CHRIST'S COLLEGE NEWSLETTER

GOING FOR GREEN: Christ's and the environment

A SCIENTIFIC VOYAGE IN GALÁPAGOS

STRIKING A CHORD: Music at Christ's

Pieces

ISSUE 34 • MICHAELMAS TERM 2017

welcome

FROM THE MASTER

Welcome to this issue of *Pieces*.

In early December I will be admitting seventy new Scholars at a ceremony in the Chapel, and we will be celebrating their achievements at a dinner in Hall that evening, bringing together the Master, Fellows and Scholars of the College. I am busy practising my Latin for the admission ceremony, where each student is admitted individually to their Scholarship. That we are admitting so many people this year means it is no surprise we were second in Tompkins Table in the summer, testimony to the hard work by our undergraduates, and the excellent teaching by our Fellows.

I have now been in post for more than a year, and have enjoyed meeting many members of the diverse alumni community. Everywhere I have been made to feel enormously welcome, and the College seems to be surviving having its first Australian Master.

In this issue of *Pieces* you can read about our impressive Green Impact awards, Dr Mike Stock's wonderful trip to the Galapagos and what's going on in the world of College music.

I hope you enjoy it!

Professor Jane Stapleton

IN THIS ISSUE

FRONT COVER IMAGE: Refections of Second Court, Sarah Proudfoot

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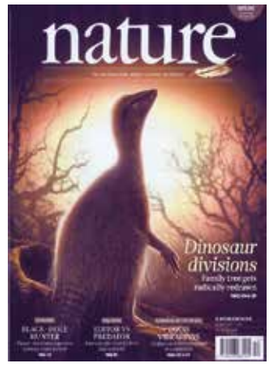
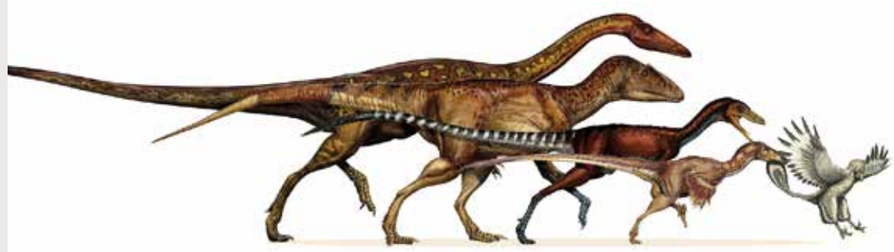
news

Dr David Norman (Fellow) and **Matthew Baron** (PhD student) have revealed some exciting new research which looks to overturn the current theory about the evolutionary history of dinosaurs and the family groups used to classify them. The discovery featured on the front cover of *Nature* which came out in March.

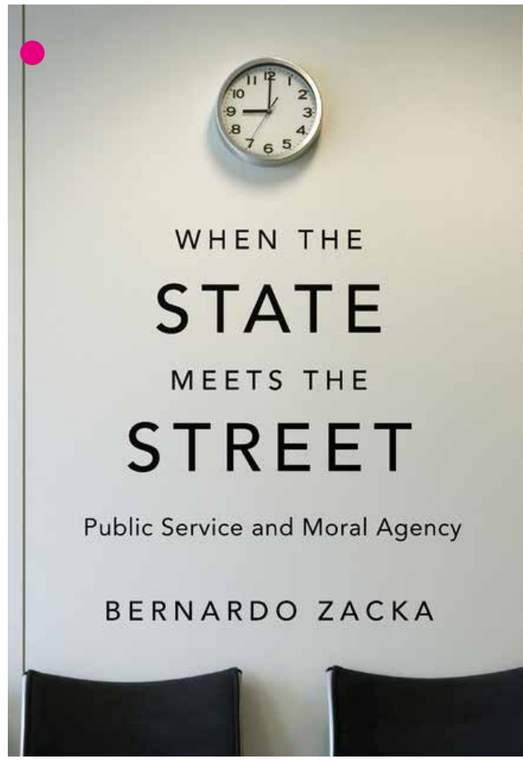




Charles Read (m. 2008) won three prizes at the annual conference of the Economic History Society. He won the Society's Thirsk-Feinstein PhD Dissertation Prize for the best PhD thesis in economic and social history completed at any university in the world in 2016; the T.S. Ashton Prize for the best article accepted in the Economic History Review in 2015 or 2016; and the New Research Prize (which Charles also won in 2014). These achievements make him the only person in the 91 year history of the Economic History Society to have won all three of its major academic awards.

ECONOMIC HISTORY SOCIETY 1926

Dr Bernardo Zacka had his first book, *When the State Meets the Street: Public Service and Moral Agency* published by Harvard University Press. Dr Zacka has also accepted a position as Assistant Professor of Political Science at the Massachusetts Institute of Technology, which he will take up in 2018.



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Tom Strudwick, (m. 2016) won a silver medal at the European U23 rowing championships in the British VIII.

Dr Yusuf Hamied (m. 1954, Honorary Fellow) has been awarded the degree of Doctor of Science (Honoris Causa) by the Indian Institute of Technology (IIT) Bombay at their 55th Convocation Day. This honour has been bestowed upon Dr Hamied for his outstanding contributions to the growth of the pharmaceutical industry.

A number of Christ's staff members completed the Cambridge Town and Gown 10K race in support of Muscular Dystrophy UK in November. The finishing times were: **Martin Spooner** (Director of College Services) – 53:05; **John Dearden** (Maintenance Department) – 50:07; **Wayne Bell** (Maintenance Manager) – 47.07; **Matthew Woosnam** (Maintenance Department) – 43:50.

Professor **Bill Steen** (m. 1954, Fellow) was inducted as an Honorary Fellow of the Institution of Mechanical Engineers in November. Professor Steen was honoured for his pioneering work in developing the subject of Laser Material Processing and is considered the 'father of laser processing'. He is now one of around two hundred and fifteen engineers honoured in this way since 1866.

John Oliver (m. 1995) and his team won two Emmy Awards this September for the show *Last Week Tonight*.

ACADEMY of SOCIAL SCIENCES

The Academy of Social Sciences recently conferred a Fellowship to **Professor Sarah Franklin**. Fellowships of the Academy are awarded to those who have demonstrated the excellence and impact of their work through the use of social science for public benefit.

Charlotte Collins (m.1986) won this year's Helen and Kurt Wolff Translator's Prize for her translation of Robert Seethaler's A Whole Life. The Prize is awarded each spring to honour an outstanding literary translation from German into English published in the USA the previous year.

THIS YEAR, CHRIST'S HAS BEEN PLACED SECOND OVERALL (UP FROM THIRD PLACE LAST YEAR) IN THE TOMPKINS TABLE, an annual league table that since 1997 has compared the examination performances of all of the students at each of the 29 undergraduate Colleges in the University of Cambridge. Christ's is one of only two Colleges that has never been in the bottom half of the Table, and for the majority of the time it has been amongst the top five Colleges.

Professor Theresa Marteau (Fellow) was appointed a Dame Commander of the Order of the British Empire in the Queen's Birthday Honours for her services to public health. Her work on the development and evaluation of interventions to change behaviour in diet, physical activity, tobacco and alcohol consumption is aimed at improving population health and reducing health inequalities, with a particular focus on targeting non-conscious processes. Professor Marteau was also the Director of the group of scientists at the Universities of Cambridge and Bristol who won a Wellcome Collaborative Award in Science.

Professor Andy Cliff (Fellow) was awarded the Victoria Medal from the Royal Geographical Society for research excellence in spatial epidemiology.

Professor Duncan Haldane (m.1970, Honorary Fellow) has been elected as a Foreign Associate of the National Academy of Sciences in the US.

Dr David Thomas (Fellow) has been awarded a Stage 2 Wellcome Trust Clinical Career Development Research Fellowship (CRCDF), for 'the role of Eros (Essential for Reactive Oxygen Species) in Innate and Adaptive Immunity'. This will give him five years funding to establish his own research group.

Professor Sanjeev Goyal (Fellow) is the holder of the 2018 Ganshof van der Meersch Chair at the Université Libre de Bruxelles.

THIS ISSUE SENIOR TUTOR DR ROBERT HUNT TAKES A LOOK INTO THE HISTORY BEHIND:

The Tancred Award

Christopher Tancred, of Whixley in the West Riding of Yorkshire, died on 21 August 1754.

He was an important man, holding for example the posts of Sheriff of Yorkshire, Deputy Lieutenant of the West Riding, Captain of Sir Henry Goodricke's foot regiment and Master of the Harriers.

Tancred had no male heirs and, fearful that leaving his properties to a female relative might result in his estate being split up over the course of time, instead left just one shilling in his will to each of his five sisters. Unsurprisingly, the sisters launched a legal challenge; but they were unsuccessful and the Court of Chancery confirmed the will. The bulk of his estate (which even before Tancred's death had, since 1721, been administered by the Rev'd Josiah Cockshutt, the Venerable Thomas Cartwright and the Rev'd Benjamin Dowse, three of the then thirteen Fellows of Christ's College) was left for the joint benefit of the Master of Christ's College, the Master of Gonville & Caius College, the President of the College of Physicians, the Treasurer of Lincoln's Inn, the Master of Sutton's Hospital in Charterhouse, London, the Governor of the Royal Hospital, Chelsea (now home to the Chelsea Pensioners) and the Governor of the Royal Hospital, Greenwich (then a home for injured sailors). They were to use the income from the estate in perpetuity to provide education for twelve poor students: four in Divinity (now known as Theology) at Christ's, four in Physic (now known as Medicine) at Gonville & Caius, and four in Common Law at Lincoln's Inn.

This division of subjects accorded with the recognised strengths of Christ's and Caius at the time. Every year in perpetuity, three of the students (one in each subject) were required to make speeches in Latin in remembrance of Christopher Tancred.

The income would also be used to provide support for twelve poor ("decayed and necessitated") Clergymen, Land Officers or Sea Officers who were to be housed in Tancred's Hospital (formerly Whixley Manor House, Tancred's family seat).

Recipients of all the awards were required to be natives of Great Britain, of the religion of the Church of England. The Cambridge students had to be between the ages of sixteen and twenty-two, while those in Tancred's Hospital had to be unmarried.

Acts of Parliament (the Tancred Charities Scheme Confirmation Act 1899 and Tancred's Charities Scheme Confirmation Act 1923) made amendments to the administrative procedures of the Charities and to the management and distribution of their income; over the course of the 20th century, many of the detailed stipulations were relaxed or modernised whilst retaining the spirit of the benefactor's wishes. Tancred's Charities are now regulated by the Charity Commission for England and Wales. Tancred's Educational Foundation is the branch that provides Studentships for those studying either Medicine or Theology at either Christ's College or Gonville & Caius College (the original subject split between the Colleges having been dropped long ago) and for those taking the Bar Vocational Examination at Lincoln's Inn, and has registered charity number 313814. Unusually, the funds are held and administered not by the Colleges themselves but by solicitors in London who service the Charity.

The age restrictions and the requirement to be a member of the Church of England were finally dropped in 2013, in my opinion not before time. Every year about thirty students at Christ's – both undergraduates and graduates, mostly medics, but including theologians – benefit from quite generous awards (over £20,000 in total) from Tancred's Educational Foundation. They are usually relieved to discover that there is no longer a requirement to make speeches in Latin. Strangely, for historical reasons, the Charity also donates to the College approximately £100 to support a student in any subject at all, although originally there was a requirement for this student to be a "native in Newmarket".

Overmatter here

GOING FOR GREEN

Having an awareness of environmental issues and striving to live a more sustainable lifestyle is something we all aspire to: making small changes in our everyday habits in the hope that it will have a positive impact. Here we learn all about Christ's and it's green credentials.

Green Impact is an environmental accreditation scheme developed by the National Union of Students which brings together staff and students to enable and showcase positive changes in environmental practice. The scheme audits and awards departments and colleges based on their sustainability performance. Launched across the University of Cambridge in 2012, around fifty Cambridge colleges, labs, and departments take part every year.

Captions to go here:Left to right:

This year, Christ's College was the proud winner of two *Green Impact* awards (2016-17): a Gold College Award and a Silver Award for the Student Switch Off.

Spearheaded by the passion and enthusiasm of Lily Freeman-Jones (m. 2015), the JCR's Officer for Environmental and Ethical Affairs for 2016–17, the College embraced a number of new initiatives at every level of its day-to day operations in order to be a very worthy winner of these notable awards in the very first year of taking part in the scheme. Changes included promotions of vegetarian and vegan food in Hall, KeepCups being used instead of disposable cups and biodiversity actions in the College gardens. The auditor was impressed and commented:

"I TOTALLY SEE THE ENTHUSIASM OF THE TEAM! I BELIEVE THAT CHRIST'S CAN ACHIEVE EVEN MORE NEXT YEAR BUILDING ON THE SUCCESS OF THIS YEAR".

Green Impact Auditor for Christ's 2016-17

Lily, who stepped down from her role this autumn, said of her successes, *'as Environmental and Ethical Affairs Officer, the main purpose of my role was to reduce our College's impact on the environment, while encouraging and empowering the College and its students, to make more ethically and environmentally-minded decisions.*

I want to take this opportunity to sincerely thank everyone who has helped, supported and encouraged me this year. It's been a pleasure and a privilege to see the enthusiasm for environmental and ethical affairs at every level of College life, and I hope you all feel as proud as I do to be part of such a forward-thinking College.'

More generally, in response to growing demand for vegetarian and vegan menu options, Christ's was one of thirteen Cambridge colleges to send their chefs on specialist vegan workshops to explore creative solutions for meat-free and dairy-free dishes. Held at Magdalene College, the two sessions were organised by Humane Society International (HIS) and the Sustainable Restaurants Association (SRA). Chief lecturer Jenny Chandler introduced the chefs to new ingredients such as umami, pulses, whole grains and pseudo cereals and taught them how to create depths of flavour and texture without using animal products. Kevin Keohane, Catering Manager at Christ's, said: *'Guests choosing a vegan diet is without doubt the largest voluntary area of growth in the catering industry today whether it's for lifestyle, health and wellbeing, animal welfare or environmental concerns.'*

Christ's also held its very first Vegan Formal Hall in March this year and it was a huge success. In order for the event to take place, all the dining chairs with leather studded seat pads had to be removed and replaced with the wooden benches that many of our alumni may remember from their day!

Congratulations once again to all the staff and students who worked so hard to reduce the carbon footprint of Christ's last year and good luck to everyone striving to continue the trend of being one of the greenest and environmentally responsible College's to live and work in.

DR MIKE STOCK – A SCIENTIFIC VOYAGE IN GALÁPAGOS:

Darwin's geological legacy at Christ's

Almost 200 years ago, the young Charles Darwin came up to Christ's to begin a comprehensive theological education. In what could be considered the most productive procrastination in history, he instead spent much of his time in Cambridge attending lectures in the natural sciences, under the mentorship of John Stevens Henslow and Adam Sedgwick. On the subsequent *Beagle* voyage, Darwin undertook botanic and zoological studies but, in light of his seminal contribution to evolutionary biology, history often forgets that he also produced a substantial body of geological research. Today, Christ's celebrates the role that it played in Darwin's early life by facilitating scientific research on the Galápagos Islands. I currently hold the Charles Darwin and Galápagos Islands Fund Junior Research Fellowship and it is testament to Darwin's broad-ranging interests that I am a geologist.

My research is in volcanology and is focussed on using the chemical fingerprints of erupted rocks to understand the processes that occur in magma chambers beneath the Earth's surface. Currently, I am applying state-of-the-art analytical techniques to Galápagos volcanoes, in an attempt to understand their sub-surface architecture and the eruption triggers. Despite Darwin's early interest in the chemical variability of rocks from the Galápagos Islands, very little is known about magma chamber processes in the archipelago, particularly compared to regions with similar volcanic activity such as Iceland and Hawaii. Understanding these processes is important, not only because of the ecological threat posed by frequently-active Galápagos volcanoes, but also because comparison of eruptions on the different islands may hold important clues to understanding magmatic processes globally. To address this, I recently led a month-long scientific expedition to Galápagos, with the aim of collecting a range of lava samples that were erupted at different times in distinct parts of the archipelago. The trip was largely financed by the Christ's College Galápagos Islands Fund, with additional support from the Geological Society of London, the Royal Geographical Society and the Mineralogical Society of Great Britain and Ireland.

'The sinking of crystals through a viscid substance like molten rock [...] is worthy of further consideration, as throwing light on the separation of the trachytic and basaltic series of lavas.'

Charles Darwin (Geological Observations on the Volcanic Islands, 1844)

The expedition team standing directly on the equator with Volcan Wolf in the background.

The expedition team was international, with wide-ranging academic interests. In addition to myself, the Cambridge contingent included Dr Sally Gibson (a University lecturer) and Matthew Gleeson (a PhD student at Jesus College). Sally and Matt specialise in the chemistry of the Earth's mantle and are undertaking research into how this varies spatially between different parts of the Galápagos Archipelago. We were joined by Dr Benjamin Bernard and Antonio Proaño Altamirano from Escuela Politécnica Nacional in Quito (Ecuador), who are interested in the physical morphology of lava deposits and are directly involved in monitoring Galápagos volcanoes to detect signals that might precede future eruptions. The final team member was Wilson Villamar, a Galápagos National Park ranger.

The Galápagos Islands are located approximately 1,000 km off the east coast of Ecuador. Although there are small towns on the islands, the volcanoes that we needed to access were in remote parts of the archipelago, well away from these population centres. Carrying out fieldwork in such a remote location is logistically challenging and required careful preparation: injuries would not only risk prematurely ending the trip but could also cause a serious evacuation challenge. To mitigate this, we hired M/V Pirata (literally translated as the 'Pirate') – a retrofitted early 20th century schooner. It is not the most luxurious boat in Galápagos, but it is manned by a highly experienced crew, intimately familiar with the obscure parts of the archipelago frequented by visiting scientists. Sleeping on Pirata was often challenging, particularly in rough seas, with all six team members closely packed into bunk beds in a cabin at the back of the boat. However, the captain prides himself on employing an excellent chef, who produced exceptional food with only two unstable hob rings and a tiny oven – nothing compares to freshly caught Galápagos fish after a long day in the field.

Main image: RV Pirata, a home from home

© MLM GLEESON

Above: Marine iguana
Right: Sleepy seals on Floreana

© SA GIBSON

© SA GIBSON

Left: A resting pelican

© MJ STOCK

Above: Hiking through dense vegetation on Floreana Island

THE TRIP WAS A GREAT SUCCESS, HAVING ACQUIRED ALMOST 100 KG OF ROCK SAMPLES. THESE WILL PROVIDE A FOUNDATION FOR MANY YEARS OF FUTURE SCIENTIFIC INTERROGATION.

Before leaving the main towns on Galápagos, all scientists must go through a thorough quarantine. All clothes, bags and boots are cleaned, sterilised and put in a freezer for at least 48 hours, to remove seeds and kill any bugs. As a UNESCO world heritage site, the preservation of the island's ecosystem is of paramount importance.

Our first stop was the small island of Floreana in the southeast of the archipelago. Floreana is one of the oldest islands in Galápagos and is made up of numerous small volcanic cones, at least one of which (Cerro Pajas) Darwin records climbing when he visited the island on 27 September 1835. There has been no volcanic activity on Floreana for thousands of years, and the island is consequently covered in jungle-like equatorial vegetation. Tourists visit Cormorant Point on the north coast, where they can see a flock of wild flamingos that live in an isolated brackish lagoon. Elsewhere on the island there are thriving colonies of seals, sea turtles, enormous marine iguana and other exotic birds. We spent our time on Floreana sampling from the old volcanic cones and particularly looking for blocks of crystalline material, which form deep in the Earth's crust but were exhumed in violent volcanic eruptions. As access is so restricted, there are no paths in the remote parts of the Galápagos Islands and sampling was difficult, requiring a machete to cut our way through dense vegetation in hot and humid conditions.

'It is long since the Lava streams which form the lower parts of the Island flowed from any of these Craters: Hence we have a smoother surface, a more abundant soil, & more fertile vegetation.'

Charles Darwin (referring to Floreana Island, Beagle Diary, 26-27 September 1835)

After visiting each island, we had to go back through quarantine to avoid spreading the endemic flora and fauna between our different fieldwork locations. Our next stop was Volcan Wolf, on Isabella Island, in the west of the archipelago. In contrast with Floreana, Isabella is one of the youngest islands in Galápagos and, rather than countless small cones, the island is comprised of six very large volcanoes with gently sloping flanks. Volcan Wolf is the most northerly of these and is located directly on the equator. At the time of the fieldtrip, it was the most recently active volcano in Galápagos, having last erupted in May 2015 (a subsequent eruption occurred on Fernandina Island in September this year). We sampled along the east flank of the volcano, which is covered by extremely fresh lava flows. These form a barren landscape, more closely resembling the surface of Mars than the dense vegetation of Floreana. A flock of flightless cormorants were almost the only living thing we saw during a week on the volcano. Here, our objective was to collect rock samples from as many recent lavas as possible, and crucially to access the new flows that formed in 2015. Although there was no need for the machete, working here was no less physically demanding – hiking all day in direct sunlight was exhausting and the fresh lavas are razor sharp, constantly shifting as you walk on them. It was challenging terrain to say the least!

Our final fieldwork location was Volcan Sierra Negra in the south of Isabella Island. Unlike Volcan Wolf, this volcano is close to a population centre (the town of Puerto Villamil) and is a popular tourists spot, where visitors can observe the enormous (9 km diameter) volcanic crater at the summit. Sierra Negra was last active in 2005, and here we were able to hike to the eruption vent. This allowed us to sample glassy ash and scoria (i.e. black pumice), which were quenched as they were expelled into the atmosphere during a particularly violent phase of the eruption.

The trip was a great success, having acquired almost 100 kg of rock samples. These will provide a foundation for many years of future scientific interrogation. We were hugely privileged to gain access to remote parts of the Galápagos Archipelago, which is truly a gem of the natural world. The abundance and diversity of life on the islands is staggering and I returned to Cambridge with a deep appreciation of the need to preserve one of the Earth's last bastions of untouched biodiversity. I hope that my own research into volcanic eruption triggers and hazard mitigation can contribute to this. But now, sitting in Christ's with a picture of Darwin on my wall, I can't help but be inspired by the fortitude of that young man who left the College and toiled for years in extreme environments to change the way we see the world forever.

Follow the project progress at: #galapagosvolc

STRIKING A CHORD: **Music at Christ's**

In the Lent Term 2016 issue of *Pieces*, Maisie Hulbert (m. 2014), introduced us to 'Sing Inside, Cambridge' and appealed for funding support for the important work that they do. Here, she updates us on the progress of the society.


HMP HIGHPOINT - MARCH 2017


HMP WHITEMOOR - DECEMBER 2016

It was wonderful to receive such fantastic support after my last article. from Christ's alumni for this project. Several alumni made extraordinarily generous personal donations, and with the help of Don Macbean (m. 1958), we established a relationship with Highpoint Prison, approximately twenty-two miles from Cambridge. We delivered a hugely successful initial workshop and are hoping to return to the prison at Christmas. I'd like to say an enormous thank-you to Don for all of his help; without him the connection may never have been made and we are delighted to continue to reach local prison communities.

CHORAL SINGING PROVIDES THESE PRISONERS WITH INVALUABLE FEELINGS OF CONFIDENCE AND SELF-WORTH, ALLOWS THEM TO CREATIVELY EXPRESS THEMSELVES


OCTOBER 2015 - HMP WHITEMOOR

Sing Inside is a student run society which delivers day-long themed singing workshops in local prisons. The prisoners are able to perform a short concert of what they have learnt to other inmates and staff at the end of the day. Sing Inside prioritises breaking down the negative media portrayals of prisons, creating perceived distance between prisoners and the public. The majority of the student volunteers we take in have never learnt the music either, and by learning alongside the prisoners Sing Inside engages with choral singing as a community forming activity, drawing these individuals together through learning music. Choral singing provides these prisoners with invaluable feelings of confidence and self-worth, allows them to creatively express themselves in a non-judgemental environment, and encourages positivity and hope for open-minded and welcoming communities which will exist upon their release. I am proud that members of Christ's continue to take an active role in the society, taking positions on the Committee such as Prisons Co-Ordinator, attending visits with enormous enthusiasm, and contributing to creating a promising forward thinking environment throughout college and the university.

Sing Inside, Cambridge continues to move from strength to strength thanks to your support, and our new undergraduate Committee are working tirelessly to ensure this work can continue. If you would like to donate directly to the Cambridge branch of the project, please contact our new President Nina Vinther on **nv294@cam.ac.uk**. I am now working as Development Fundraiser for Sing Inside, securing funds to allow our most experienced leaders to travel to other student communities and deliver training and briefings, in the hope that Sing Inside can reach more inmates nationwide. If you would like to support the development of Sing Inside, or have particular ideas for expansion projects, please get in touch with me on **meh72@cam.ac.uk**. I hugely value the support from our alumni community and would love to hear from anyone with an interest.

SING INSIDE
CAMBRIDGE

THE COLLEGE **CHAPEL CHOIR**

After a successful recording of Leighton, Walton, Howells and Finzi in March 2017, the Christ's College Chapel Choir are looking ahead to their next exciting project: a recording of music by Christ's alumna Annabel Rooney (m. 1991).

Annabel studied Music at Christ's, and went on to study an MPhil and PhD at Cambridge. She currently commits much of her time to choral composition, also working as a cellist in chamber groups, as a soloist and as a teacher. The Chapel Choir regularly sing Annabel's music in their weekly chapel services, and this recording will uniquely showcase music solely by a female composer and with a particularly close connection to Christ's. Recording will commence in March next year and a release date decided soon after.

In the meantime, the Choir's latest release, *Christmas from Christ's*, is on sale in the Porter's Lodge, or you can order a copy by emailing **choir.admin@christs.cam.ac.uk**. The choir have recorded a wide variety of music from early Tudor settings to contemporary commissions to a very high standard and all of their CDs are currently available. *Christmas from Christ's* contains a particularly good selection of unique twentieth century carols and traditional texts.

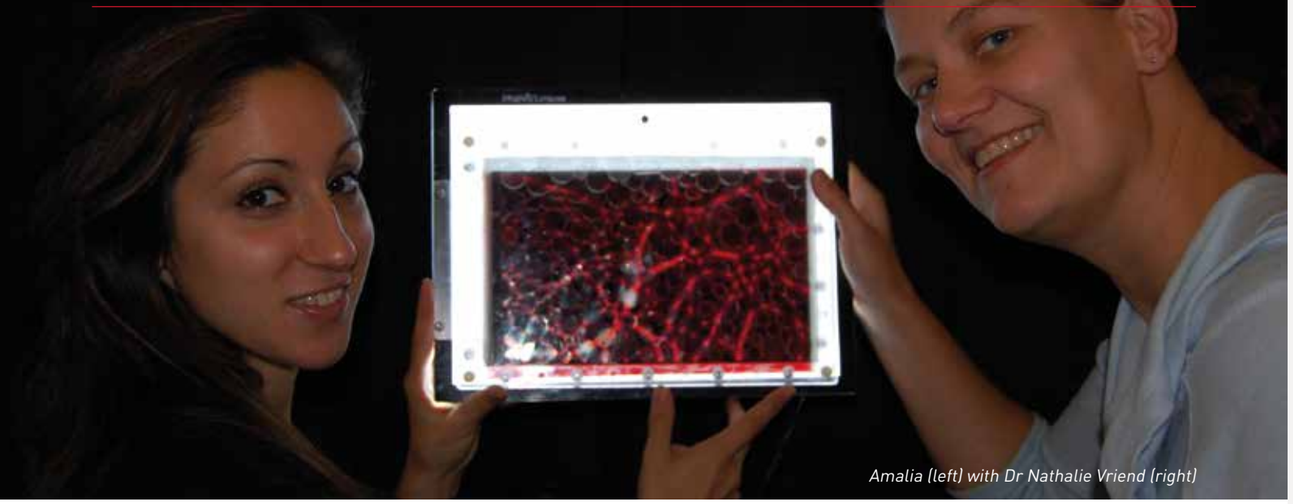
The Art of Issam Kourbaj

In the wake of the Franco-Syrian war that ended in 1920, Issam Kourbaj's uncle searched among the rubble for unexploded bombs. He collected and dismantled them, before making them into pots and spoons. Issam, who for more than a decade has been Christ's College Lector in Art, is today one of the major artists addressing the tragic human cost of forced migration and the current refugee crisis. Throughout his life-long effort as an artist to restore the voices of lost objects, Issam has transformed his many collections of found objects into explorations of loss, mourning and their commemoration. Two of Issam's recent Cambridge exhibitions used museum objects and settings to delicately and forcefully expose the existential questions posed by refugee journeys, identities and worlds. In *Dark Water, Burning World* at the Fitzwilliam Museum last March, repurposed mudguards from abandoned Cambridge bicycles became tiny ships, peopled by matchstick travellers, settled into scorched and serried rows – an exhausted army seeking new shores. The boats' voyage across a museum cabinet posed a question of belonging: in whose houses can these refugees find home? *Lost* was a simultaneous exhibit in the Museum of Classical Archaeology addressing the destruction of Issam's homeland. Amidst plaster casts of classical objects housed in the museum were a new set of castings Issam made from the clothing of children who died fleeing from Syria. Written on the casts, in Greek and Arabic, is the minimal information about the age and sex of the child, and the date they were found. The subtly powerful combination of writing, casting as means of preservation, the 'fixing' of the past, and the tragic legibility of a child's last journey pose a question about what will be remembered in the future about the refugee crisis in Europe and the world today.

More information on Issam and his work can be found at: www.issamkourbaj.co.uk.

AMALIA THOMAS (M. 2015), PHD

NIGHT LIGHTS: OUTREACH AT THE SCIENCE MUSEUM



Amalia (left) with Dr Nathalie Vriend (right)

The evening of 29 March 2017 saw the Granular Group leave their offices at Department of Applied Mathematics and Theoretical Physics (DAMTP) with a large and heavy suitcase. Their destination: the Science Museum in London, where the Royal Society had organised that month's Lates, and was counting on an instructive, creative exhibition on photoelastic avalanches.

It had already been a year and a half since the Royal Society had begun to fund my PhD with Dr Nathalie Vriend. Our group researches dry granular systems – solid particles (or granules), such as grains, sand or snow – and my project aims to improve our understanding of granular size segregation. This phenomenon is behind why larger nuts end up at the top of trail mixes, it is the reason for cereal boxes accumulating fine grains and dust at the bottom, but it is also responsible for serious difficulties in the homogeneous mixing of pharmaceutical products. In particular, when an assembly of granules roll down a slope – as in an avalanche – the large masses naturally rise to the flow's faster top layer and front. Mudslides, lahars and snow avalanches are especially destructive for this reason. Understanding the physical mechanisms that cause granular segregation helps engineers deal with such dangers.

But despite the wide range of direct and indirect ways in which our lives are affected by it, no model has yet been published to fully characterise the parameters that influence granular size segregation, mainly because of the difficulty to directly observe. However, for the first time worldwide we have adapted a complex experimental technique to see and measure forces exerted on each individual particle. Using a material property called photoelasticity, by which some materials transmit light differently when under pressure, we model the features and fluctuations of force chains that can be seen as bright lights within an avalanche of otherwise dark discs. The novel experiments we are running promise leaping advances in the field, and may have a direct effect on our lives – from our safety while skiing to a better-mixed muesli.

> OUR EXHIBIT CONSISTED OF A SERIES OF SIMPLE GAMES AND EXPERIMENTS THAT WOULD OFFER THE PUBLIC A MEANS TO DIRECTLY OBSERVE THE EFFECT OF THE FORCES THEY APPLY, AS WELL AS TO EXPLAIN HOW IT IS APPLIED TO OUR RESEARCH

Beyond its useful application to our research, we recognised the potential of the photoelastic technique for public engagement. Force, work and power are often difficult concepts to grasp in school because they normally cannot be sensed directly, but this is possible with the photoelastic technique, which results in visually impressive and beautiful light patterns. Thus, we prepared a series of displays and took the whole research group to present them in London.

Our exhibit consisted of a series of simple games and experiments that would offer the public a means to directly observe the effect of the forces they apply, as well as to explain how it is applied to our research. Examples included 'how 3D glasses work', 'load transmission in bridges and archways', and we showed a video of the large-

Overmatter here

MAKING A GIFT **TO CHRIST'S**

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LEGACY

☐ I would like information about leaving a bequest to the College

☐ I have included a bequest to the College in my will

SINGLE GIFT

☐ I enclose a cheque / CAF donation payable to Christ's College Cambridge for £ _____

Please charge £ _____ to my:

☐ Visa ☐ Mastercard ☐ Maestro

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Date _____

*Located on the signature strip on the back of the card.
For security reasons you may wish to phone, email or send separately.

Please return this form and direct any enquiries to:

The Development Office, Christ's College, Cambridge CB2 3BU UK
Tel: +44 (0)1223 766710 Fax: +44 (0)1223 766711 email: development@christs.cam.ac.uk

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DATES FOR YOUR DIARY & SOCIAL MEDIA UPDATES

2017

5 DECEMBER
Winter Drinks in London

7 DECEMBER
Varsity Rugby Matches at Twickenham

2018

27 JANUARY
Law Society Alumni Dinner

24 FEBRUARY
Joint Christ's and Wadham Lunch at Wadham College, Oxford

15 MARCH
Alumni Evensong Reception

7 APRIL
MA Congregation

2018

14 APRIL
Christ's College Medical Alumni Association Meeting

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UNIVERSITY OF CAMBRIDGE ALUMNI GROUP

Overmatter from page 6

Tancred has therefore been a most generous donor to our students for over two hundred and fifty years, despite not being an alumnus or in fact having any strong links to the College at all!

Overmatter from page 14

scale photoelastic granular avalanche experiment carried out in our lab. By walking groups of visitors through these experiments in order, they were actively brought in contact with our research.

The project proved to be a good opportunity for our group to network. Many visitors had original ideas on what the technique could be used for, particularly academics who were interested in applying it for their own research. The support and funding from the Royal Society and Cambridge University Public Engagement Offices certainly served for more than public engagement; our most important lesson was that such activities ended up funding our research and encouraging the development of our transferrable skills.