



CAMBORNE SCHOOL OF MINES:

MAKING THE
EXCEPTIONAL
HAPPEN

EXCEPTIONAL JOURNEY





Foreword



At the University of Exeter we are incredibly proud of the world-leading research and teaching conducted at the Camborne School of Mines. The School's focus on the understanding and management of the Earth's natural processes, resources and the environment has never been more important than it is today. With its global reputation and expertise, we believe the Camborne School of Mines has a vital role to play in finding solutions to some of the world's biggest issues around energy, natural resources and the environment.

We are indebted to the Camborne School of Mines Trust and the Association for the vital support they provide. Together we are working in partnership to invest and build for the future at this pivotal moment in the School's history. We know that by working together we can achieve even more so whatever your connection to the Camborne School of Mines, I ask you to join us and help shape its future.

Steve Smith

Professor Sir Steve Smith

Vice-Chancellor and Chief Executive, University of Exeter



As the current Chairman of the Camborne School of Mines Trust I care passionately about the support and development of Mining and Minerals Education. The challenges of the extraction and processing of all forms of natural resources will face our young engineers and geologists as the global demands grow for greater production with enhanced recycling and less and less environmental impact.

The Camborne School of Mines Trust has been proud to support Mining and Minerals Education as it has evolved over the last 128 years. There are Camborne School of Mines Alumni in every corner of the world and we plan to provide more and more support for this key sector worldwide to meet these future demands. The Camborne School of Mines as part of the University of Exeter is developing exciting pathways to support the future of the natural resource industries and the Camborne School of Mines Trust is pleased to support this vision.

T Batchelor

Dr Tony Batchelor

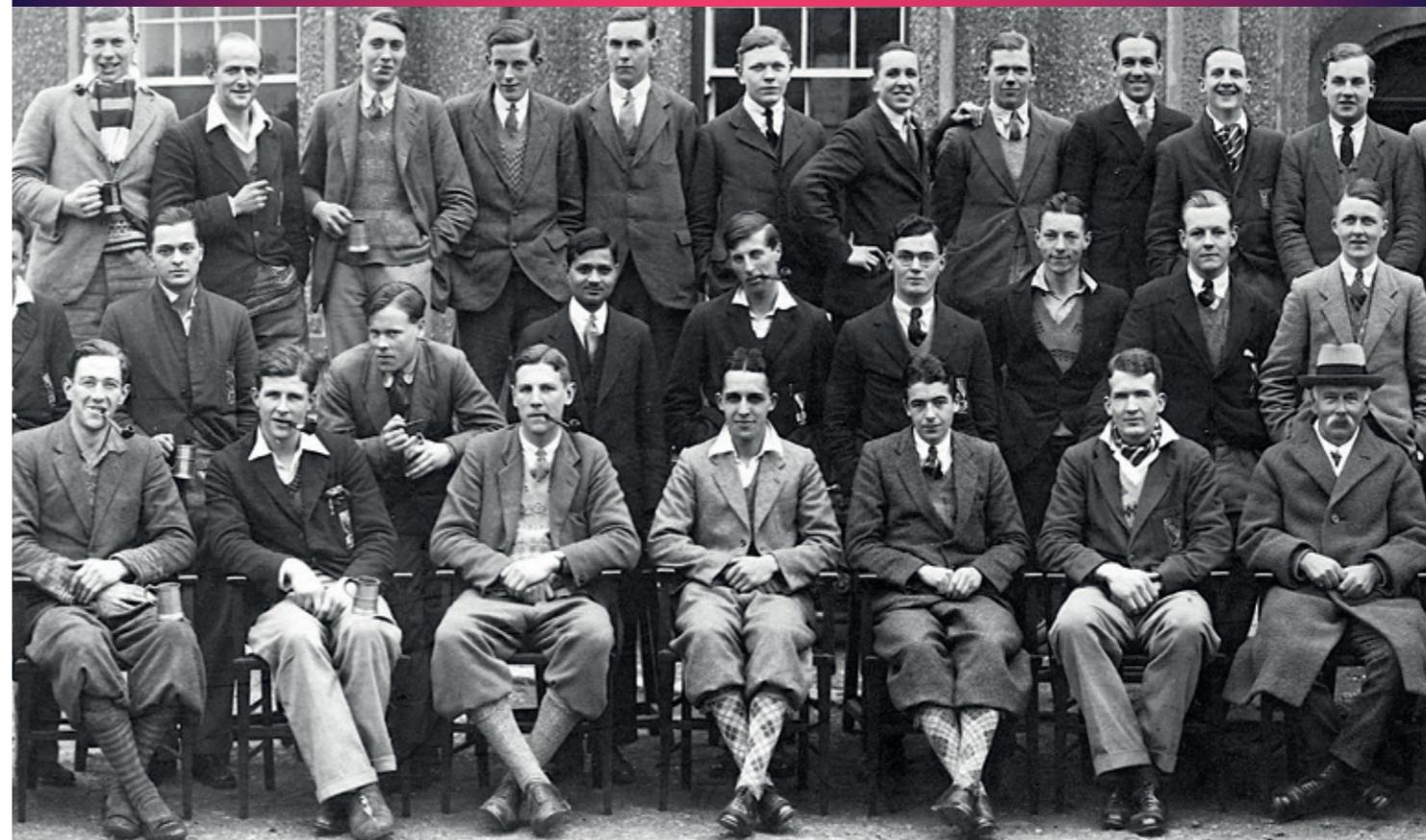
Chairman of the Camborne School of Mines Trust

A tradition of philanthropy

The Camborne School of Mines was founded on philanthropic support, with an initial grant made by the Miners' Association and Institute of Cornwall in 1887, and laboratory and teaching spaces financed by local benefactor G. L. Basset.

Respected local figures such as Josiah Thomas, captain of Dolcoath Mine, were active in the School's early days and contributed towards various prizes and scholarships. Meanwhile the School was also the beneficiary of what might now be termed 'crowd funding' with popular appeals raising funds to establish the geological museum.

For over 125 years, the School has benefitted from the generosity of its benefactors, many of whom were and are alumni. As we look to the future to maintain the School's international pre-eminence, we also look to the next generation of philanthropists who are willing to invest with us to deliver our vision for the 21st Century.



Our relevance today

Mining is a truly global industry, supplying raw materials that underpin infrastructure and manufacturing, as well as affecting the lives, security and opportunities of people worldwide. Today mining is at a crossroads: it is increasingly difficult and expensive to find new mineral deposits and there are concerns over the limited sources of critical commodities. The response to declining ore grades has been to increase the scale of mining operations and consequently produce more waste.

All of this creates unprecedented engineering, technical, training and political challenges – challenges which the Camborne School of Mines is addressing through its research and teaching.

With research covering geology, mining engineering, mineral processing, sustainability and remediation, we work across the mining value chain and lifecycle. Our test mine facility allows for experiential education, training and research, and our alumni are to be found throughout the global industry.

We engage widely with the mining industry, governments, international agencies and the broader mining sector through collaborative research, consultancy, bespoke teaching and training aiming to reduce costs, energy consumption, emissions and waste, improve safety and encourage innovation.

Our 128 years' heritage in mining research and education, combined with our history of working with international businesses means we are well placed to deliver global impact.

“ Our aim is to help supply the vital raw materials to support a growing world population, in the safest, most cost effective, environmentally sensitive and socially acceptable ways possible. Our research will help transform the lives of the 100 million people whose livelihoods depend directly on mining. ”

Professor Kip Jeffrey, Head of the Camborne School of Mines and First Quantum Minerals Professor of Mining Education



Creating tomorrow's leaders

As one of the world's oldest mining schools we have always been known for our highly skilled and talented graduates: our alumni are recognised internationally for their excellent practical mining skills and technical knowledge.

Our graduates are amongst the highest-earning of any UK institution and possess some of the best employment rates of any recent graduates.

The Camborne School of Mines recruits the best students from around the world. It is also rooted in Cornwall's mining history and is committed to supporting young people from Cornwall and the South West to access mining education regardless of their financial background. We are currently developing new access arrangements to help prepare students for their studies, and provide pathways for those from less conventional backgrounds. Developing alternative routes into the School such as salaried degree apprenticeships will enable talented students to gain solid industry experience through a combination of on-campus residential courses, e-learning and work-based projects.

We require urgent investment to provide bursaries at undergraduate and postgraduate level and enhance our outreach programmes to attract the best and brightest to the Camborne School of Mines. A gift to support our access programmes is a gift that will change students' lives. As a sector leader in mining education, the Camborne School of Mines is uniquely placed to meet the industry's need for qualified, highly capable mining professionals for the future.

“ By 2025, the world will need 13,000 new Mining Engineers, 16,800 new Geologists, and 5,000 new Mineral Processors. ”

(Future Employment Trends for Graduates in Mining and Related Industries, Paul Burton, Piran Mining Research, January 2016)



Our research

Our research addresses some of the most fundamental questions facing the mining industry today, from energy and resource efficiency, operational innovation, improved mineral processing and recovery, to health and safety, environmental protection, corporate social responsibility and the social license to operate.

Our expertise includes:

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mineral exploration and deposit vectoring, ore deposit formation in magmatic, porphyry copper, MVT and critical metal deposits; industrial minerals, gemstones and construction materials evaluation techniques.

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deposit characterisation and resource estimation, mine design, resource efficiency, water and energy efficient production.

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geotechnics, remote data acquisition techniques, rock mass characterisation and modelling.

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slope stability and failures, underground support design, and block caving optimisation as well as assessing blast design and vibration.

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rapid and remote surveying techniques, void detection, safety, accident prevention and reconstruction.

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automated mining, remote control, robotics, advanced visualisation techniques, virtual and augmented reality. Operational data integration and analytics, Process and value chain optimisation.

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geometalurgy, biohydrometallurgy, liberation, separation, processing and recovery enhancement, minerals engineering.

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mine site pollution, microbial remediation of metal contamination, mine waste storage, reprocessing monitoring and mine closure. Climatic and climate change impact on mining operations.

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social impacts of mining, mining education and skills, collaborative mining sector partnerships, resource nationalism, community relations and development delays.



The urgent need for investment

To meet the challenges of the future the Camborne School of Mines requires a multi-million pound investment.

As we are expanding to address critical industry issues we are seeking to develop a new home for the School – an iconic building reflecting our teaching and research mission and long tradition of industry impact. We are developing our underground test mine facilities to complement a new Centre in Automated and Remote Mining – where we will help develop new concepts for mining processes. These will work in tandem with a new visualisation centre where virtual and augmented reality, and data analytics are used to harness the power of big data in the mining value chain.

Your University is committed to developing research and education at the Camborne School of Mines and our 'making the exceptional happen' campaign presents an exciting and historic opportunity for the School.



Your support could help us achieve this in the following ways:

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Provide access scholarships to support high quality international, UK and Cornish students

Your gift of £10,000 will provide an access bursary to support a talented student to complete their BSc in Mining Engineering.

**YOUR
IMPACT**

Support Tomorrow's Leaders

Your gift of £25,000 will fund a Masters student to study on one of our innovative blended learning programmes.

**YOUR
IMPACT**

Support a Diamond Jubilee Doctoral Scholarship: shape the future of mining research

PhD studentships range from £18,000 for a UK/EU student to £136,000 for an international student – Exeter will support your donation 2:1 through our unique match fund.

**YOUR
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Fund academic talent

Your gift of £250,000 or more will provide revenue funding to support key posts, from early career fellowships to lectureships. This would help revitalise and re-introduce the Mineral Processing Masters programme. A gift of £1 million or more can establish an endowed professorship or academic chair.

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Invest in mining education

Your gift of £5 million will allow us to invest in cutting edge equipment, such as a full mission simulator, to educate the next generation of miners.

**YOUR
IMPACT**

Advance mining research

Your gift of £10 million will fund an advanced visualisation facility to model the digital mining and geological environment using virtual reality, data analytics, process modelling and multiscale data integration of rock and mining excavation systems.

**YOUR
IMPACT**

New teaching and research facilities

An extraordinary gift of £15 million will allow us to build a new state of the art home for the Camborne School of Mines on the Penryn campus encompassing new lecture theatres, laboratories, seminar classrooms, and research spaces. This transformational investment will deliver the world class infrastructure to train the next generation of mining specialists for the global industry and the research which will shape the future of mining.

There are a range of ways to give tax efficiently to the Camborne School of Mines Trust – we would be happy to discuss options with you.

Recognising exceptional generosity

We are committed to recognising your support. From naming opportunities for buildings and rooms or academic posts and scholarships, to events publically thanking our supporters, we would be delighted to discuss options with you.

Contact us today on exceptional@exeter.ac.uk or +44 (0)1392 723141 and help us to make the exceptional happen.

Images on pages 6-7 from Camborne School of Mines Archive courtesy of Archives and Special Collections, University of Exeter, Penryn Campus

Contact us:

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