need advice on troublesome lifts, 3-phase water heating, jetties, slipways, massive flagpoles, or commercial kitchen equipment then Nick's your man! When he surfaces from that there is always the Church's technology to sort – a 14-microcontroller heating system, organ blower motors, sound systems, undertaker/bride arrival warning system, etc to name just a few. Marriage to Sheila is now two years in – she is still getting used to being spliced to an engineer! In his spare minutes Nick tries to give advice to his two daughters – one in academia looking for a way out, and the other a defence consultant balancing work against bringing up two young boys.

Richard Lewis

Richard said that he and his wife have spent a fair amount of time with their daughter's family and the grandkids. His daughter had moved to Kuwait in the autumn last year and they visited them

there. The family was back in the UK during the worst of the Iran crisis and have since returned to Kuwait.

In terms of projects, he has pretty well completed his green energy transition in the UK and France. At their house in France, he's added a 15kWh battery to the existing solar and air-to-air heat pump systems. So, they're in surplus there, running entirely on solar and selling the balance back to EDF. In the UK they've added an air-to-water heat pump to the existing solar/27kWh battery system and had the gas meter removed. He now expects a zero UK energy bill for the year despite everything now being electric and having two EVs.

Health-wise his Crohn's is now being managed by injection of a drug called Wezenla every two months. (Not to be confused with their fish called Wanda!)

Dave and Liz Mansfield

Dave is a full-time carer for Liz, whose Alzheimer's disease has unfortunately progressed significantly over the past 12 months. She seemed happy to be with us at the reunion though, probably because Dave was close to her all the time.

They had great Easter cruise to the Canary Islands and back (with their sons and grandchildren) and earlier in the year Dave (with his sister-in-law's help with respite caring) went to the Netherlands in his classic car, the Ronart W152, along with other members of the Ronart Car Club.

Patrick Mason

Pat said his past year had been a very enjoyable one in many ways. He has travelled, especially with a wine tour of the Southern Rhone & Provence, a winter break in Barbados and an annual trip to the Isles of Scilly. As is true for many of us, time with the grandchildren is a major (and joyful) priority, as is keeping on top of various health issues that plague our age group these days! Fifty years after breaking his left ankle and leg in a motorbike crash, the ankle has finally lost all cartilage so an operation beckons in July!

He is still spending a good deal of time overseeing the IT for the small international payments business in which he has a stake. He said he probably needs to find an acceptable way of extracting himself from the business at some stage – though many of our generation never seem to retire totally! Otherwise, village life is forever busy and, for his sins, he runs a local Wine Tasting Society of 75 oenophiles, which is a very sociable group as you may imagine!

Peter Marlow

Peter told us that he now has 3 grandchildren (7, 5 and 1) and he is spending a lot of time (and energy) with wife Sally chasing them around!

Last summer they travelled on the Glacier Express and walked in Provence around the amazing Pont du Gard.

He is still singing in a chamber choir performing around the Cotswolds and he really is enjoying being a trustee of the Inland Waterways Association as well as being Treasurer of his local parish church.

Rut Patel

Rut has had a very busy time travelling during the year. He started off in Athens with a visit to the Acropolis in sweltering 38C heat! Then on to Spain for his nephew's wedding in A Coruna in Northwest Spain. After that it was to Porto in Portugal and plenty of wine tasting. The scenery in the city was awesome with cable car rides, river cruise and the iconic bridge.

In October/November he visited India for a whole month. He travelled to Delhi for a few days and managed to watch India play West Indies in a Test match. Then onto Rishikesh, where Beatles studied Transcendental Meditation, and a dip in the holy Ganges River. His next destination was Kerala and he stayed in a lavish houseboat whilst visiting tea and spice plantations. Finally in Tamil Nadu he visited Kanyakumari which is the southernmost city in India. He was able to see sunrise and sunset here which was a unique experience.

He added that the most heartening occasion for the year was the mini-London marathon in April this year where his two granddaughters participated for charity. They chose Cancer Research for their charity as their grandad had cancer and survived to this day through strength and resilience. The girls made a difference by raising in excess of one thousand pounds.

Sid Seth

Sid said he is still working on using AI to help him with various challenges and he is intending to create some apps using AI soon. His son will be married in an Indian palace in Rajasthan in December and he has another lovely grandchild – retirement is great!

Alice Spain

Alice had just returned from walking the length of Hadrian's Wall, taking five days to walk the 84 miles. She said that this was her first step in preparing for a trek to Everest Base Camp in October. It's a charity challenge and she has set up a Just Giving page: https://bit.ly/IE45-Alice

She successfully completed the Inca Trail to Machu Picchu in 2004 which included the risk of altitude sickness, but Everest Base Camp is rather higher – and of course Alice is rather older!

As regular readers will remember, Alice started a restoration project on an old rectory in Norfolk in 2014. The COVID epidemic in 2020 interrupted the house part of the project but making a Victorian garden (including a maze) is broadly complete. Work on the house restarted about a year ago and they installed two wood-burners which made a huge difference to the temperature (and dampness) during the winter. They're currently restoring the top floor, levelling a drop of about six inches in the middle and installing insulation. When Alice and partner moved here, most of their 'stuff' went up there for storage so they're having a mega sort-out of dusty relics. Cough, cough!

Peter Wright

Peter said he is still walking many more than 2,000 miles per year, he does much of this with Peter Marlow, around London and environs (Capital Ring, etc).

On a "work" front, he is managing his Scout HQ building and is a District Scouting Trustee, acting as Secretary and assistant Treasurer. He is developing some expertise in the QuickBooks accounting package (where he finds that accountants seem to think quite differently to "normal" people).

For fun, Peter plays with his Raspberry Pico W processors, LiPo chargers, ePaper display drivers, and CircuitPython, plus, of course, MySQL. He is also the Group Leader for his local U3A Philosophy group. A busy bee indeed!

Jay Yiakoumetti

Jay told us that, after a few years' work, his planned photovoltaic project in Cyprus was rejected by the Electricity Authority of Cyprus. They said that they did not have capacity in the area to connect the park, even though it was a small one generating just 1MW. Another problem was that the nearby Sovereign Base Area authorities said it would disturb the cows in an adjoining cattle farm. He's not sure if they meant "cows", they might have meant "signals" because Jay's solar farm was 15,000 square metres and lay within the Eastern British Base of Cyprus, near the Ayios Nicolaos signals facility. (This base provides prime interception capabilities for monitoring communications across the Middle East, North Africa, and the Eastern Mediterranean region.)

Unfortunately, in April, Jay's wife, Kika, tripped on a raised paving and fractured her lumbar region resulting in five days in hospital. Since then, Jay has been busy supporting Kika's recovery, physio appointments, chauffeuring, shopping, etc. Fortunately, she is making good progress so far.

To add to all this, Jay needs to get up to speed with the new Renters' Rights Act and the relevant legislation as part of his role as director of Alphacube Properties.

News from those who couldn't attend:

Addy Adesara

Addy wasn't able to make it this year as he is an international hockey star (see more below).

He reports he is still working part-time in his manufacturing business though they have plans to sell the business this year.

He has had two hip replacements in last 12 years, but he still plays hockey. At present he can lay claim to be a current Wales International, with seven caps now. He knows this sounds a bit odd and Sheela, his other half, says they must have been desperate!

He played his first internation tournament last year for Wales (Masters – Over 70/75) in South Africa and they had a Home Nations Cup this year in North London. Wales played against Ireland on the 16th; Addy was on and contributed to Wales's 5–0 victory. Well done, Addy! He says if you want to support him, the Hockey Masters World Cup is coming up in Breda in August.

Finally, he notes that, at our age, hips and knees do need TLC but to all; just keep on going.

Antony Ardeman

Antony has been enjoying retirement, spending a lot of time on music projects, playing guitar and singing, where he enjoys using the Apple software Logic Pro. He is still playing and singing at various senior-living homes. He is also part of a 60s band and he recently started up in country music, which is looking and sounding very promising. He and his wife enjoy Ballroom and Latin dancing and they travel around the country entering competitions and having lessons.

He adds that. amongst all that's going on around the world at the moment, music and dancing are great ways to relax and try to think of positive things to do with one's life.

Geoff Banks

Unfortunately, Geoff has been struggling with walking for a couple of years due to the side effects of chemo, radiotherapy and prostate cancer medication.

Then in December 2025, he fell in the bathroom and broke his hip. He had to have surgery to replace the broken head of the femur. Happily, he is back on his feet now, but walking is still a big problem and he is currently managing with a walking rollator frame.

Peter Cheung

Peter continues to work nominally three days per week at Imperial but, in practice, almost full-time during term. He is mostly focussed on delivering teaching – currently teaching five modules in two departments – EEE and Design Engineering. Plus he continues to pursue his hobbies including woodwork and violin making. The most exciting thing he has done this past year was to create a new 4th year module for EEE to teach a class of students to go from design to silicon – a so called 'tapeout' class. Check out this link for details:

https://bit.ly/IE45-Tapeout

Peter says that his offer of a free lunch for anyone who comes and visits him at Imperial is still valid. So far, only Martyn has taken him up on this. We are getting old – so don't miss your opportunity!

Paul Cheung

Paul (who is Peter's older brother & better looking, he says), lives in Hong Kong (and offers to buy any Triode a lunch should they visit there). Although 'retired', is still involved in a number of Hong Kong University courses. He comes over to the UK for two months every year to see his children and grandchildren. He'll try and get over a bit earlier one year to join us at our reunion.

Jorge Gabrielczyk

Jorge says that one day he will gird up his loins and the rest of him and attend our reunion. But he couldn't this time. However, he is pleased to report that work on the Manor is proceeding, albeit at a snail's pace – their resident carpenter was run over by a Fedex courier in the local village car park in January (!) and is now growing a new stainless steel leg joint of some kind, the lack of growth is causing some delay. However, in June they will/should be starting work on the terrace at the back of the Manor. This is the last major work planned to be done on the fabric of the Manor itself, leaving the small 'outhouse' barn (housing boiler room, energy store, twin garages, and pellet production facility) as a "to do" starting next Spring.

Unfortunately, they still cannot accommodate visitors properly as the finishing work on the bedrooms is yet to do, but if anyone is up to sleeping on the floor in a sleeping bag, they have plenty of floor space and hot water! Should you be passing by, do look in.

Jorge is also pleased to report that, with his stalwart co-driver Nick, they started in the Spring Pomerania two-day off-road challenge event. This involved not only driving off-road (550 km, 95% off asphalt) but also a Land Rover G4 Challenge type physical activity. There were some 40 cars competing, with some very good competitors from Denmark and Germany. Despite the collective age of our team (driver, co-driver and car) being 185 years (the car is a 39-year-old Range Rover, extensively redesigned and rebuilt – you can work out the age of the crew), they managed a very credible 3rd place. There then followed two weeks rehab for all three!

Chris Giles

Chris reports that he has found vegetable growing a very stressful business and they have recently had two very intense hail storms, the first of which smashed all the onions to bits and damaged all sorts of other stuff. Chris was caught in the greenhouse at the time, and it was quite an experience. Luckily no glass was broken on his greenhouse, but several panes on his neighbour's were!

It's not all veg; he is still working part-time designing aviation fuel installations but is wondering if it is time to stop, as he finds himself muttering about how much better things were years ago and wondering whether young engineers actually know anything these days! To balance this, he still enjoys designing equipment for appreciative users.

Steve Glenn

Steve couldn't make it, apparently one of his nephews had bought a 20-acre smallholding in East Sussex and was having a housewarming that weekend. It includes a lake which Steve was looking forward to swimming in.

He added that his history studies continue. Also, he is involved in community work, trying to help the unfortunates of this world. Some people have very difficult lives he says. He is also enjoying his eight grandchildren, swimming, walking, his yellow MG Midget, and his recently acquired Frogeye Sprite. Plus, the local pubs, of course.

Tony Godber

Tony is still doing some consultancy work for various customers in the Australian rail industry. Hours worked this year have been less than last year for both personal and business-related reasons, but he's not complaining. A gradual slowdown will probably work better than an abrupt halt.

It seems that more grandchildren keep arriving – the seventh (fifth granddaughter) was born at 01:03 on Sunday 17th May – probably not very long after the reunion, given the seven-hour time difference. Grandchildren, Tony says, seem to have absorbed more of his time than the reduction in work hours! This also creates great uncertainty on when he should downsize from the family home.

However, Tony had a successful left knee replacement in early March, six years after the right knee. Recovery is almost complete and he is already feeling a lot better than before the surgery.

At this stage, he's not too sure how birthday celebrations affect his chances of attending a future reunion (they already have another May birthday) but hopefully he will get there at some stage.

Philip Harris

Phil was not able to attend this year as he and wife Lina were on holiday in Seville (bad planning he knows, but it was all booked some time ago).

Over the last year Lina and Phil have had a mostly quiet time, with a bit of work done on the house, a few short breaks away, and some visits to local theatres – classic musicals and Sixties music mostly! Phil had a hip replacement in October (after many years of putting up with osteoarthritis) and he's pleased to say it's been a success! His surgeon promised him a 'forget about it' hip and that's how it feels, great! He hopes that, after that, and the cataract operations early last year, he'll not need anything else changing!

Edward Hyams

Edward was with his family – he has three children and seven grandchildren – for a birthday celebration over the weekend, so he gave his apologies for not making it this year. (Actually, it was his 75th birthday.)

He still enjoys living close to London where he and his family can enjoy theatre, music, and art in abundance, plus all with free travel! They are also Saracens season ticket holders; he has found it a somewhat frustrating season but a glimmer of hope remains. He was particularly sad on the passing of Scott Hastings in May from Non-Hodgkins Lymphoma (NHL) which reminded Edward he is very fortunate to have been in remission from NHL for over 10 years. He remains aware that it is still very difficult to diagnose and he continues to do what he can to support the Lymphoma Action charity in improving the understanding of its symptoms.

On the "not doing much work" front, the past year has seen the successful but modest exit from the one remaining renewable energy business he has been actively involved with. He still supports a number of early-stage green-tech businesses – with mixed success. Sadly, somehow none have been IC spinouts.

He says that the UK seems to be very focused on 'rewiring Britain', which seems to him to be recreating the old to support the new. He is in a small minority who think there is a better way!

Sarfraz Khan

Sarfraz wrote that he would have loved to join the reunion but unfortunately the British High Commission is inclined to believe that he won't return to Pakistan, even though he returned home immediately after graduation and after every time he visited the UK over the years. That's bureaucracy!

After graduating, Sarfraz was an engineer with his local power utility, making power transformers. He has led a fairly active life. At Imperial he was in the college squash team and he continued with sports; first with tennis and then, when his knees started hurting, he switched to swimming. That was until last December when he swam but the water had the last laugh. He came down with pneumonia and that aggregated his chronic kidney disease. So now he is undergoing twice weekly dialysis.

As a child, when asked what he'd like to be as a grown up, his prompt reply was 'to be a grandfather' because Grandpa sleeps and gets up when he wants, doesn't go to school, and has no homework! 'I'm doing all of that, relaxing and spending time on my farm.'

Hari Singh

Hari is doing well and still playing a lot of golf, but his handicap has gone up a little. Other than the golf he spends a lot of time ferrying his grandson around, but that's also a lot of fun!

George Wloch

George wrote that a few years ago he became interested in crypto assets, which led to him setting up an MSc programme in Fintech at his local University of Greenwich. Then last autumn he delivered a set of lectures at a leading university in Muscat, which led to the Central Bank of Oman asking him to deliver an in-house course on cryptocurrencies this year. He couldn't join us because he had to fly to Muscat to deliver the course.

One Hundred Years of Links

In October 1926, Rip Mayer, John Millard, Bobbie Mayes and Percy Shelley decided they would quite enjoy a regular drink together on a Thursday. They had, one suspects, no grander plan at the start than a good time among people they liked. On Saturday 13 June 2026, over 200 of us sat down to dinner at Church House, Westminster, to see whether the habit had held. It had.

The day began where the club's story began. By mid-afternoon Links were gathering in Beit Quad for a pint with kindred spirits, and the atmosphere starting to build. Members elected across seven decades, from 1967 to this year's initiates, found each other in the sunshine. Some had not seen each other in decades. A few had never met at all, and that lasted about two minutes. This was a group of like-minded individuals from across the generations. Then came an open-top Routemaster ride through the city to Westminster, which is a good way to arrive at a hundredth birthday.

Church House did the rest. Round tables meant nobody was marooned at the end of a long row. Many members had asked either to catch up with old friends or to mix with other eras, and we were able to accommodate both. The room fell naturally into decades, and the conversation moved freely between them.

The City and Guilds College Association was with us. The Venerable Roger Preece, President of the CGCA, spoke on behalf of the guests of the Links and the representatives of our fellow tie clubs, and delivered a very well received grace.

The speeches were mostly short, partly because of the club's strong line in heckling. Faith Budge, Honorary Secretary, spoke for the current generation, and Chris Baker-Brian spoke for the Senior Committee. I had the privilege of MCing. We also heard from Dr Peter Cox, the senior member present, elected in 1967. When the oldest speak, all listen, and all were reminded how far the club has come in its outlook since it finally elected its first woman member in 2005.

We also heard from Links who could not be with us, with messages arriving from around the world. We raised a toast to absent friends, and to those who walked beside us and have gone before.

Around the speeches there was plenty to do. Photographs and memorabilia from the archives drew crowds. New club merchandise went home in a good many pockets. Members hunted for their own names on the chain, a tangible and unique reminder of our connection to 100 years of engineers. Then the mighty Jam Sandwich took the stage, and the dancing went on until throwing out time.

What stays with me is the feeling in the room: fellowship, and a strong desire to do more of it. Nobody was pining for 1926. People wanted to know what happens next, and how soon. Several said so before the coffee arrived.

The club's rule book gives us three purposes: friendship, functions, and the furtherance of the interests of the Club and of the Faculty of Engineering. Saturday suggests we are good at the first two. Many of us would like to get better at the third, working with the CGCA to help the next generation of engineers through the door we all walked through. Ideas are already being discussed, and if you are a Link or a friend of the club with time, skills or a view, we would love to hear from you.

A hundred years. Long may the Links Club flourish.

If you are a member we have lost touch with, please get in touch via shellard@links-100.com. We will be delighted to reconnect you with old friends and share details of upcoming events.

Barney Rhys Jones (1993)
Honorary Senior Treasurer
The Links Club







MC Barney



Photos by Booker Zhang (Instagram @redman.booker) and PhotoSoc


100
YEARS
OF
EXCELLENCE
C
CLUB

Record-breaking philanthropic support

Imperial raised over £97.5 million in philanthropic donations between August 2025 and July 2026, marking the highest fundraising total the university has received in a single financial year. This remarkable support is removing barriers for talented students, powering groundbreaking research and creating state-of-the-art facilities.

Philanthropy helps create scholarships and contribute to student support initiatives that provide life-changing opportunities for exceptional students. With over £15 million donated for student support in the 2025–2026 financial year, Imperial continues to open its doors to the most talented students around the world.

Scholarships help build a diverse student body of high-achieving students, no matter where they come from or their financial circumstances. A generous donation from the Qube Research & Technologies will create more than 20 full scholarships for PhD students, fostering a global talent pipeline in computer science, as well as establishing the new Imperial x QRT Labs within the Department of Computing.

Initiatives such as the President's PhD Scholarships – a prestigious programme that seeks to reward exceptional candidates with strong research potential and academic records regardless of nationality – contribute to a student's success, giving them all the resources and opportunities they need to maximise their potential.

To solve some of the most urgent challenges of the 21st century, Imperial is adopting a convergence science approach – a radically new way of advancing science by integrating disciplines, convening cross-sectoral partnerships and developing new modes of research to accelerate solutions that benefit communities worldwide. With over £44 million donated in the last financial year to advance research initiatives, philanthropy plays an important part in Imperial's ability to do just that. Some of the most significant gifts Imperial received in the 2025–26 financial year have allowed researchers to strengthen healthcare systems and explore new interventions, including:

- A generous donation from the Institute of Philanthropy has created a new Professorship in Health Emergencies, who will join the team at the Fleming Initiative in tackling the threat of antimicrobial resistance globally.
- A transformational gift from The Cadogan Charity will support the next decade of mental healthcare research at the Imperial Centre for Interventional Psychiatry and Psychedelic Research.
- Support from Community Jameel for Imperial's Centre for Paediatric Blast Injury Studies will focus on the urgent medical and rehabilitation needs of children in Gaza, improving standards of care for survivors, and strengthening first-response capacity in conflict settings.

Philanthropy also contributes to establishing the spaces and platforms for researchers and scientists to come together and address some of the greatest challenges of our time. This includes a transformative £11.34 million gift from The Michael Uren Foundation, which will create a new controlled environment research facility at Imperial's Silwood Park Campus, which will allow researchers to recreate any environment and study bio-organisms in their natural habitat, improving understanding of how climate change impacts living organisms – knowledge which is crucial to creating informed policies that protect the planet, nature and people globally.

Imperial's alumni community plays an important role in the university's success and achievements, as alumni make up more than 80% of the donors who gave in the last financial year. In addition to donating close to £9 million collectively, Imperial alumni also gave their time and expertise through volunteering: supporting student recruitment and outreach programmes, mentoring students and contributing to international events.

Imperial's success this year was made possible thanks to the entire Imperial community, from the generosity of donors and alumni volunteers to academic and professional staff. At a time when Imperial is looking to increase the impact of science and research for society's benefit, philanthropy is pivotal to the scientific progress the world so urgently needs.

https://dub.sh/IE45-Philanthropy

A dedicated teacher, empathetic colleague and playful spirit

Dr JOHN C. ALLWRIGHT (Elec Eng 1961-64, 65-69)

John graduated from the Electrical and Electronic Engineering Department with first-class honours in 1964, completed his PhD in Control Systems in 1969 and joined Imperial as a lecturer that same year. He later helped establish the Department of Computing and Control before returning to Electrical and Electronic Engineering.

A Senior Lecturer from 1981 until his retirement in 2009, he remained an Honorary Senior Lecturer.

John died on 11 August 2026.

Those who knew him remember a gentle, kind, and funny man. His connection with Imperial spanned more than six decades, and he is remembered warmly by former students and colleagues.

One such colleague, and friend, Richard Vinter, wrote:

"John Allwright was an Imperial College man through and through. It almost seemed that his association with Imperial was for him a life's calling. He was an undergraduate and then a PhD student at the College and, after obtaining his doctorate, he was a Lecturer (later Senior Lecturer) at the College for his entire career.

His close and happy marriage to Christine also has an Imperial connection, since they met as colleagues in the Electrical Engineering Department.

For much of his career, John was part of the Control Group





in Electrical Engineering. The group stood out internationally for the quality of its research and, naturally, the Big Beasts in the group such as its (rather intimidating) leader David Mayne, intent on their next big research breakthrough, took the limelight.

John could hold his own as a scholar and his publications include a prize-winning paper. But he was a valued member of the group also because he added a gentler, more human, side to the group environment; he was sensitive, empathetic and put people at their ease.

John was a dedicated teacher who stood out for the meticulousness of his lecture preparation and for the care he accorded to the many students he supervised at undergraduate, MSc and PhD level.

He showed similar dedication in the way he exercised demanding and time-consuming managerial responsibilities, as Director of the Control Systems MSc course and Exam Coordinator.

John had a delightful playful side. He liked to waylay colleagues, to share a favourite joke and he was a whole-hearted participant in community activities aimed at bringing people together and creating a welcoming atmosphere.

There was one occasion when John organised the dinner for a Group workshop. He chose a venue with Shakespearian-themed entertainment including a jester brandishing a pig's bladder. This certainly had the desired effect, breaking down the inhibitions of his more po-faced colleagues!

He will be remembered by generations of students and co-workers, for his warmth, support and for bringing a smile to their lives."

A proud alumnus of Imperial and a man of very strong integrity

WOLF DEANE (CIVIL ENG 1951-55)



Wolf in England, in 1950

Wolf was born in Lodz, Poland on 3 September, 1925. He was a Holocaust survivor, against all odds, and tragically lost his parents during World War 2.

He courageously restarted his life after the war as a refugee, completing his schooling in Israel at night while working as a labourer during the day.

He was driven to honour his parents' wishes to complete a university education and although it was an onerous process, and still relying on English as his fifth language, he was accepted into Imperial College in London to study a Civil Engineering degree, in 1950.

Graduating with honours in 1955, Wolf became a Life Member of CGCA.

Following the completion of his degree, he migrated to Australia. At that time, there was a shortage of engineers in Australia and it also provided the opportunity to reunite with a first cousin, one of his few remaining relatives, who was living in Melbourne.

Initially, Wolf was employed at BHP, working in Port Kembla, near Wollongong in regional New South Wales, for two years, as part of a team building a bridge on the main highway between Wollongong and Sydney.

He permanently settled in Melbourne in 1957, getting a job in the design and drawing office at the Commonwealth Department of Works. There he became friends with an English engineer and together they acquired a structural steel fabrication business named Master Steel. He was very proud to have become a partner in his own business. He was involved in some significant and iconic projects, including providing structural steel for the famous Sidney Myer Music Bowl, wheat silos throughout regional Victoria and a spectator stand at the Collingwood Football Club (Australian Rules).

He sold Master Steel to set up a building company in the mid-1970s and was subsequently involved in the construction of numerous factories, warehouses and office buildings across Melbourne until his retirement.

He had a reputation amongst the business community, as well as his many friends, as a man of very strong integrity and loyal to a tee.

Wolf was involved in several philanthropic and charitable pursuits throughout his latter years and was very proud of his family. He ultimately felt fulfilled and blessed to have married his dear wife, Asya, in 1961 and subsequently created a family. He and Asya had a son and daughter and eventually four grandchildren to whom he was devoted.



Wolf (at left) on the highway bridge in Wollongong in 1957

Wolf was very proud to be an alumnus of Imperial College and returned for a number of reunions. He maintained close friendships with his fellow students, in particular Mike Phipps, even though they lived on opposite sides of the world.

Wolf was an inspiration to his family and had a positive and long-lasting impact on so many people.

He died on 25 June, 2026 and is dearly missed, but his family is comforted in the thought that he has been reunited with his dear parents.

Wolf is forever in our hearts.

With thanks to
Wolf's son,
John Deane



Wolf at home in May 2026, standing next to his portrait in which he is proudly wearing an Imperial College jacket

A gentle but forceful voice who spoke honestly to power

DR PETER CLAY
Department of Chemical Engineering.

A stalwart of Imperial College London fondly described as "a gentle, learned man with a giving, kind heart" has died, aged 92.

Former colleagues and students have paid warm respects to Dr Peter Clay, a genial Geordie with a love of unspoilt pubs and a keen interest in aviation and military history, who devoted more than three decades of his working life to the Department of Chemical Engineering.

The tributes were led by Professor Omar Matar, Head of the Department of Chemical Engineering. He said: "I remember Peter as a caring teacher, a supportive colleague, and, above all, a truly kind person. He touched the lives of so many through his generosity, wisdom and unwavering positivity. His legacy lives on in the colleagues he inspired and the countless students who benefited from his exceptional teaching and experience."

Brian Bennett, who joined Imperial's Nuclear Technology group as scientific officer in 1965 and worked with Peter for more than 30 years, called him "one of the most affable academics, dedicated to his students, always patient and encouraging."

Emeritus Professor of Chemical Engineering, Stephen Richardson said: "Peter, like his colleague Mike Carabine, was one of the old school of totally dedicated academic staff who could always be relied upon. They were never flashy - they just got on with things and did them really well."

Peter Gillis Clay was born in 1934, one of the six children of Mary (nee Clazie), a housewife, and Bob, a merchant seaman. His lifelong fascination with science began with childhood experiments conducted on the kitchen table at home in North Shields, using chemicals bought with his pocket money from the local pharmacy. After excelling at Tynemouth High School, Peter studied at King's College, University of Durham, which later became Newcastle University. He graduated with a first-class Chemistry degree and continued at King's as a postgraduate. His PhD – titled 'Action of ionising radiations on ethylene and acetylene in aqueous systems' – was supervised by pioneering radiation chemist, Professor Joseph Weiss, who had been an assistant to the Nobel Prize-winning scientist Fritz Haber. His viva was heard in 1959 by Professor Frederick Dainton, later Baron Dainton.

Peter left Tyneside in 1963 to join Imperial's Chemical Engineering department, which was then led by Professor Paul Ubbelohde. The new job suited him: he stayed put for 36 years. His research interests included radiation chemistry of aqueous solutions, and he was a linchpin of the department's Nuclear Technology group, taking the role of Departmental Radiation Officer, with responsibility for Imperial's cobalt source.

Aside from his lecturing and supervision duties, he was the department's admissions officer and careers adviser. He was also a friend to newcomers to the department, introducing them to unofficial annexes of Imperial like the Harrington, The Queen's and the Anglesea Arms.

Professor Sir William Wakeham, later Head of the Chemical Engineering Department and then Deputy Rector, joined Imperial in 1971, and credits Peter with smoothing his path into life in South Kensington. "He showed me an immense kindness which I later observed he extended to all, most especially to the undergraduate students for whom he was a rock of stability and an advocate to the department on their behalf," he said.

"He was also a gentle but forceful voice who spoke honestly to power. When I became Head of Department, he was always willing to offer advice and an honest assessment of any developments planned or unplanned. I really valued his very considerable contributions to the Department."

Geoffrey Maitland, now Professor of Energy Engineering at Imperial, tells a similar story. "He was already a well-established member of the academic staff here when I arrived as a young lecturer in 1974," he said, "and I remember how welcoming and helpful he was as I learned the ropes and how to operate in the department run by the formidable Professor Ubbelohde!

"I remember his ability to ask the questions others dared not ask about why we did things in a certain way. We ran several student projects together and he was a pleasure to work with. He was very supportive of students, with his door always open."



Peter, who published as PG Clay, wore his knowledge lightly, and took people precisely as he found them. He was quite possibly the only member of both the Royal Society of Chemistry and Shiremoor Working Men's Club in Earsdon, a former coal-mining village in Northumberland. He forged long-lasting bonds with his postgraduates. Even in retirement, the phone would ring in the family home as a former student he'd supervised decades earlier called for a periodic catch-up.

"He was one of the most lovely people I have ever met," said Dr Denis Buckley, who studied at Imperial for an MSc and PhD from 1979-1984. "He was my tutor, supervisor and mentor and looked after this somewhat clumsy student, me. He was very avuncular and all the undergrads and post grads loved his company and likewise he loved the students. It was what he was: a gentle, learned man with a giving, kind heart."

Dr Bahram Ghiassee, a London-based nuclear analyst who studied for his MSc from 1973-1974 and for his PhD from 1975-1979, called Peter a "uniquely beautiful person" who was "alien with the notion of self-interest." He said: "I revered and respected Peter and learned a great deal from him, both academically, and how to be a conscientious and caring human being. I was so privileged to know Peter for more than five decades, and to benefit from his support and wisdom."

Away from campus, Peter had an enduring enthusiasm for aviation and an encyclopaedic knowledge of both world wars. He was the nephew of an RAF Dambuster and joined the Air Training Corps in Tynemouth at the age of 13. He flew Chipmunks while in Durham University Air Squadron, where he was a Royal Air Force Officer Cadet. For a while, he was Commanding Officer of Tynemouth ATC and sported a luxuriant handlebar moustache. Though he transferred to the Barnes Squadron when he moved down to London to work at Imperial, the moustache didn't make the journey south. The following year, he married Sybil (nee Harvey). The newlyweds – who had known each other since they were teenagers in North Shields – planned to spend their honeymoon walking the WW1 battlefields, but ended up staying in Paris after the airline lost their luggage.

Peter would have seen the funny side. His analytical mind was complemented by a wry sense of humour. "He taught me Inorganic Chemistry in my first-year," recalled Prof Richardson, "and he liked to give demonstrations to enliven otherwise rather dry material - not his fault. One involved what should have been a spectacular colour change from yellow to blue, as I recall. In fact, the result was a muddy brown. Peter immediately said, in his best north-eastern accent, 'as the more astute members of the audience will have observed, the solution is now bright blue'." When the prog-rock group Van der Graaf Generator played a gig at Imperial College's student union, he sent them a note to point out they'd misspelt their



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name. They didn't reply.

Dr Clay left Imperial in 1999, after staying on beyond his 65th birthday to help usher in the new academic year. A loving husband, dad and grandpa, he settled into a quietly contented retirement, sprinkled at first with carefree trips to France. In 2004, Peter and Sybil headed north once more, moving to Beverley, in East Yorkshire, close to their elder son Nick and his family, with plenty of new pubs for Peter to discover and adopt.

Though his physical realm contracted in his later years, Peter's interest in the wider world remained undimmed. Sharp to the very last, he kept a keen eye on scientific developments, current affairs and the fortunes of Imperial College, as well as the comings and goings of wildlife in his back garden.

And life still offered up unexpected amusements. Last year, his granddaughter Emily nominated him as Britain's Kindest Man in a tongue-in-cheek poll by the podcast Top Flight Time Machine. 'Emily's Grandpa' received 43% of the public vote, finishing ahead of Paul McCartney and Michael Palin.

Following a short illness, Peter died on July 12, 2026, in a house filled with books about chemistry, Northumberland, pubs and the RAF.

Just a few days earlier, he had received a certificate from the Royal Society of Chemistry marking his 70 years of membership.

He is survived by Sybil, his sons and daughters-in-law, and by four grandchildren who all inherited his dry wit.

A staunch avoider of fuss, he would have disputed the need for this obituary.

With thanks to
Jeremy Clay,
son of Dr Peter Clay

A very generous legacy

JOHN STOTON (MECH ENG 1950-53)

John was a Life Member of CGCA. Born on September 28, 1932, he passed away on January 14, 2026, at the age of 93, leaving a very generous legacy to the OC Trust.

His son, Peter, wrote:

"Whilst Dad worked most of his career designing boilers for power stations, as an engineer he was forever tinkering with things in his spare time, whether it was fixing the car, some household appliance or building or repairing clocks.

In his retirement, he joined Remap and loved analysing bespoke problems that elderly or disabled people had and coming up with solutions to make their lives easier.

Away from engineering, his two great passions were sailing and gardening.

He and Mum sailed an Enterprise sailing dinghy and later a Centaur sailing yacht.

In the garden, he grew fruit and vegetables and he and Mum loved visiting National Trust properties and similar. With these passions it was Dad's wish to support charities involved in these areas after his death, for the benefit of others."





John (Right) and his fiancée (later his wife) Jeanne, with their friend Nigel Benson, in Barking, 1957



