



KOHNFUSED ABOUT CLASSICAL MUSIC?



Read Imperial University Challenge team captain Michael Kohn's new column about classical music

Read more in the Music section on page 13

Credits: Dave Guttridge Imperial College



Neil Ferguson was fired in May for breaching lockdown regulations

Neil Ferguson back with more bad news

Calum Drysdale Editor-in-Chief

Professor Neil Ferguson has warned that despite the month-long lockdown new tough restrictions on movements and contact will still be necessary as Christmas socialising might spark a "third wave"

Ferguson whose modelling has been criticised for being too alarmist has told

reporters that evidence showed that the restrictions imposed by Tier 2 and 3 rules were having an effect on COVID-19 rates before 5th November when a national lockdown began.

Speaking by video link to the House of Lords Science and Technology Committee Ferguson told the Lords that restrictions would have to remain in large parts of England in order to prevent cas-

es numbers rising again. Ferguson was speaking to the Science and Technology Committee about how modelling informed the UK's response to COVID-19.

He said: "We now have clear evidence that Tier 3 measures were working to bring down infection rates in some ar-

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Hammersmith and Fulham council roll out 30 minute test

Calum Drysdale Editor-in-Chief

Hammersmith and Fulham council have become the first in the capital to provide 30 minute COVID-19 tests. These are faster than the PCR tests done by Imperial Testing hub.

The lateral flow swab tests which works similarly to pregnancy tests uses a paper platform that holds a number of assaying SARS-CoV-2 monoclonal antibody. If COVID-19 antigens (fragments of genetic material or proteins) are present in the sample being tested then a colour change occurs, alerting people of a potential COVID-19 infection.

The council authorities have said that they will soon receive enough testing kits from the Government to be able to carry out 20,000 tests a week from now until the end of March 2021.

These tests will be made available to key workers such as teachers and social workers and the council has expressed hope that they will be able to offer tests to people wanting to visit elderly at risk

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WHAT IS FELIX?

Felix is the newspaper of Imperial College Student Union. We provide entertainment, information and news while also being a space that members of the Imperial College community can use to publish their views and respond to the views of others.

CAN I WRITE FOR FELIX?

Yes. We welcome all submissions and aim to publish everything we are sent. An editor will work with you to make sure your article is in the best condition it can be for publication. We also produce video and audio content if that interests you more.

HOW DO I SUBMIT AN ARTICLE TO FELIX?

- If you already have an article in mind or have written one already then send it to the section editors via email. These email addresses can be found at the top of each page in a section.
- If you want to write but don't have a topic in mind, check out or section specific writers Facebook groups that we update every week with topics we would like articles about or email the section editors

Send your article to us by 8 o'clock on Tuesday and we can then have it ready for publication that Friday!

We are also always recruiting editors, copy editors, photographers, artists and more. If you would like to get involved in Felix in a regular capacity, email Felix@ic.ac.uk

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as. Tier 2 was also having an impact, but a smaller one. The decision is a political one, but if we don't want to see infection levels rebound from December 3 my assessment is that measures between Tier 2 and Tier 3 will be necessary in the great majority of locations."

Ferguson's words come as universities prepare to send students home for Christmas.

With all face to face teaching ending on the 9th December students have been asked to travel home between the 3rd and 9th December during the so-called "travel window".

Deputy chief medical officer Dr Jenny Harries said that the travel window "will help minimise that risk and help students get home to their families as safely as possible for Christmas. It is crucial that students follow the guidance in order to protect their families and the communities they return to."

However, the plan has been criticised by academics and their union. Jo Grady, the University and College Union general secretary, said the plans were "riddled with holes" and "raise as many questions as they

Neil Ferguson threatens third wave

answer".

Dr Grady drew attention to the difficulty of ensuring that transport services are not overly full during this very short period saying that "allowing just a week for around one million students to travel across the country leaves little room for error."

She added: "If the Government instead told universities to move online now it would provide much more time to stagger the movement of students and better protect the health of staff, students and their wider communities."

Imperial has not yet provided any details on how students should return home but experts are suggesting that the density of students living in the capital might make additional staggering of transport necessary, raising the possibility of Imperial students having a shorter window of travel than the official nation week.

Union President Abhijay Sood has suggested instead, however, that the large amount of transport links coming out of London means that London is less important than smaller university towns whose transport could be overwhelmed by a surge of student departures.

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relatives living in care homes.

These tests have also been distributed to twenty five other London boroughs and form part of the government's mass testing drive.

Hammersmith and Fulham have also announced that they will be expanding its local test and trace programme. Separate from the national version run by the NHS and Serco, the local authority will attempt to avoid the issues that plagued that national version.

Council leader Stephen Cowan, said:

Neil Ferguson threatens third wave

"With the continued high infection rates, we will do everything possible to protect people by stepping up the fight against Covid-19 with local targeted testing allied with robust track and tracing.

"I want to thank all the partners who are helping us deliver this service and appeal to everyone in the borough to continue to stick to the advice to stay at home to save lives during this lockdown. We can limit the dreadful effects of this pandemic if we all pull together."

Royal Albert Hall to reopen for first event since March

Calum Drysdale Editor-in-Chief

The Albert Hall is hosting a trial event to test the processes developed for re-opening safely.

The organ recital on 3rd December, the day after national restriction on movement and socialising end, will be the first public event held in the Hall since 17th March

when it shut as part of the national lockdown.

Groups will be limited to two tickets which cost £10 and the hall will operate at a limited capacity.

The recital will feature a repertoire ranging from J.S. Bach's to Eric Coates and Edward Elgar and will be played by the organist Thomas Trotter on the Hall's 9,999 pipe

Rolls-Royce announces plans for 16 mini nuclear plants

Lily Shepherd Science Editor

The engineering giant announced a consortium with the National Nuclear Laboratory and construction firm Laing O'Rourke to build 16 "small modular reactors" (SMRs).

The consortium, known as UK SMR, were awarded £18m by the UK Government in 2019 to design SMRs and are now asking for a further £217m for the next stage of the project. Prime Minister Boris Johnson is expected to announce at least £200m for the project as part of a larger green plan for economic recovery.

The UK currently gets around 20%

of its electricity from seven nuclear sites, all of which are owned by EDF Energy. However, six of these seven sites are due to go offline by 2030. EDF are constructing two new reactors at Hinkley Point C, and are expected to be given the green light for two further reactors at Sizewell C soon. But there will still be a reduction in the nuclear energy supply without further action.

Rolls-Royce and their partners claim that the use of SMRs will significantly reduce the cost of construction. Each

nuclear plant would be built from a set of "modules" made in factories and then transported to the site for assembly, turning nuclear power plant construction into something like life-size Lego.

They also argue that this will increase safety, as making lots of smaller modules will mean that there is greater opportunity to practice construction and learn from mistakes.

Like most new nuclear projects, UK SMR are facing criticism, with environmental groups such as Greenpeace

questioning why this investment is not being directed towards renewable energy, which would not pose the same risks associated with radioactive materials. Others are sceptical about whether the short time scale for construction and low cost are actually achievable.

That being said, the project is projected to create thousands of jobs over several decades, and while nuclear energy is certainly not perfect, it has a much lower carbon footprint than the fossil fuels that make up the majority of the UK energy mix.

20% of UK electricity from seven nuclear sites

Are the UK Government right to be investing in new nuclear?

► *As the UK government continues to pump millions of pounds into the development of new nuclear facilities, Science Editor Lily Shepherd discusses whether this is really the right approach for the UK energy mix.*

Lily Shepherd Science Editor

In 2018, I spent three months working for EDF Energy, who own the UK's seven nuclear sites. I started with a fairly limited knowledge of nuclear power, only familiar with the introductory theory of nuclear and atomic physics (from my degree) and the negative portrayals of nuclear power in the media (from the Simpsons). After months calculating the incredibly low radiation doses that would result from incredibly unlikely reactor faults, I came out of that job with a strong sense that nuclear in the UK is both safe and necessary. But should it be the future of energy in the UK?

Environmental groups have long been critical of nuclear power in this country. Greenpeace UK describe it as "expensive, hazardous and slow to build", and argue that it creates problems for future generations who have to deal with disposal of radioactive waste. They have

also suggested that it creates significant national security issues, particularly with the risk of terror attacks on nuclear facilities. These are all very valid arguments.

It is unsurprising that we are fearful of nuclear energy. Most of us have seen the disturbing impacts of the nuclear power station accidents at Chernobyl and Fukushima. However, those of us who have seen HBO's stunning drama Chernobyl will know that this accident was preventable, and the same has been said about the Fukushima tragedy. In both cases, experts have said that the tragic deaths resulting from the accidents could have been prevented if the governments responsible had followed international best practices and standards. The UK nuclear industry is independently regulated by the ONR (Office for Nuclear Regulation) and has some of the strictest nuclear safety regulations in the world.

Despite this, it is difficult to make an argument that nuclear energy is entirely



A nuclear power station.

safe and secure. However tiny, there is always some risk involved – particularly when external safety issues such as nuclear terrorism are factored in. Renewable energy sources such as wind and solar do not create the same level of security

issues and are more climate friendly. A recent study in Nature Energy from the University of Sussex analysed nuclear programmes in 123 countries over 25 years, and found that countries with large scale nuclear programmes do not

Picture credits: Shutterstock

SCIENCE

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show significantly lower carbon emissions than those without. They found that countries which operate an energy mix that is partially nuclear and partially renewable are less efficient, as the nuclear and renewables “crowd each other out”, resulting in the high levels of national investment required for successful renewable programmes being misdirected towards nuclear.

It is clear, then, that a 100% renewable energy mix is the ideal approach to electricity supply in the UK. But the UK currently uses an average of 1873 TWh of energy per year, and to produce this amount requires significant land area, as well as

investment. For example, consultancy firm LucidCatalyst calculated that using solar power to replace oil demand alone would require around 23,000 square kilometres of land – roughly 10% of UK land area. Wind, geothermal and tidal energy all require similarly large areas.

There are two solutions to this problem. One is to increase the efficiency of renewable energy sources, and the other is to find ways of storing energy so that it is not wasted (e.g. so that solar energy is stored on sunny days, when there is more than we need). Both of these solutions are focuses of worldwide energy research.

However, research does take time. If the UK Government directed all their investment in nuclear towards renewables

tomorrow, we would still be left without energy for potentially years, as we waited for the research to bring more efficient or storable renewable energy. Given that we have got a very short amount of time to turn climate change around, we really need an alternative to fossil fuels that we can use right now. Using nuclear power provides an intermediary stage on our way to complete decarbonisation – a stepping stone – and it is therefore necessary.

That being said, nuclear should not be the long-term future of energy in this country. We should be seeing a gradual phasing out of nuclear energy in the next few decades, and a rapid growth in renewable investment. The UK government has awarded billions of pounds to

several new nuclear initiatives in recent years, and I cannot help thinking that at least some of this would have been better spent elsewhere. Renewables may not be able to provide us with all the energy we need today, but our government should be investing much more heavily in research so that the UK energy sector can decarbonise as soon as possible.

Felix's tips for Black Friday tech shopping

Shrey Bohra Tech Writer

Black Friday originated in the US, with the day following Thanksgiving signifying the start of the Christmas shopping season. Despite the fact that the UK does not celebrate Thanksgiving, the event has crept onto our shopping calendar, with American companies such as Amazon and Asda (then owned by Walmart) introducing the event in the early 2010s, and major British retailers following in 2014 for fear of missing out. Although many firms had misgivings – with John Lewis' CEO calling Black Friday “bad for business” in 2015 – the event has clearly been a success for retailers. Shoppers in the UK spent an estimated £8.29 billion over the Black Friday weekend in 2018 – an average of £346 per person. This year's Black Friday event will undoubtedly be different to what has come before; an economic downturn caused by the coronavirus pandemic, the second lockdown and severe shortages of popular products such as games consoles and laptops threatening to dampen the retailer's takings. With that in mind, it is more important than ever to make sure you get the best out of your spending.

Scrolling through pages and pag-

DECIDE WHAT YOU NEED BEFOREHAND

es of deals is a great way to make sure your wallet ends up lighter than you

intended. The deals page on websites are the digital equivalent of window shopping, without the physical limitations the real-life version presents, making it easy for you to convince yourself you need something you do not.

Before the deals start, make a list of things you actually want. It is best to not be too specific when doing this – while a TV is almost definitely going to be on sale, a specific model may not be, and limiting your choices to a single product might lead to disappointment.

While we associate pressure selling

IS IT EVEN A DEAL?

with the dodgy man in the van on Rogue Traders, the subtle tricks digital retailers use are no less effective. A great example of this is Amazon's “Lightning Deals”, with their countdown showing that the number of discounted items is limited, and the timer forcing you to hand over your money in the next 15 minutes or lose out on the deal altogether. What this means is that you often do not get the opportunity to compare prices across the market, or even against the retailer itself. It is important to not let yourself get caught by the tactics of the retailers – take your time researching the product and find out if it can be found cheaper elsewhere. The short-term deals offered are often not that impressive, which can be seen if you use a price tracker such as camelcamelcamel – sometimes a deal

is only returning a product to its original price before it had been increased to make the deal look more impressive.

Retailers sometimes have manufacturers bid to build special products to

CHECK WHAT YOU BUY

fit in a price budget. These products are then given model numbers that are extremely similar to existing products. Not only does this make it more difficult to compare retailers, as they are technically selling different models, it makes it easy for you to inadvertently purchase an inferior product. While the products will still keep their headline features, smaller things – such as the number of HDMI ports on a TV – might have been cut in the process of making the product cheaper.

The obvious rules apply here – if a price is too good to be true, it probably is. Companies that offer a price signif-

BUY FROM A REPUTABLE RETAILER

icantly cheaper than their competitors are often shipping from a warehouse outside the UK, marking your parcel as a “gift” and hoping it is not inspected during transit, thereby reducing costs by avoiding VAT. Even if it does get past customs, the items from these sellers are

often not covered by the manufacturer's warranty, leaving you at the mercy of the seller. Another thing to remember is that extended warranties are only as good as the companies offering them – a 10 year warranty is no good if the company you buy from goes bankrupt in a month.

If you are making a purchase of over £100 (and below £30,000) you should also pay for a portion of it – however small – using a credit card. Thanks to a power-

USE A CREDIT CARD

ful piece of legislation known as Section 75, credit card companies are jointly liable for any purchases you make, even if you pay off the balance immediately. This means that if something goes wrong – for example, if something you ordered never arrives – the credit card company has to refund you if the retailer does not. It is important to note, however, that this protection does not apply if you pay for something via PayPal or other third party; wherever you can, pay directly.

COVID-19 VACCINE TRACKER: Felix Edition

Julia Dabrowska Science Editor

In order to put an end to the global coronavirus pandemic, researchers around the world are working tirelessly to develop a vaccine to protect against COVID-19. While vaccine

production usually takes multiple years, a coronavirus vaccine is hoped to be developed within 12-18 months.

Vaccine testing can be split into 5 stages:

Pre-clinical – animal testing to see

whether the vaccine elicits an immune response.

Phase I – healthy human volunteers to determine safety and evaluate immune response.

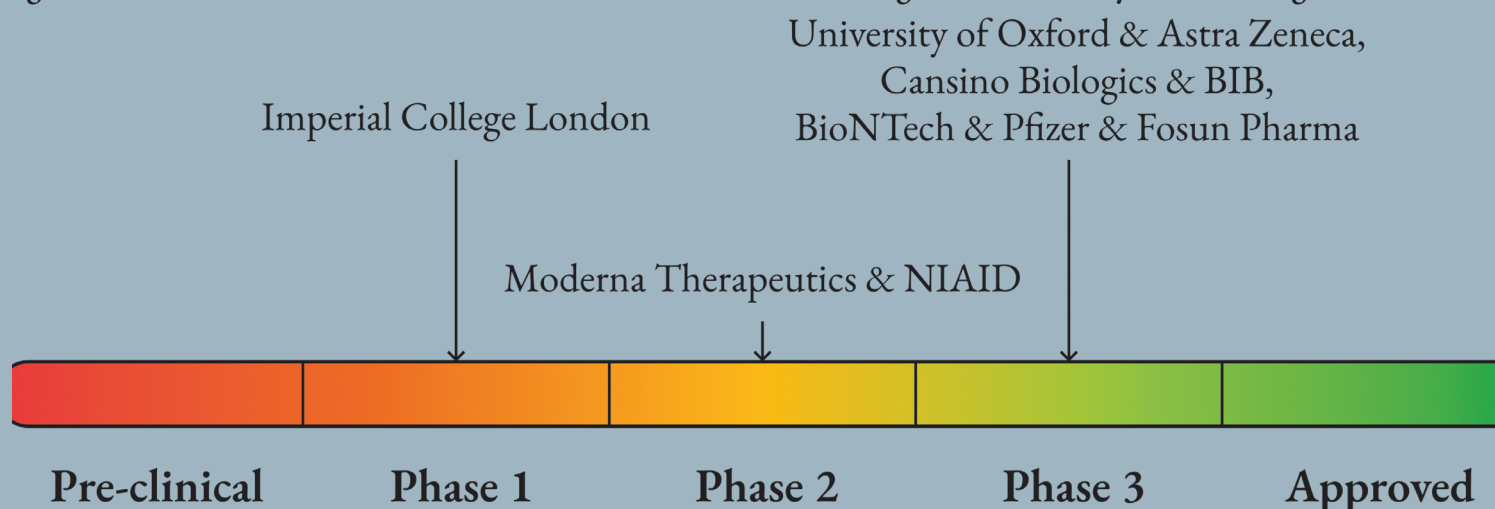
Phase II – hundreds of volunteers to identify correct dosage.

Phase III – thousands of volunteers to confirm safety and efficacy vs. a placebo.

Phase IV – studies on adverse effects, long-term immunity and vaccine usage following the approval and licensing of the vaccine.

The WHO is currently tracking the progress of over 170 candidate vaccines; at Felix, we've chosen 5 of the most promising candidates to follow, so watch this space!

New Update: This week, Pfizer/BioNTech confirmed the 95% efficacy of their vaccine, initially proposed last week, while Moderna became the second company to release an early analysis of their Phase III trials. Read more below!



Moderna reveals 94.5% efficacy for its coronavirus vaccine

Photo credits: Wannapic.com

Julia Dabrowska Science Editor

Another week, and another coronavirus vaccine manufacturer has shared news that preliminary results from their Phase III trials are overwhelmingly positive. This time, the vaccine is being developed by Moderna Inc., a US-based biotech firm, and the efficacy from the study of 33,000 people was shown to be over 94%.

Moderna's vaccine is designed using the same concept as Pfizer/BioNTech's vaccine, i.e.. mRNA that drives the individual's cells to produce antigens and generate an immune response (read about it in last week's issue if you haven't already!) and requires two doses. Similarly to last week, the results have not yet been peer-reviewed, however they still allow for cautious optimism.

It must also be noted that while 94.5% and 90% seem like different numbers, the vaccines they represent are likely to have the same, or even reversed, efficacy. As Imperial's coronavirus vaccine lead Prof. Robin Shattock tweeted: "[We have] no idea what the efficacy will be at 6-12m. Could be considerably lower.

The danger is that the public will be using this % to ask for what they think is best."

Despite the similarities in study size, efficacy and technology, this vaccine has a solid advantage over the previous candidate, in that it can be stored in temperatures of -20C over a 6-month period, and in typical fridge-like temperatures of 2-6C for up to a month. In comparison,

Pfizer/BioNTech's vaccine can only be stored in these temperatures for about

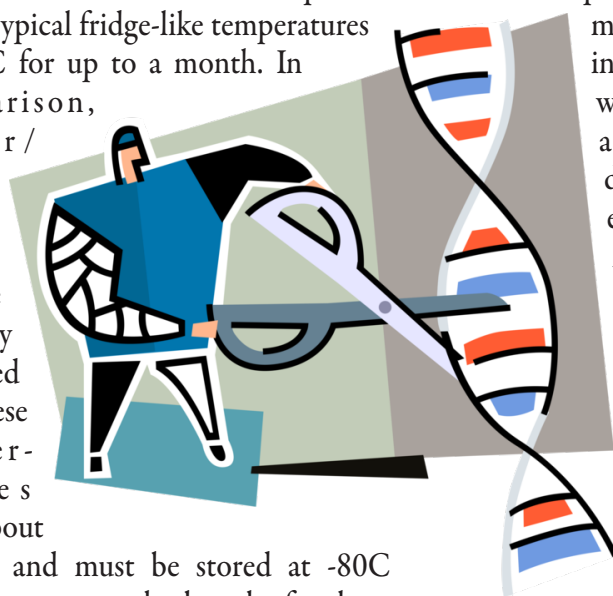
a week and must be stored at -80C otherwise – a real obstacle for lower-income countries around the globe.

However, while the vaccine may have better shelf-life and storage conditions, it might be more difficult to access in the first place. Unlike last week's vaccine candidate, which the EU and UK have

both signed large deals for (200m and 40m, respectively), Moderna's largest deals thus far have been with the US for 100m doses (and an option for 400m more), Japan, Canada and Switzerland, with the EU commission only having a

'potential purchase agreement' (that is, nothing set in stone). The UK, meanwhile, scrambled to secure a mere 5m doses on Monday when the news of efficacy was announced. Moderna's vaccine is also the most expensive of the frontrunners, costing around £40 for the two required shots, in comparison to Pfizer's £30, or Oxford/AstraZeneca's £3.

Nevertheless, as the mood around the world improves, it will still be months before the vaccines will have an effect on day-to-day life – so it is up to governments and individuals to act responsibly to control the spread of the pandemic until they are widely available.



SpaceX Crew-1 successful launch and dock with ISS

Ansh Bhatnagar Science Editor

Shortly after midnight UTC on Monday 16th November, the first operational crewed mission from American soil successfully launched and subsequently docked with the International Space Station.

On board the Crew Dragon spacecraft were NASA astronauts Commander Michael Hopkins, Victor Glover, Shannon Walker and JAXA (Japanese Aerospace Exploration Agency) astronaut Soichi Nogushi. They will join Russian cosmonauts Sergey Ryzhikov and Sergey Kud-Sverchkov, as well as fellow NASA astronaut Kathleen Rubins, onboard the ISS for a planned mission duration of 180 days.

This followed an earlier mission, Crew Demo-2, that succeeded in delivering NASA astronauts Douglas Hurley and Robert Behnken to the ISS. This mission onboard a SpaceX craft is expected to be just the first in a long line of private-public collaborations as part of NASA's Commercial Crew Program, which also involves aerospace company Boeing.

SCIENCE

Charity CEOs plead for more support as research funding dwindles

Patrick Chan Science Writer

Medical research charities in the UK are facing a critical moment: as revenues plummet, many have been forced to make huge cuts to their research budgets. In a recent commentary published in the *Lancet*, a leading medical journal, CEOs of major health charities warn of the threat to UK medical research and development, likely causing delays to medical advances and deployment of next generation treatments for patients.

Due to the pandemic, funding for research by charities has fallen precipitously. Many fundraising events like the London Marathon have been cancelled, while charity shops remained closed for extended periods of time. This has led to a 38% drop in fundraising income between March and May 2020 and a projection of a fall in research spending by up to £368 million for 2020/21.

As the financial impact starts to bite, charities have already taken drastic actions in anticipation of further losses. The British Heart Foundation has halved

its budget for this year, down from £100 million. Meanwhile, Cancer Research UK has cut £44 million from its budget, as well as postponing all decisions on new research ideas for 6 months - meaning that no new research projects were approved or funded in the first half of 2020.

When the government announced a £750 million package to support charities back in April, medical research was excluded. Instead, money was reserved for front-line services to patients, leading to calls for more funding to keep research and development going.

The effect of a lack of funding will be keenly felt by patients and scientists alike, as charities play a crucial role in supporting medical research in the UK. In 2019 alone, their fundraising efforts brought in an estimated £1.9 billion,

which represented just over half of the total investment in publicly funded medical research in the UK. They also support over 17,000 scientists and their work to advance our understanding of diseases and search for cures.

Moreover, charity-funded research has led to numerous breakthroughs over the years, such as the development of radiotherapy for cancer treatments and life-saving medications for heart attacks and strokes.

These treatments have aided in the prevention of an estimated 830,000 cancer deaths in the UK since the 1980s.

With funding not expected to recover for at least 3 to 5 years, charities have also warned of the long-term risks, such as delays in bringing new treatments for patients. Furthermore, there are signs that researchers are also feeling the pressure. In a recent survey, 40% of scientists

funded by charities expressed a desire to leave the field as a result of the recent cuts.

However, it does seem that the government is aware of the impact. In their latest UK Research and Development Roadmap policy paper, published in July 2020, the government noted that the pandemic has “exposed the fragility of the funding system, with large sections of our national research activity dependent on third-party funding sources, including international student fees”. They have also vowed to “stabilise the system” in the next spending review, which is due to be published later this month.

As a result, charity bosses have called for the government to use the review as an opportunity to bridge the gap. They propose setting up a new life sciences charity partnership fund, which will enable improvement in patient outcomes and help protect careers. With spending and financing policies being debated now more frequently than ever, perhaps there is hope that the ever-important medical research can continue.

“

IN 2019, CHARITY FUNDRAISING BROUGHT IN AN ESTIMATED 1.9 BILLION POUNDS

A conversation with Tom Whipple, Science Editor of *The Times*

Alana Cullen Science Writer

Last Friday, Imperial students were lucky enough to have a conversation with Tom Whipple, Science Editor of *The Times*, during an online event organised by Felix.

Speaking to aspiring journalist students, Tom recounted how he first got into journalism an interest alongside his Mathematics degree. For this work he was named the *Guardian* Student Feature Writer of the Year. From there, Tom's began his career as a freelancer, resulting in a job at *The Times*, where eventually he became Science Editor.

In this role, Tom has written about a variety of topics: from the bizarre concept

known as the leap second which causes havoc on Wall Street to the people who refuse to leave the Chernobyl exclusion zone. His job has also allowed him to travel, taking him across the world to chase the latest science stories.

Interested in journalism yourself? During the interview, Tom offered 3 tips to writing a good science story:

1. Interview the scientists. Getting the human voice into your story is potentially much more interesting than the canned quotes that the press release offers. Ask why the author of the paper is interested in the finding, and how the science was done.

2. Read the paper. Press releases are a great resource for finding the story, but

delving into the paper and getting to grips with the science yourself is a much more thorough source of information.

3. Science is received better as a feature - not hard news. Try and go deeper within your story than the classic headline, breakthrough, pyramid structure. Humanise and write a richer, more detailed piece.

A good science journalist is also a responsible one. Science stories appear similar across most outlets because they are constructed by objective journalists trying to get the science right. Unlike some aspects of journalism, science stories tend to be the least subject to editorial pressures. If you are concerned about accuracy, it is acceptable to send

a paragraph to the scientist to sign off on technical accuracy - but no need for copy approval. And if you find yourself writing in complex jargon, it is probably a sign you do not understand the science fully; go back and research more so that you can explain it in layman terms.

For those who aspire to be a science journalist like Tom, in his opinion, the commonality in journalism is those who persevered - it isn't an easy field to break into, but persistence is key to getting to where you want to be. Take up all the opportunities you can - graduate trainee schemes or getting your name on a few national by-lines (or even writing for your student newspaper *cough cough*) is a good place to start.

This edition was produced thanks to the work of

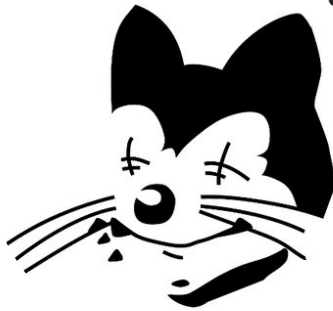
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And our numerous contributors

The Felix Editor on

The immense joy of seeing someone you sort of know

I went onto campus this week in order to do something in the Felix office. My plan was a quick in and out visit. Arrive, do what needed to be done and leave. What I never appreciated is how many people whose acquaintance I had made that I would see. I am an outgoing person. I like to meet people and talk to them. Yet I do not think I am alone in saying that there are a huge number of people that I know that with whom I have never spoken. Maybe they are on my course or I know them through someone else. In any case my instinct would once have been to ignore them



or to nod politely and to walk on by. However, this time, as I walked through South Kensington I felt like all my filters had been switched off. I was speaking to everyone. Anyone whose name I knew I greeted with huge excitement delighted at the opportunity to see anyone.

I wonder what will happen when we can all move around freely again. I like to imagine that other people will experience, the same feeling, at least for a while. A whole country experiencing immense joy at just seeing and talking to someone will be lovely, however, quickly it is over.

Maybe some sort of pulley device?

This week has been the first time that I have properly felt the despair of lockdown. In the spring and summer, when I was revising for exams, being stuck at home was helpful. It allowed me to work harder without distraction. I was living alone with my girlfriend and I would get up in the morning, exercise and work through the day and then we would cook together in the evening. Yet our situation at the times seemed so much bleaker. We had no idea when our confinement would end and far less of a reason to feel optimistic about the future as we can now thanks to BioNTech, Pfizer and Moderna. I wonder if this is because the end seems both so near and so far away. With full immunisation predicted to still be over 6 months away am I just facing the realisation that many of my peers have already been clever enough to figure out a while ago. Namely, that things you want to do are no longer

possible and this situation is still long from finishing. Alternatively it could be that the frustration stems from no longer feeling that the social distancing requirements no longer seem to match the severity of the problem that the country is facing. Neither of these two reasons particularly sits right in my head though. I am forced to consider whether the reason that I was more productive in the March to July period was because I was being kicked out of bed every morning and being told to go and make a cup of tea. What I need is some sort of machine that can replicate this function. Some kind of machine that would only turn off when the liquid volume of one mug is poured into it and would re-activate if I got back into bed. Please send suggestions to felix@ic.ac.uk with detailed blueprints or completed machines to the Union.

Statement of Intent

We here at Felix believe that it is always in the interests of the students to know. That cover-up and paternalistic obfuscation is never right and that as intelligent people students should be treated with respect and given the ability to make up their own minds. Therefore, I, the Felix Editor, on behalf of the team promise that:

We will to the best of our ability tell you the whole truth and nothing but the truth.

We will keep your confidence and will only publish something you say to us if you have explicitly said that we can.

We will work to expose unfairness and discrimination in all forms that it takes both at the College and elsewhere.

We will treat fairly any article sent to us, regardless of point of view and do our best to work with you to prepare it for publication in our pages.

Signed by Calum Drysdale
Editor-in Chief

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Credits: wikimedia

Gideon Osbourne Consultant Correspondant

We interviewed *Hangman* employees for their tips on growing a business. In the race to get into the 1% before robots replace us, starting a business is a tried and tested strategy.

We visited the *Hangman* headquarters, located in a lake resort on the Moon, to get some tips for young entrepreneurs. The natural place to start is with those whose job it is to give this sort of advice, so we consulted the *Hangman* management consultants, most of whom told us to hire more management consultants. *Hangman* executives following this strategy were weary when the fifth new division of management consultants were still giving the same counsel, but the consultants explained that you can't make money without spending money and the best way to do that is to “hire more management consultants”.

“
IN THE RACE TO GET
TO THE 1%, STARTING
A BUSINESS IS A
TRIED AND TESTED
STRATEGY

Like any good naval ship, the *Hangman* headquarters has a bridge, and under that bridge live some trolls. One troll, Hrangnir the Ugly, explained some things he learnt working for the Dark Mage of the East: “You really need to ask yourself three questions: when's a good time to start planning finances, what's the optimal financial goal, and how should I go about my financial plan? Then you'll need to start thinking about growth and protecting your investments. How involved with them should you be? Is it better to be flexible or stable?”

Another troll, one Chase W. Phillips, had this to say about business: “There's no point even thinking about it because all the minorities are just taking the jobs. My dad man-

aged to get me a job interview with the head research engineer at the company he owns and I lost it to this other guy just because he was in a wheelchair. My dad told me it was because the guy had 4 PhDs and a Masters but I think we all know what's really going on. These multimillion dollar companies are getting more Marxist by the day.”

Hangman's writers also contributed: Trevor Say-trevor told us “surroubdn ytoursekfk with smart peopyle”, Erin Onthesideof-caution told us “never jeeo toue eggs in one basker”, and Sharin Iskarin told us “exoasnd your pirtvolio”. We didn't have time to talk to any editors. On the shop floor we spoke to Darryl ‘Long Femur’ Jones, who told us about some of the smaller details of running a business, like article word limits. “You've got to be careful when writing something like this that you don't run out of page spa-

“
THESE MULTIMILLION
DOLLAR COMPANIES
ARE GETTING MORE
MARXIST BY THE DAY

Credits: wikimedia / Robert Scoble



Hangman Consultancy HQ

“All quiet at Wilson” say Wardens

Alpha Beta Private School Wanker Correspondant

Subwardens and hall seniors at Imperial College London's Wilson Hall have reported unexpectedly high levels of quiet and respectful obedience among residents, sources confirmed this week.

In an exclusive interview with *Hangman*, warden Samuel Norton explained that the students under his supervision had risen to the challenge of lockdown admirably. He opined that “going into this, many people thought that being forced to spend days on end locked in would provoke students to rebel, but no!” He went on to express that such docility “honestly left [him] with very little to do”.

The behaviour is especially surprising given the usu-

al fanfare around the freshers' experience, but clearly students have found their own introspective ways to deal with this.

Speaking to some of the residents we found that, while a majority felt inconvenienced by the consequences of a global pandemic, all invariably felt that such grievances paled in comparison to their “responsibility as citizens, classmates, and friends”. First year biochemist Mandrew said told us “sure, I'd rather be out drinking right now, but this term is but a

“
IT'S IRRITATING TO
BE ABLE TO HEAR
THE HUM OF THE
STREETLIGHTS
OUTSIDE

brief moment of what I pray will be a long and fulfilling life”, at which point the group of socially distanced students behind him nodded wistfully in unison. Another student, this time physicist Dalum, did however have a complaint, saying that “it's irritating to be able to hear the hum of the streetlights outside” when trying to sleep. The hall leadership team have been quick to respond to this, promising to provide more therapeutic ambient noise at night in the form of the early work of Enya and Brian Eno.

Caption Contest Results

NegaFelix Hangman-in-Chief

Last week, we challenged you to send us your funniest captions for the comic on the right. Whilst there can only be one winner, we received lots of funny responses (and some less funny), so here are some honourable mentions:

"You will be able to fly back to Earth in the travel window from December 3rd to 9th."

"I don't think apples go very well with cheese."

"You must self-isolate here for 14 days."

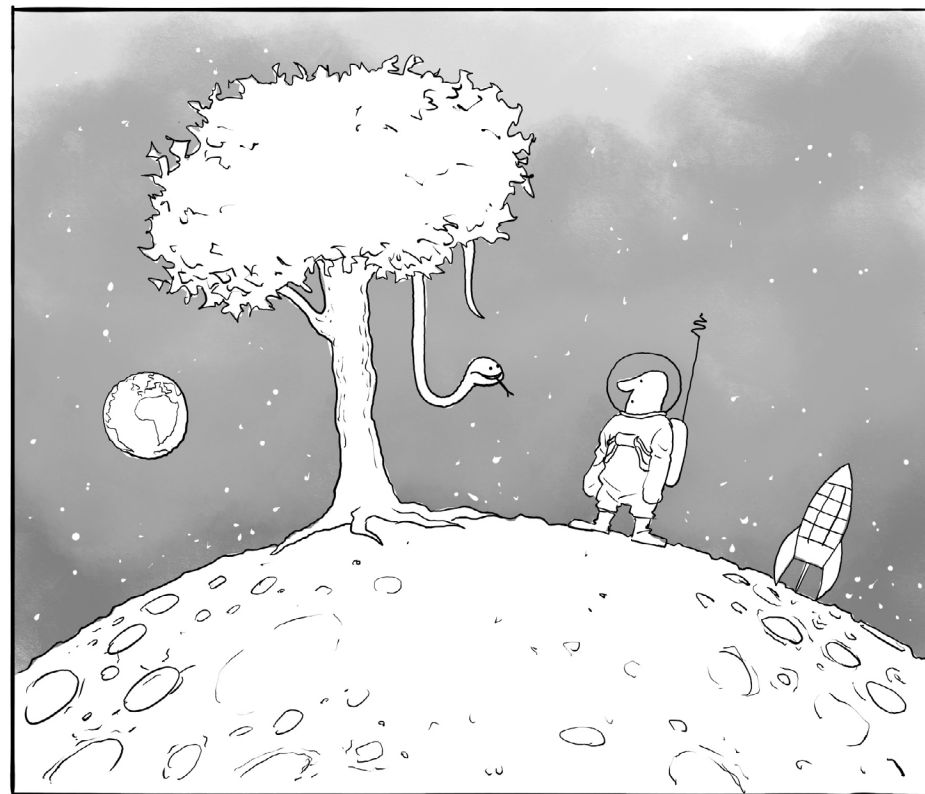
Of course, our very own Hangman editors couldn't resist cracking a wise one. Here are some of their ideas to be lambasted at your discretion:

"The Moon? Yeah, keep going 100,000 miles and it's on your left."

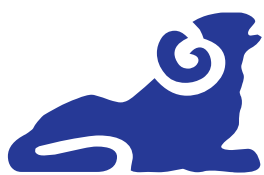
"You're not here for the oil, are you?"

"Excuse me sir, do you have a moment to talk about our lord and saviour Jesus Christ?"

Don't want to miss out on our next Caption Contest? Then watch this space and follow us on instagram @felix_imperial where you can keep an eye out for the next competition on our story. Remember, we are not the cat food brand.

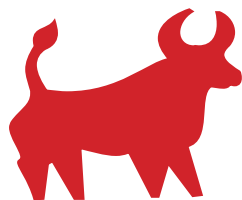


Winner: *"Fancy an apple? It's 1/6th as forbidden up here."*



ARIES

This week you finally manage to tell a tasteful cancer joke.



TAURUS

This week you can't be sure, but you think the spider in the corner of your room just winked at you.



GEMINI

This week, in the modern day version of the Narcissus myth, you try to kiss the little preview window on your MS Teams call.



CANCER

This week you live it up a little and have a wank with the nice shower gel.



LEO

This week, while your landlord isn't pleased about the blu-tac marks left by the poster on your wall, it's really the gaping escape tunnel behind it that sets him off.



VIRGO

This week your flat mate throws a wet blanket on your grease fire party.



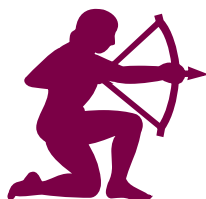
LIBRA

This week's eviction notice will pale in comparison to next week's crack addiction.



SCORPIO

This week new fire safety regulations require everyone to tell the truth whilst sitting on flammable materials.



SAGITTARIUS

This week you find out your boyfriend has been trying to do Movember.



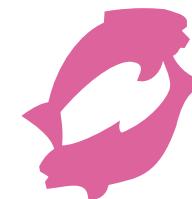
CAPRICORN

This week you find out that ice cream sundaes can be eaten any day of the week.



AQUARIUS

This week surprise your significant other with a rock in a sock.



PISCES

This week capital gains tax is increased to capital punishment.

Blyth Centre 2020 Art Awards

It's been a less than subtle year in so many ways. Seems like everywhere we turn – news of the pandemic and the impending vaccine is all we hear. But on the other side, it is often the most turbulent of times that encourages and unleashes defining Art. While the rest of the world, bustles about, Art goes about its humble duty in silence – to awe and inspire.

Blyth Centre of Music and Arts has been quite active amidst the flurry of lockdown and remote learning routines of 2020. Online classes and workshops have continued per usual drawing great involvement and excitement from the student body. Bespoke opportunities are currently available – including a free 20 minute, 1:1 tutorial across the academic year with a range of professional artists, open to all students and staff at Imperial College (More details regarding these can be found on the Blyth Centre website).

In that spirit, this year we bring to you features of the awardees of Imperial's Blyth Centre awards and fellowships. The following column will run through the coming weeks introducing the Blyth Centre fellowship holders and awardees along with their artwork. We wish the awardees the best of luck and congratulate them on their accomplishments, and hope that this space will inspire readers to tap into their creative side and utilize the Blyth Centre resources.

About the Awards

Blyth Art Fellowship

The fellowship is presented to students who have shown both exceptional talent and incredible commitment to their creative practices alongside their study at Imperial College. The fellowship offers each holder £500 materials bursary, a free place on the Arts/Short courses drawing class, a free Tate card and professional mentoring support from a range of artists

Blyth Art Award

The award is presented to students who have shown great talent and dedication to developing their creative practice alongside their study at Imperial College. Each Art Awardee receives a £50 materials budget and a mentoring tutorial with a professional artist.

Unlike any other professional Art Fellowship, the tutors are bespoke sourced after the interviews in response to each student's work to maximise on developing each individuals' creative practice.



A DAMP NIGHT
digital oil painting,
32.1 x 42.8cm

This piece is made using the Procreate app. It only took me a week to finish whereas actual oil paintings would take a lot longer. I experimented a lot with the brush parameters to mimic the textures and tones of real paintings, and I think it turned out quite realistic.

Credits: Cleo Zhang

2020 Winners

Blyth Art Fellowship

1. Photographer Louie Hext (Physics UG)
2. Artist Cleo Zhang (Life Sciences UG)

Blyth Art Award

1. Artist Freddie Hong, (Engineering Research PG)
2. Painter Grace Zhang, (Earth Science & Engineering UG)
3. Photographer George Dixon Dray (Mechanical Engineering UG)
4. Painter Santhosh Thavarajasingam (Medicine UG)

Written by **Vaidhiswaran Ramesh** Arts Editor with input from **Mindy Lee**

Cleo Zhang

Blyth Art Fellowship

My name is Cleo and I'm in my third year of Biotech. I first heard about this award from a friend who was one of the awardees last year. She encouraged me to apply and so I started gathering up my art pieces to make an online portfolio. I also made new artworks during the summer to prepare for the interview. So before receiving this award, it has already inspired me to create more art. And I believe this award will continue to push me forward while providing me with plentiful resources and support. I'm also excited about the tutorials with different artists as I've always been curious about other people's creative process. Although many things have been different due to COVID, it gave me the excuse to finally experiment with digital drawing. During lockdown, I learnt various software such as Procreate, Illustrator and 3D modelling tools such as Blender. And I really came to love the versatility and convenience of digital art which I will continue to explore in my future work.

Santhosh G. Thavarajasingam

Blyth Art Award

My name is Santhosh G. Thavarajasingam, and I am a 5th year medical student. I was born in Sri Lanka and grew up in Australia and Germany. My art practice started three years ago, when I found some acrylic colours in my parents' cellar during a summer break and painted a little something with my two brothers. We loved how painting brought us together and enabled us to express ourselves, so we kept painting.

My paintings reflect what I have been, I am, and I am becoming. Some inspiration comes from my Hindu heritage, from the places I grew up in, German poetry and aboriginal art. That said, most of my ideas come from my brothers. I would not be painting without them. Furthermore, I would like to thank Mindy Lee for the Blyth Art Awards which allowed me to expand my fine art practice alongside my medical studies.

I got to know about the Blyth Centre Awards through the Imperial Art Society. The award allows me to practice art with less financial constraints and it extremely motivates me to continue creating art. The pandemic has not affected my art practice. But my art has changed, it has become more abstract.



Credits:
Santhosh G.
Thavarajasingam

SHAKTHI
2020,
Acrylic on wood,
150 cm x 50 cm

Shakti, a Sanskrit word meaning feminine power, is the primordial cosmic energy and represents the dynamic forces that are thought to move through the entire universe. Shakti is the concept or personification of divine feminine creative power. The painting depicts a female and male at a beach. The stark but complementary colours represent the contrast and connection of male and female. The outstanding purple symbolises Shakti, female energy, without which the earth and this painting would lose its beauty.

ARTS

Pour away the ocean and sweep up the wood

Vaidhiswaran Ramesh Arts Editor

Art is an interesting aspect of life. While we consume it every day, we fail to articulate and define its remit. And even the boundaries, if any, between the ill-defined definitions we provide for say Arts, Music, and Theatre are ever so blurred in the 21st century. In another world, in a world without COVID-19, a busy world that is, we wouldn't have had time for such semantics. But in this current expanse of time, courtesy of the pandemic, the mind wanders for such introspection.

London is truly blessed in that accord. A modern-day bridge between the old world and the new one, both literally and metaphorically. Tucked away in its quaint neighbourhoods, museums in London offer a quick getaway to any part of world, from full blown headliners such as The National Gallery or British Museum to the quaint personnel collections of famous Britons such as The Wallace Collection or Apsley House.

Considering that, I realized that I was better placed now, in diverse London, than in my earlier years, to address this predicament

What is the definition of Art? If not a comprehensive, articulate one, at least a personal one would do for now. For the better part of 2020 while the COVID-19 situation ravaged

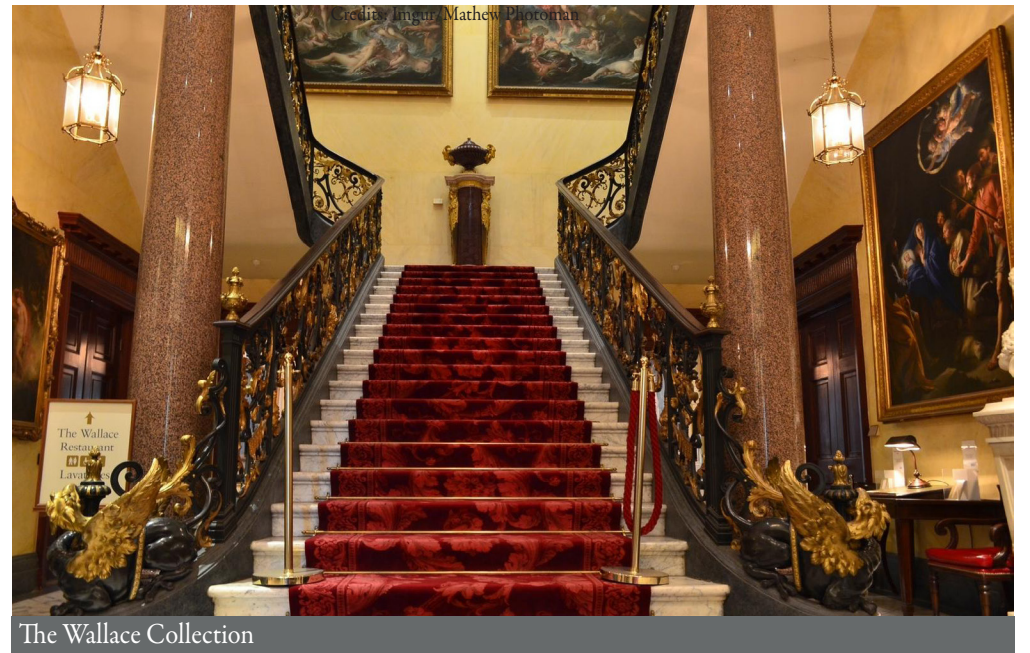
all over, the absence of prolonged local lockdown meant that you could almost make up for the lack of international travel and enjoy these exhibits like never before, away from the crowds, the glistening frenzy of Instagrammers and

the constant chatter of tourists. However, as England is dragged into a second lockdown this opportunity is alas taken away.

Pushing for a last rendezvous and seeking to resolve my dilemma before the curtains close, I find myself here on the 4th of November, a cold grey London evening in Manchester Square, standing before the old townhouse of the Seymour family, now housing The Wallace Collection. If I am being honest, I chose this one, half indulging in an incoherent intuition that if I were to find any definition/resolution, it was to be in an old school collection such as this, and - well - because they were the only one who had a last-minute ticket available the day before the lockdown. Seems like I was not the only Art enthusiast in town, but perhaps certainly was the laziest.

One-way paths, reduced occupancies for each room, hand sanitiser tills every few yards, and the works. Nothing changed and yet everything did. A little less than half the collection had been boarded up, owing to safety measures, but enough indeed for its quarters. I wandered by all the famous stops, consciously reflecting this time on the cause of any appreciation. The grand staircase with its famous wrought iron balustrade, made originally for the Royal Bank in Paris in the early 18th century, stood as ever, overlooking the entrance — It certainly had allure. But was it

the history, or its inherent beauty or was it a realisation that it's a perfect the embodiment of the turbulence of time? I was not sure. But I stood and I watched. I followed the trail there on, gazing and ogling at the umpteen drawers and



The Wallace Collection

cabinets from Louis XV's court, the intricate clock pieces with their marble sculptures, and the paintings by Old Masters, reflecting another time. The Venice Canal, busy with activity, painted by Canaletto in his trademark style - I wonder if dolphins swam in the canal in his time? The Laughing Cavalier by Frans Hals was still smiling nearby, despite the dearth of tourists wanting a selfie with him now. Anyway, a pensive few moments accorded and I moved onto the European armour collection, the least interesting to me personally but it struck a realisation. Most of the appreciation stemmed from the exhibits history, albeit as short as it was. Perhaps that's the point of these institutions isn't it? The contextualization of the creation of Art? I strayed a bit further, moving back and forth, savouring all I could, aware of the lockdown, but I could never put my finger on what constituted Art.

Coming out, however, the last thing that registered in my mind, was that the definition I was seeking was and is by itself meaningless. In hindsight, I might have done myself a disservice by visiting a collection with a narrow gambit, but then again, whatever we call it - Art doesn't itself articulate, or at least good Art doesn't, but it begs articulation and discourse. So, at the end of the day, it is what you make of it. The common consensus however must be that it evokes a thirst, a desire if any to be awed, and in

my opinion anything that satisfies that, would be the bounds of its definition. It seems to be the same across platforms, whether you are in the stands in an opera, or before a Bernini or in a humble drawing room of a 19th century townhouse, looking at Rembrandt.

I sat outside following this line of thought a bit, watching the staff close the gates. The relevance of semantics disappeared further, and a stark reality emerged as I watched this somber parade. The reality of the lockdown and the needed shift in consumption of 'Arts' for the next few weeks. I was reminded of Samuel Taylor Coleridge's verse from the 'Rime of the Ancient Mariner' - 'Water, water, everywhere, and all the boards did shrink; Water, water, everywhere, nor any drop to drink'. In that moment this captured my thoughts perfectly well. There stood on the other side of me, some of the greatest collection of Art ever accumulated, available to all until just a few minutes ago.

The internet is indeed a cruel thing, tantalising us with the prospect of replacing this physical experience ever since. Memories of the hours spent scouring the scores of online museum catalogues during the first lockdown came to mind. Perhaps it's time we all give the internet another try, but when that fails, we shall find ourselves here again when the curtains and the doors reopen, only at that time, there isn't going to be enough water for our thirst.

Credits: Cleo Zhang

Kohnfused About Classical?

Each week Michael Kohn introduces us to one old and one new classical composition, attempting to break down barriers and make the genre more accessible.

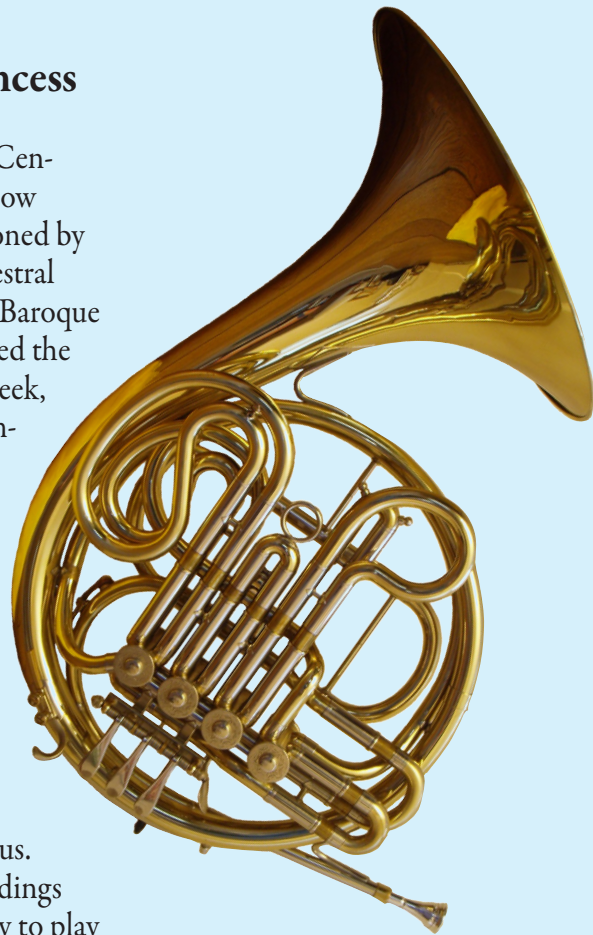
Ravel - Pavane for a Dead Princess

In 1899 (so basically the 20th Century), Ravel, who you might know from his Bolero, was commissioned by a princess to write a short orchestral work. He chose to write a slow Baroque (early 17th century) dance, called the Pavane. In a change from last week, this is very still and serene, opening with a solo for what is (in my biased opinion) the best instrument of the orchestra - the French Horn. Characteristic of impressionism, this short work develops just two themes, but it's the harmonies that make it very interesting, and the music really builds and swells to some chords that can only be described as delicious.

It's best to opt for shorter recordings here - there's a (wrong) tendency to play this very slow, which ends up making a masterpiece into a bore. Ravel wouldn't have been happy with this, describing slower performances as "Dead Pavane for a Princess". But if the tempo is right, it's really a magical five minutes, incredibly sad music tinged with hope.

Benjamin Britten - Serenade for Tenor, Horn and Strings

Sticking with this week's last-minute and tenuous theme of French Horns, this minor work by a very famous late



20th Century British composer is really something. Written for Britten's lover Peter Pears, and undoubtedly the greatest French horn player of all time, Dennis Brain, this work sets 7 poems by great names such as Alfred, Lord Tennyson and John Keats to music that spotlights both the singer and the horn, often with the singer having the melody that is responded to by the horn. There's a deeply serious and gut-wrenching Elegy based on "the Sick Rose" by William Blake, or a slightly more playful Hymn based on a poem by Ben Jonson, both about 3 minutes long. The best recording is of the original dedicatees Brain and Pears.

Disagree with me completely?

Is there a specific theme you want me to recommend classical music for?

Or do you have music for me?

Email me at michael.kohn18@imperial.ac.uk

Felix Recommends

Freedom

Artist: *Amen Dunes*

For fans of: *Oasis, Mazzy Star*

Run time: 47 mins

Guthrie Ruby Music Editor

Three years of production produced this master work from the band Amen Dunes. Drawing influences from Tom Petty, early Oasis and Late Nirvana, the band reinvigorate and restore their usual lo-fi dark style. Freedom is a pop rock record for those who prefer to be understated.

At first listen the album is solid but not outstanding. Repeated listening is the only way to truly appreciate the subtle genius at work. This is an album that really rewards you for taking a second to pay attention, getting you caught on its hooks and sucked into its pulsing forward momentum. Picture yourself driving down a dusty road in a convertible with a chilled milkshake and fries.

Lyrical focuses is on moments from



lead singer McMahon's childhood. Using either real or fictional characters, McMahon explores topics such as his father, masculinity, and his mother. Ranging from silky to raspy, clear cut to riddled with vibrato, McMahon's vocal performance is endearingly tender; exactly like that of a man returning to days gone by.

Freedom is likely to be off the beaten path for most Imperial listeners, but I employ you to give it a chance. I believe it to be a perfectly gentle ray of summer sun that can break up the increasingly dark dismal winter days.

GREEN

Artist: *Hiroshi Yoshimura*

For fans of: *2814, Khotin*

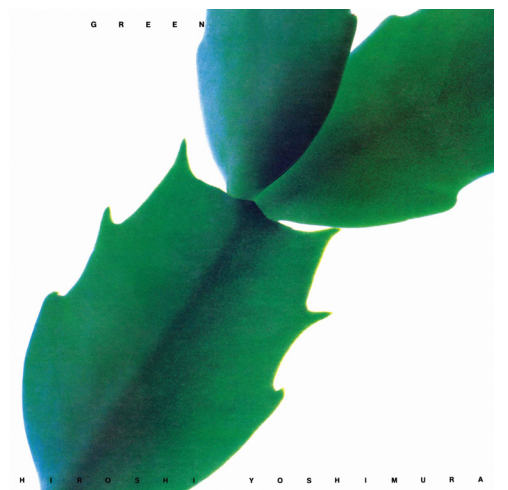
Run time: 43 mins

Guthrie Ruby Music Editor

Way back in the 1980's Japanese artists were pioneering their own style of ambient electronic music inspired by sounds in nature. Artists like Hiroshi Yoshimura made it their goal to create music that could fill buildings the way natural sounds fill a forest, river or desert - music that is ever present, never overpowering, but still pleasing to the human ear.

As a genre, Japanese ambient environmental music is very distinct. Tracks move at a snail's pace. Usually, only one or two repeated motifs are present with occasional variation. There is never any crowding of sounds, it sounds the way a breath of fresh air feels. In many ways it sounds very spiritual, the perfect soundtrack to meditation or yoga.

GREEN is one of the all-time masterpieces of Japanese ambient environmental music. Using a small range of



synthesizers, Yoshimura delicately places notes into space. It has the same calming effect as white noise but is loaded with artistic expression and is filled with heart-wrenchingly ingenious moments.

It wasn't until last year that the genre was paid much attention. An archivist team called "Light in the Attic" compiled tracks from the 80's into an album that received widespread acclaim. Sadly Yoshimura died in 2003, but two of his albums were rereleased last year, allowing his music to spread across the world.

BOOKS

Imperial student by day, writer by night.

Books Editor Hari Kumarakuruparan interviews Devyani Saini on her recent work – *The Serpents Veil*.

Hari Kumarakuruparan Books Editor

What made you want to start writing?

When I would read books and watch films, I would always ask questions and come up with ideas on how I could change the story – e.g. What if so-and-so event went differently? What if there was a new character who took the plot in a different direction? What happened before this story started? What will happen after it ends? At some point, I decided to put these ideas on paper and I ended up writing a bunch of fanfiction. One which I wrote based on Lord of the Rings is now 80,000 words and counting – I was really obsessed lmao. After a while, I tried to write my own contemporary stories, but they weren't very good. I realized my strength was in writing fantasy, so I decided to stick with that for the long run.

What kind of research do you do, and how long do you spend researching before beginning a book?

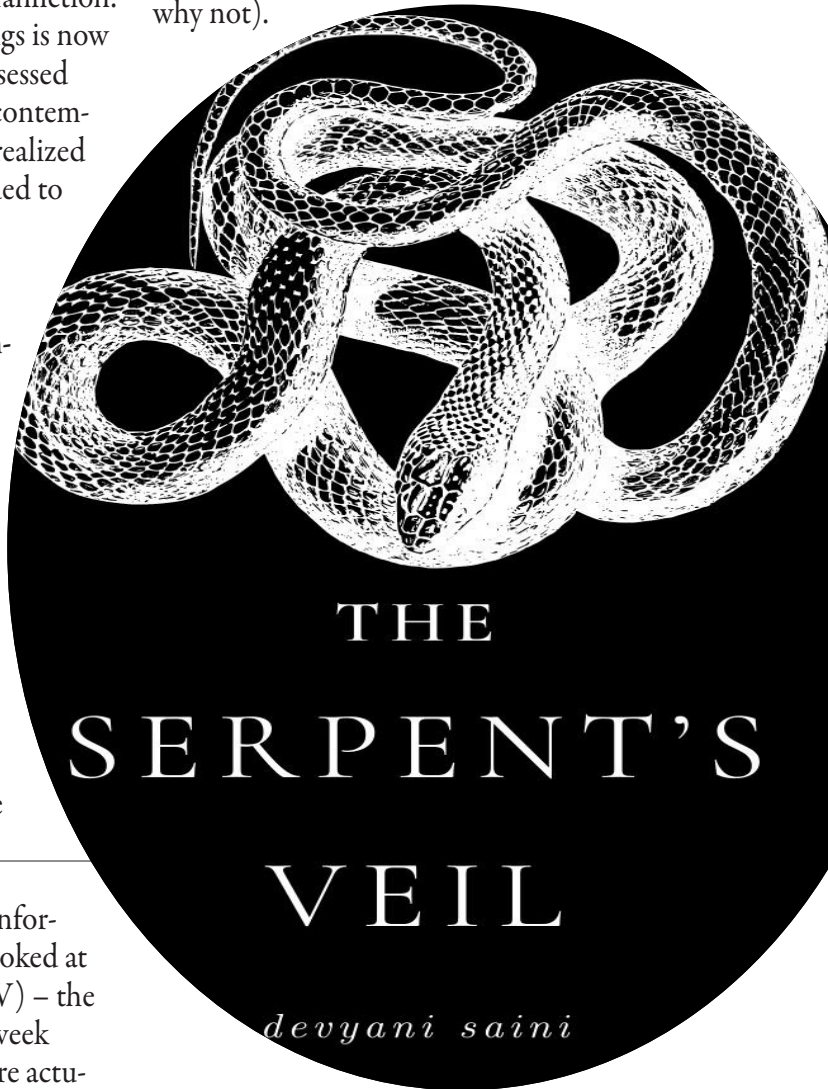
It depends on the genre, but for historical fantasy you have to do a lot of research about the time period and the society you are writing about. You don't have to re-research everything before you start writing, but it's good to look at a map, look at the main cultures, and possibly the structure of the society (e.g. monarchy, democracy, oligarchy, etc.). If you're doing a completely original setting, then you need to spend time building the world before you write.

Wikipedia is probably the best resource for information about history, and is the first one I looked at when researching for *The Serpent's Veil* (TSV) – the novel I'm currently writing. I spent about a week researching and compiling information before actually putting pen to paper (or finger to keyboard lol). It's good to write everything down – I use Evernote to keep track of my research. Sometimes you get lost in a rabbit hole with research though – once I found myself knee deep in some obscure article about Saudi Arabian agriculture because one of the characters was eating a fruit and I wanted to make sure it was a fruit you could find in that region at precise time. It's important not to let research override the actual writing, and usually readers don't take notice of such tiny details (which is sad).

What inspired the book, where do you get constant inspiration to make sure the quality is sustained?

The source of my idea for TSV was from a book called

The Wrath and the Dawn, a (young adult) YA fantasy by Renée Ahdieh. It retells the story of Scheherazade and Shahryar (the story is more commonly known as 1001 Arabian Nights). I did some research about Scheherazade, and found out that her character was based on a real Queen named Al-Khayzuran. Originally, I was going to write a story similar to 1001 Arabian Nights, but the history surrounding Al-Khayzuran intrigued me and I decided to write a book that told her story with some semblance of accuracy (and of course a little magic thrown in because why not).



I get constant inspiration mainly by reading other books in my genre – so mainly YA/historical/high fantasy. When you read successfully published books you get an idea about what sells, and also how to improve your writing. I don't mean by copying other authors' technique but more by understanding what constitutes good dialogue, sentence structure, plot pacing, character arcs etc. Reading also gives me new ideas for plot points.

What sort of books do you read?

I read a bit of everything, but mostly fantasy and contemporary novels. I like anything that has an adventure or quest type plot, and plenty of swords. Romance is nice to have, but not necessary. Right now I'm reading *The Witcher: Blood of Elves*, by Andrzej

Sapkowski, and I am loving it immensely.

I also make a point to read famous novels in different languages translated to English. You get a lot of insight into the culture (literary and general) of other countries when you read their most renowned books. One author in particular whose work I always read and enjoy is Han Kang, who won the Booker Prize for her novel *The Vegetarian*. I even managed to get through the colossus that is *Anna Karenina*, only to learn that Russian literature isn't really my cup of tea.

When you see your book attracting more and more attention, how do you feel?

I feel really happy and validated when people leave comments on my work, either praising it, or trying to predict what's going to happen. At the same time, when I receive criticism (especially about cultural/historical aspects), I know what to avoid and what to include instead, which is really helpful. In that sense, I do cater to my readers, but I don't feel any pressure to change the plot or anything extreme like that; it's more about cultural sensitivities and making sure I don't offend anyone.

Tips for an imperial writer?

I'm pretty bad at following my own advice, but I would say schedule a regular time and duration to write (e.g. Thursday 6pm for 45 minutes). You shouldn't write when you 'have time', but rather make the time for it like it's a lecture or a tutorial that you have to attend. This kind of takes the fun out of it, but if you want to make significant progress and you're really passionate, it's the best way. Writer's block is a real issue for me (once I didn't write for 6 whole months), and sometimes the only solution is to force yourself to spit something out, even if it's complete shit. If something is there, at least it can be edited! Also consider joining the Writers Society – they have really useful weekly workshops and write ins.

Where can we find your work and describe *The Serpent's Veil* for those who haven't read it.

The Serpent's Veil is set in the Arabian Peninsula during the 8th century, and follows the story of Khayzuran, whose world is turned upside down when she's kidnapped and sold to a travelling caravan belonging to the Caliph ('King'). The story is filled with deception, royalty, intrigue, and war, catering heavily to fans of *The Wrath and The Dawn*, *Prince of Persia*, and *Aladdin*. You can find it online on Amazon and other online booksellers.

Editor Recommends

David Fincher: Top 5 Films

Oliver Weir Film Editor

In anticipation of Fincher's new film *Mank*, out on 4th December, I've compiled the top 5 movies from his illustrious career thus far:

Fight Club (1999)

1

I can't think of a more fitting end to the twentieth century than a crazed man referred to only as 'The Narrator' telling an equally crazed woman: "Trust me, everything is going to be fine... You met me at a very strange time in my life", as 'Where is My Mind?' by *The Pixies* plays in the background, and skyscrapers holding important records are blown up in a hopeless attempt to erase debt.



Credits: 20th Century Fox

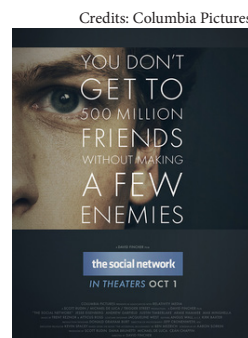
With God slain and chucked to the roadside, politicians seen as corrupt and incompetent, and inequities numbed with rampant consumerism, the 'everyman' of the twentieth century (played by Edward Norton) has "nothing to overcome, nothing to explore" as Fincher said. He is forced to create an *übermensch*, called Tyler Durden (Brad Pitt), to create his values. The result is brutal, rebellious, hate-filled, explosive, relieving, and desperate. It is David Fincher's *magnum opus*.

The Social Network (2010)

2

In what is Jesse Eisenberg's best ever performance, David Fincher—helped by a clinical, fast-paced script by Aaron Sorkin, and some sublime editing by Angus Wall

and Kirk Baxter (who both won an Oscar for their work)—creates what could prove to be a modern classic. The wit of the dialogue, the smoothness of the picture, and the slowly-building drama that barely announces its presence, could maybe be overlooked upon first viewing. However, as rewatches reveal, this film is beautifully economical in its plot, and exquisitely sharp in its presentation. It is hard to concisely describe its efficacy, although the word 'unified' captures most of it. Every single element, from the central performance to the Oscar-winning soundtrack, feeds into the cold and cynical atmosphere that so often festers in the ranks of prestigious institutions, and in the minds of those too rational for their own good.



Credits: Columbia Pictures

Se7en (1995)

3

A clumsily-titled crime thriller about two detectives chasing a killer whose crimes take inspiration from the seven deadly sins. The colour palette for this film bears a striking resemblance to the sludge one sees on the banks of the River Thames: it is dark, squalid, feculent, and, well...mesmerizingly disgusting. The more we look, the more we are repulsed. Every plea we make to watch from a distance is denied. Our only options are to either turn the movie off, or to embrace the heinous brutality and pray that whatever was in that Thamesian sludge does not cause lasting damage.



Credits: New Line Cinema

Gone Girl (2014)

4

Nick Dunne searches for his wife Amy after she disappears one morning. As the film progresses, we discover that Amy may not be as disentangled from her own disappearance as we previously thought.

The first act is an exquisite, slow burn which tonally feels somewhat similar to Denis Villeneuve's 2013 film *Prisoners*. However, this film is not at 3 because of its frankly fanciful resolution. That the FBI and scrupulous police investigators find no holes in Amy's easily disprovable claims when she returns is incredibly frustrating, especially given how rigorous and detail-oriented the film is up to that point.

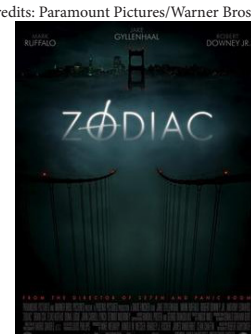


Credits: 20th Century Fox

Zodiac (2007)

5

A great movie that shows the Zodiac Killer-terrorised world of 1970s San Francisco Bay Area. While *Zodiac* is highly effective in absorbing you into the era, the movie's suspense is contingent on the audience's prior knowledge of both the killings and of the fate of the key suspects. Those familiar with the case may find that while chewing on the atmosphere for 160 minutes keeps them busy, the flavour does start to fade. However, the "Not many people have basements in California" scene will scare even the hardened true crime enthusiast.



Credits: Paramount Pictures/Warner Bros.

Classic Film of the Week

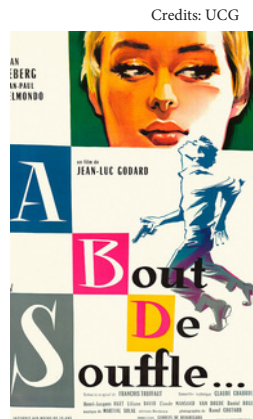
Breathless

Directed by: Jean-Luc Godard

Starring: Jean-Paul Belmondo; Jean Seberg

Reviewed by Oliver Weir Film Editor

About de souffle ('Breathless') came as something of an inevitable explosion in the world of French cinema. Before the release of *Breathless* in 1960, and of other *nouvelle vague* pictures such as Truffaut's *The 400 Blows* or Resnais's *Hiroshima mon amour* in 1959, there had been a growing dissatisfaction among French critics and directors. In



Credits: UCG

the French film magazine *Cahiers du cinéma*, critics like André Bazin, as well as Truffaut and Godard, cemented a new theory of filmmaking called *La politique des auteurs*, or, as English speakers know it today, 'auteur theory'. The New Wave wanted films to be imprinted with the mark of their maker, to express emotions and ideas in the same way that a novelist creates with their pen—so-called *caméra-stylo*. There was admiration from these French critics for the non-conformist streaks in Renoir and Vigo. Beyond France, they established an admiration for American auteurs like Welles and Hitchcock in many ways before the Americans did. *Breathless* was one of the ground-breaking outcomes from those decades of discontent—"We barged into the cinema like cavemen into the Versailles of Louis XV", as Godard put it.

Breathless is loose and fluid; it is full of tracking shots and

quite jarring jump cuts—most of which are there because Godard removed parts and didn't feel it necessary to patch up the remains. The New Wave was not a movement, Truffaut said, it was "a quality". If the movie comes off as impromptu, that's because it is; as Richard Balducci said: "Shooting ranged from 15 minutes to 12 hours, depending on how many ideas Godard had that day". While I have no time for the modern Godard movies like *Le Livre d'image* or *Film Socialisme*—which mask their lack of vision with flourishes and needless abstractions—*Breathless* is different. Although it is not a film I deeply cherish, it would be disingenuous of me to downplay its authenticity and its impact on cinema. 60 years on, modern directors have still not squeezed *Breathless* of all its nourishment, its technique, or its flair. [If you can find it, there's a new 4K restoration out now to celebrate its anniversary.]

IMPERIAL'S BEST DRESSED

ANISIA TALIANU

BRINGING HAUTE COUTURE TO IMPERIAL

Check out her Instagram for more fashion inspo @anisiatln

Elizabeth Tong Fashion Editor

Walking the streets of Fulham to Charing Cross Hospital or working (hardly) in Central Library. Be sure to catch Anisia taking full advantage of a happy hour near you.

A strong believer of look good to feel good. Anisia is in her third year at Imperial, the French-Romanian biomed student is an incredible dancer, well-known in Imperial's Funkology Society. Her other talents include making a mean Espresso Martini, extra frothy.

She's got the drip. Her fits are always on point. And you can count on her to outshine anyone else in the room.

Her black mini dress is from Spanish retailer brand Zara, complimenting her model-like figure. Overlayered with a cosy white sweater from Missguided.

Her jacket is thrifted (we love a sustainable queen!) and her small shoulder bag is from Mango.

She paired her clean fit with black tights and a pair of leather knee-high boots from ASOS. Her gold chunky hoop earrings compliment her tan perfectly.

When asked who her style icon is, she replied with "I guess Lissy Roddy or Bella Hadid, pretty basic". Following the famous fashion goddesses of Instagram, Anisia is definitely a style inspiration herself!

How to look like me

The brands:

Dress : Zara
Sweater : Missguided
Jacket: Thrifted
Shoes: Asos
Bag: Mango



It's A Sign of The Times

Elizabeth Tong Fashion Editor

The former One Direction star Harry Styles has graced us with his presence and has marked his moment in history by being the first ever solo male to feature on the December cover of US Vogue.

The 26-year old singer is breaking barriers with fashion. Shot by Tyler Mitchell, the gender-fluid shoot set in West Sussex blurs the lines between conventional gender clothing. Harry can be seen styled in a Gucci dress straight from the Fall 2020 runway, designed by his friend and creative director Alessandro Michele.

In his interview with Vogue, Harry notes Pilates and meditation have both brought him calmness to the "tumult of 2020". Styles exclaims his devout appreciation of Alain de Botton's writing, leading him to understand the importance of vulnerability in relationships. The star looks back on his time with the group, the big move to London and the pivotal moments in his life which have shaped who he has become. Harry states "As a kid I definitely liked fancy dress" and remembers

a time when he had to wear tights during school plays. Perhaps kicking starting his creative and eclectic style.

This is not the first time Styles has collaborated with Gucci's creative director Alessandro Michele. The pair first met in 2014, with Michele describing Harry as "the image of a new era, of the way that a man can look". The Gucci muse has worn Michele's floral suit, part of the spring/summer 2016 collection to the American Music Awards. Styles was then seen to become the face of numerous Gucci campaigns and part of the gender-neutral scent, Mémoire d'une odeur, a bedtime necessity for the singer.

A big lover of pearl earrings and éliou necklaces, Styles has become a fashion icon amongst his 13 million followers. In earlier interviews, Harry has stated his androgenous look has taken inspi-



LOVER OF PEARL EARRING AND ELIOU NECKLACES, STYLES HAS BECOME A FASHION ICON

ration from music artists David Bowie, Jimi Hendrix and Mick Jagger. Born and bred in Worcestershire,

the singer songwriter has also stepped foot in the film industry, with his acting debut in Christopher Nolan's 2017 war film, Dunkirk.

Known to push the conventional gender norms. Harry further states that "clothes are there to have fun with and experiment with and play with" and "once you remove any barriers, you open up the arena in which you can play".

Harry is marking his moment in history by rewriting the rules of masculinity. He is redefining what it means to be a man with confidence, wearing his own and unique style.

What's on this week



ICRS Talk: Robot Vision

Tuesday 24 November | 18:30–19:30

This guest lecture in robotics is an insightful talk on robot vision with Dr. Andrew Davison from the Faculty of Engineering.

Sign up here: imperialcollegeunion.org/whats-on/event/7958



Into the Wilderness

Wednesday 25 November | 19:00–20:00

Speakers Dr Daniel Grace and Captain Scott Pallett will be sharing their inspiring experiences and wealth of knowledge in remote, wilderness and expedition medicine to take you on an adventure.

Sign up here: imperialcollegeunion.org/whats-on/event/8081



ICSM Dance: Online Contemporary Class

Thursday 26 November | 18:30–19:30

Join ICSM dance for their Online Contemporary Class, taught by a professional teacher. The class is aimed at an intermediate level but is also suitable for complete beginners so, sign up and have a go – you might be surprised at how good you are!

Sign up here: imperialcollegeunion.org/whats-on/event/8005



Move Imperial Virtual Class

Friday 27 November | 12:15–13:15

Free class on Move Imperial's Instagram channel. Whether you're working from home, self-isolating or just heading out less, we're all faced with challenge of keeping active whilst spending more time in our houses.

Details here: imperialcollegeunion.org/whats-on/event/8085

More events: imperialcollegeunion.org/whatson

Union Page



“You can’t sit with us!”

Mean Girls came out in 2004 (that’s 16 years ago...), but bullying is very current. Bullying is not always straight forward. Anyone who laughs along and joins in, or even turns a blind eye, makes a decision to do so. So joining in with bullying is just as bad as initiating, and anyone who sees unfair things going on has a responsibility to try to stop it.

If you are experiencing bullying while studying at Imperial (or anywhere else) it is important to know that you are not alone, and it’s important to ask for help.

We have put together a few resources to help you deal with this. From the Advice Centre to the College’s harassment and bullying support line, or even companies like Mind or No Panic! there’s always someone there who can listen to you and help you out.

Find details and resources here: imperialcollegeunion.org/anti-bullying



Last week of Bake Off!

What a season! We’ve had such amazing entries to our Union Bake Off competition we don’t really want it to end. We’re so very proud of you all, we think you should consider a career in baking if that last exam put you off...

The Great British Bake Off final is next week and it also marks the final round of our Union Bake Off competition. As usual, we’re looking forward to receiving photos of your bakes via direct message on Instagram (@icunion). You’ll be in for the last chance to win a £10 voucher to redeem at FiveSixEight (as soon as we’re able to reopen, of course).

You all deserve a prize but there can only be one winner, which you will be able to vote for, following the Bake Off final! Thank you for being so involved and sharing your yummy stuff with us.



Your officers first hundred days in office

On Monday 9th November, we reached a big milestone: 100 days since the beginning of the academic year! And that also marks the first 100 days for our full-time sabbatical officers at the Union. They’ve been working really hard for the past months and so we thought you’d like to know what they’ve been up to.

“COVID-19 has made our jobs more challenging, but it also highlighted their importance.”

Each of them (your four Deputy Presidents, and your Union President) have reflected and written about their experiences of the first 100 days in office. You can read all about it on our website: imperialcollegeunion.org/our-first-100-days.



PUZZLES

Concise Crossword

1		2		3		4		5		6		7
8						9						
10				11								
12		13					14	15				16
						17						
18				19						20		
21								22				
23						24						

ACROSS

- 1 Styling of keratin (7)
- 5 Italian herb (5)
- 8 Fruit of an oak (5)
- 9 Red fruit often used in crumble (7)
- 10 Horse food (3)
- 11 Nuts often roasted (9)
- 12 To make noise like leaves (6)
- 14 A small amount of liquid (6)
- 18 Direction on the tube (9)
- 20 A portion of corn (3)
- 21 A state of no change after a period of progress (7)
- 22 Vapid; lacking sense (5)
- 23 Nasal cavity (5)
- 24 To fail to care for (7)

DOWN

- 1 Wild pink or purple flowers (7)
- 2 Material of elephant tusks (5)
- 3 Distrusting or disparaging of other people (7)
- 4 Thanksgiving meat (6)
- 5 Opposite of sharp (5)
- 6 Shoulder blade (7)
- 7 Part of the ears (5)
- 13 To strengthen or support (7)
- 15 Dessert (7)
- 16 To gather (7)
- 17 One of the seasons (6)
- 18 Disposable cleaning cloths (5)
- 19 Nickname for dark red vegetables (5)
- 20 To rub out (5)

Points Available

- Cryptic Crossword: 10
- Concise Crossword: 5
- Hot: 3
- Medium: 2
- Mild: 1
- Gogen: 3

Points are available for partially solved cryptics!

Leaderboard

- 1. The Flots (71 Points)
- 2. Mr Puzzles (52 Points)
- 3. Cryptic Ed (10 points)

Send in a picture of your solutions and your entry to the cryptic clue writing competition by Tuesday 12pm to puzzles.felix@imperial.ac.uk to take part.

Clue Writing Competition

Your word is THANKSGIVING!

Send in an original cryptic clue to puzzles.felix@imperial.ac.uk for a chance for it to be published in next week's issue.

Mild Sudoku

		8	4	2			1	
	2	3	8	6				5
			9	7		8		
	3				6			7
	8	4	2		9	3	6	
2			7					9
		5		1	2			
8				4	7	1	3	
	6			9	8	4		

Medium Sudoku

				7		6		2
	7	6						
		8	2		9		3	
6				8	3			
7		3	1	9	5	2		6
			6	2				1
	6		8		2	9		
						7	2	
3		5		4				

Hot Sudoku

7						8		
	3				4	2		
				1	2	4		7
5					6	3		
			5		7			
	8	9						2
8		4	7	5				
		7	2				4	
		3						8

Precious Metals and Oil During the Pandemic

Credits: Will Stoffberg

Will Stoffberg Investment writer

Warren Buffett once said, “[Gold] gets dug out of the ground in Africa, or someplace. Then we melt it down, dig another hole, bury it again and pay people to stand around guarding it. It has no utility.”

So what exactly happened to gold earlier this year?

On August 6, gold reached an all-time high of \$2,067 an ounce. Soon after on August 31 silver surpassed \$28 an ounce, a seven-year high. Safe haven assets such as precious metals have been popular during the pandemic. **Figure 1** shows the relative performances of gold, silver and platinum over the last year. Lows can be seen in March, just as the pandemic began taking hold and affecting markets globally, but since then have been growing, significantly so in Q3, before stabilising.

The jump in this quarter arose due to

major banks maintaining their expansionary monetary policy stances and long-term bond yields falling and approaching negative territory.

While jewellery and, in the case of gold, bank purchases were down, there was record investor inflows into ETFs

“**WORRIES ABOUT A SECOND WAVE IN SEPTEMBER CAUSED PRICES TO FALL SLIGHTLY**”

backed by silver and gold. Additionally, the recovery of industrial activity has led to the return in demand for silver and platinum.

Supply of precious metals was also affected. Recycling was restricted due to concerns of the virus spreading through the labour force and for similar reasons mining was disrupted. Gold mines in Mexico, Peru and South Africa were disrupted, and in the case of South Africa being the largest producer, platinum was also affected.

The World Bank Group is predicting stable prices for gold and platinum in 2021 as the economy recovers. Silver is expected to drop around 14%.

Global consumption of crude oil plummeted in 2020 Q2 by 16 percent as a result of COVID-19 lockdown measures, severely affecting oil prices (**Figure 2**). The fall in consumption was most notable in transport fuels,

Brent Crude Yearly Relative Performance

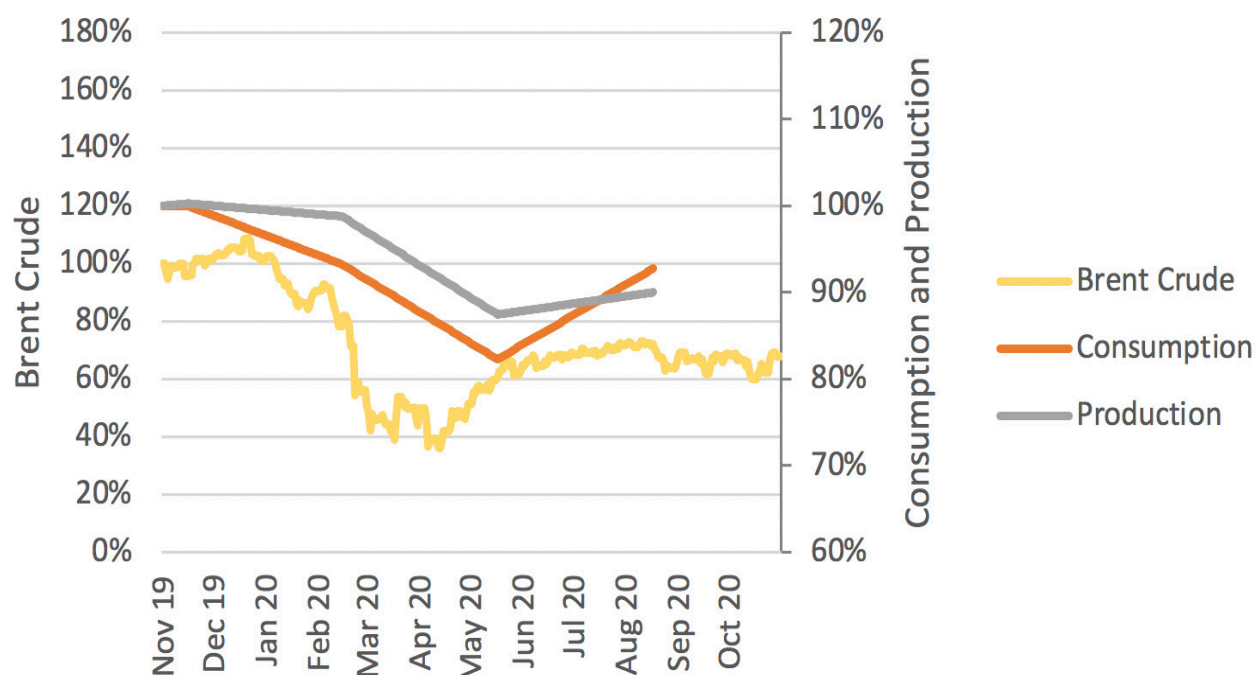


Figure 2: Brent Crude Yearly Relative Performance

particularly jet fuel which fell more than 60 percent as a result of the collapse in air travel. Diesel consumption was the least affected given its main use is to transport goods by road and ships, but still declined by nearly a quarter.

In response to this, global oil production dropped by 12% in May. OPEC and OPEC+ collectively agreed to production cuts of 20% (9.7mb/d). Non-OPEC countries such as USA and Canada also cut production by 20%. The OPEC group increased production by 2mb/d in August and plan another increase in January 2021, depending on the rate of economic recovery.

Oil consumption has started to recover as lockdown measures are lifted. Crude oil prices were nearly 40 percent higher in 2020 Q3, although they remain around 30 percent below their pre-pandemic levels. Worries about a second wave in September caused prices to fall slightly.

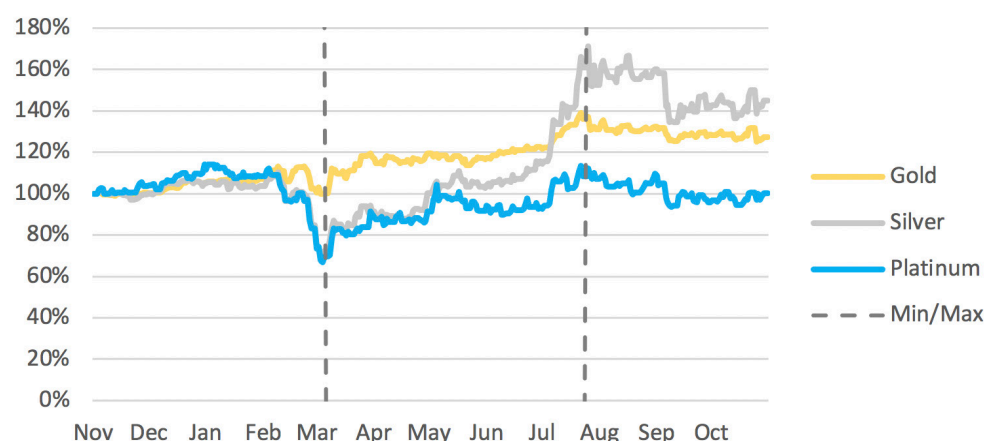
Oil prices are expected to average \$44/bbl in 2021, still significantly lower than their 2019 level of \$61/bbl. Demand will be lower in almost all countries in 2021 than in 2019, with the notable exception of China. However, oil prices and consumption are very sensitive to economic changes and vaccine progress.

Market Summary

Riccardo Pierre Investment writer
Nikhil Narayanan Investment writer

1. Pfizer's vaccine news got everyone jumping for joy this week- well, that is, everyone but Zoom and the other stay-at-home tech stocks that fell.
2. E-commerce penetration is expected to grow by a whopping 30% in 2020 thanks to COVID-19, but this is only actually two years ahead of what analysts predicted.
3. The U.K. economy expanded 15.5% in the third quarter, a weaker pace than its peers in Europe.
4. The Trump administration granted ByteDance a 15-day extension of a divestiture order allowing a little bit more time for TikTok to be sold.
5. Costco is selling \$17.5k private jet membership that lasts 1 year showing the extent of the companies' riches, and analysts predict that Costco Wholesale will submit a \$9.62 EPS for the current year.
6. On Thursday, the International Energy Agency cut its forecast for global oil demand saying that it doesn't expect demand to rise significantly till late 2021 despite Brent Crude, the international benchmark, up 8.11%.

Precious Metals Yearly Relative Performance



Credits: Will Stoffberg

Figure 1: Precious Metals Yearly Relative Performance

Uncertainties in Oil Prices Beyond 2020

Credits: Worksite Ltd.

Yanda Wong Investment writer

The year of 2020 is probably one of the worst years in history that oil executives had hoped to find themselves in. Just seven months ago, the West Texas Intermediate (WTI) crude has shocked the world with an almost 300% drop in index price, trading at around negative \$37 per barrel.

What does it mean really?

Well, in short, you are actually paying the person with the oil to not give you the oil! The reasons behind this

I'm too embarrassed to ask: what are commodities?

Oil, alongside other products such as metals (copper, gold), livestock and meat, energy (oil, natural gas), and agricultural (grains) are classified as commodities, the basic goods in our daily life.

Commodities are one of the most important asset classes for investment. While they are not generally suitable for individual investors, commodities do provide an important way to diversify investment portfolio beyond traditional securities for institutional investors, such as hedge funds and private equity funds. There are numerous ways to invest in commodities, including futures, options, contracts, and exchange-traded funds (ETFs). Within the oil market, there are few most common oil benchmarks, which represent crude oil from different parts of the globe, including: Brent Crude, West Texas Intermediate (WTI), and Dubai/Oman.

The supply and demand of crude oil, and thus its price have huge implications on the global economy, affecting not only the daily lives of individuals, but also industries ranging from aviation, transportation, consumer discretionary, consumer staples, and automobiles.

were the novel coronavirus that caused oil demand to halt, and the supply cut from the Organization of the Petroleum Exporting Countries (OPEC) that had not scheduled to come into effect weeks later. With Pfizer and BioNTech reporting success of their coronavirus vaccine trial earlier this week, the oil industry supposedly looks brighter ahead. On the contrary, various entities suggest that the global oil demand remains low, and oil industry prospects heading into 2021 are extremely weak.

Earlier this week, the International Energy Agency (IEA) cautioned that a COVID-19 vaccine is unlikely to come to the oil market's rescue until late 2021 at the earliest, as the effect of the vaccine will only show towards the end of next year. Oil demand would come lower than initially forecasted due to the surge in number of COVID cases across Europe and the US, and social distancing measures governments have implemented to halt the spread of the virus. In the meantime, global oil supply rose by 200,000 barrels/day from 91.2m barrels/day in October, with production expecting to rise further after the US recovers from the Hurricane Zeta, and Libya restoring production of 1m barrels/day within four weeks after the eight-month blockade. The macroeconomic contributions from weaker demand and increasing oil supply will potentially deteriorate oil prices further, deeming the December 1 OPEC meeting in an attempt to curb oil production and rebalance the market for slow progress crucially important.

Biden administration's victory in the US presidential election might further complicate the oil industry, sending off multiple contradictory market signals and uncertainties. Under president Biden, if the US and Iran manages to return on the path of diplomacy, there is chance that strict US sanctions on Iran's oil exports could be eased, paving way for around 2m barrels/day of oil supply, further weakening oil price. However, some of his other proposals such as limiting new drills on federal territory could on the contrary, shave off US oil production. More importantly, US under Biden might potentially be able to recover oil demand given his commitment to tackle COVID with his COVID-19 task force.



The uncertainties in oil price is reflected in the oil futures market. For example, the Brent crude contract for December 2023

can be bought today at \$48 per barrel, just over \$3 a barrel over the next three years from the current oil price. The December 2025 Brent crude contract, which seems distant away from now and the COV-

ID fear, is barely just \$49 per barrel. Consequently, shares from BP and ExxonMobil have both plummeted to below their April 2020 lows, with oil executives struggling to find solutions, be it investing more in renewables or praying for the oil traders' sympathy or the so called "oil cycle" that supposedly cannot be broken.

Contrary to the pessimistic oil mar-

ket, the gold industry is doing more than just fine. Barrick Gold, the world's second biggest miner recorded a significant

threefold rise in adjusted third-quarter profits on the backdrop of the surging price of gold.

Gold prices set a new record nominal high this year of more than \$2000 per troy ounce, amid sustained investor demand for gold, which has pushed prices up 26 per cent.

The above average performance of gold is understandable given that gold has always been in the past considered a natural hedge against economic recessions and currency volatility.

Well, maybe now might be the right time to move from investing in oil futures to buying gold after all.



WEAKER DEMAND AND INCREASING OIL SUPPLY WILL POTENTIALLY DETERIORATE OIL PRICES FURTHER,

SUSTAINABILITY

Public finance funds fossil fuels

Flora Dickie Sustainability Editor

According to figures from the UK government, the carbon dioxide emissions produced from 1990 to 2018 declined by 43.5%, which it thought principally to be due to the shift away from coal as an energy source. To ensure that emissions continue to move in a downward trend, in 2008 the Climate Change Act was enshrined in UK law, committing the country to reduce all greenhouse gases emissions by 80% (relative to 1990 levels). This Act was then updated in 2019 to reduce all greenhouse gas emissions by at least 100% by 2050. These commitments may seem that everything is on track for reducing emissions in the UK, however, in 2019 a report from the UK Climate Change Committee stated that the UK's policy actions fell 'well-short of those required for the net-zero target'.

One of the pledges that the UK has made, as part of the coalition of G20 countries, is to

end 'inefficient' fossil fuel subsidies.

A recent report from the Overseas Development Institute, a UK based think tank, tracks the progress of G20 countries in phasing out government support and public money commitments

“ THE UK IS AT RISK OF NOT ACHIEVING ITS PLEDGE OF PHASING OUT FOSSIL FUEL SUBSIDY COMMITMENTS

to fossil fuel production and consumption to increase transparency and accountability. Along with every other G20 country, the UK is at risk of not achieving the pledge of phasing out fossil fuel subsidy commitments. Strangely, the UK government denies that it provides any fossil fuel subsidies, under its definition of the concept. Yet, between 2014-2018 the amount of public money going to the fossil fuel industry increased. The report found that the UK and Russia provide the highest levels of direct transfers and tax exemptions (per unit of GDP) of all G20 countries. The

UK was also ranked as one of the highest in showing significant support to fossil fuel use (per unit of GDP).

The global energy policy tracker found that since the beginning of the pandemic until the 11th of November, the UK government has given £30 billion to support oil and gas fossil fuel industries, which is approximately £446 per capita. Some of these funds went to projects such as the oil and gas energy sector in Scotland or national road-building programmes, and other funds went to bailing out huge companies such as Honda, Nissan, Baker Hughes (oil industry company) and Schlumberger (oilfield services provider). The government also committed £12.16 billion to clean energy (renewables), 40.5% of the money put into oil and gas industries and £182 per capita.

Looking at our COVID response on a broader scale, compared to 30 major economy other countries, the UK ranked in 2nd place (the USA in 1st!) in fossil fuel fund commitment during the pandemic.

The UK's Climate Change Committee recommends that the government uses this moment of crisis to create a just transition and a green recovery from

COVID-19 to define the fight against climate change. Green Party MP Caroline Lucas also highlights the importance of a green recovery: 'This really is a once-in-a-generation opportunity to us on the path to a greener, fairer future. Going back to business as usual would be a one-way street



● Fossil Unconditional (65.7%) ● Fossil Conditional (0.3%)
● Clean Unconditional (21.0%) ● Clean Conditional (6.0%)
● Other Energy (7.0%)

Since the beginning of the pandemic, the UK has committed more money to fossil fuel industry than renewable or nuclear energy. Source: Energy Policy Tracker

to climate disaster.' This will involve removing oil and gas subsidies away from the budget and redirecting money into protecting the most vulnerable affected by subsidy removal and into support healthcare and social support. It is vital to ensure that poor and vulnerable consumers can still access and afford energy as subsidies are reduced.

In the UK, 78% of current emissions are produced by transportation, business (commercial use), energy supply (burning fossil fuels) and residential heating. To reach net-zero by 2050 the UK government needs to put into place much more action on the pledges and policy promised and needs to stop providing support for coal exploration and transportation with a quicker shift to renewable energy sources. We will see how the government plans to manage the situation in the new carbon budget, which will supposedly be presented by June 2021.



The G20 countries (shown) have pledged to reduce fossil fuel subsidies from public money. Image from website The Conversation.

How might UK achieve net-zero?

Action steps

Flora Dickie Sustainability Editor

The UK government has committed to reducing greenhouse gas emissions so that by 2050 the country produces net-zero emissions. A limited number of steps have been taken over the last few years to support a just transition to a net-zero economy. Next month, the Sixth Carbon Budget is to be published by the UK's Climate Change Committee, which is expected to advise to the government on how we may get to net-zero greenhouse gas emissions in the UK. Here are some actions that will likely be in the plan:

§ **Energy supply** : Quadruple amount of energy production by renewable sources, such as wind and solar power

§ **Business** : Move towards a circular economy, bring in carbon taxes and start a reskill/retrain programme for green jobs

§ **Residential** : End the use of gas, and convert boilers to be able to use hydrogen or electric power, design and retrofit homes to be energy efficient, climate-resilient, re-design neighbourhoods to provide all necessary goods and services, decentralisation of work zones,

§ **Transportation** : Ban the sale of petrol and diesel cars by 2035, reduce the number of flights, stop subsidies for companies intensively using oil and gas without commitment to transitioning to renewables, funding for research and innovation for electric aeroplanes, more electric vehicle charging points, invest in electric battery recycling, promote active travel such as walking and cycling

§ **Food system** : Reduce consumption of beef, lamb and dairy, promote more plant-based diets, reducing food and packaging waste at industrial, commercial and residential levels

§ **Landscape** : Nature recovery by converting current farmland into forest, planting 1.5 billion trees across the country, peatland restoration, green infrastructure, more flood defences

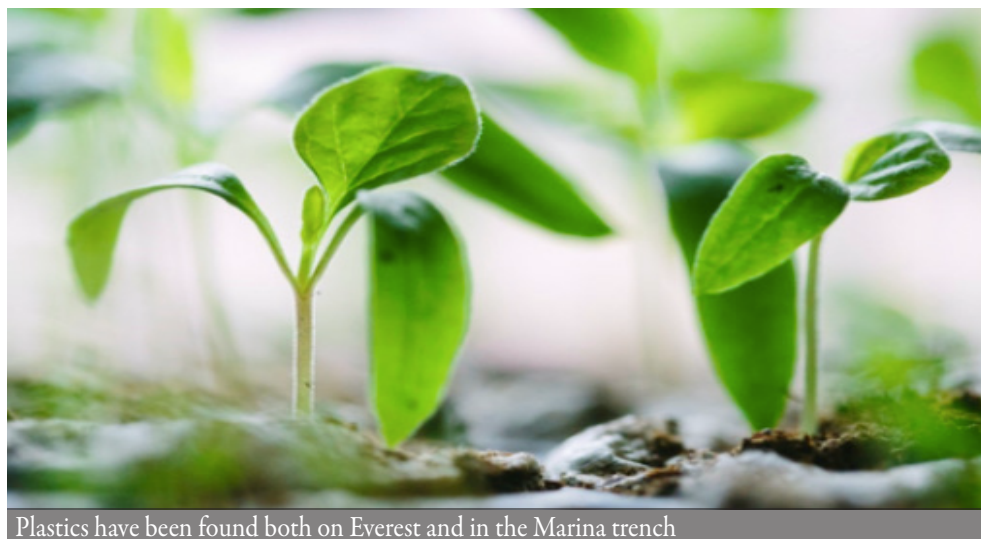
§ **Systems** : A sustainable and resilient food system, healthy models of work which allow remote working and lower carbon behaviours

Microplastics in our plants?

Monami Miyamoto Sustainability Editor

A recent paper published in Nature Sustainability studied the potential uptake of microplastic by plants. We all know that microplastics are present everywhere around us – in the rain fall, the soil, the oceans and the fish we eat. There's even a term for this widespread phenomenon – the 'plastic cycle', just like the carbon cycle and nitrogen cycle. But could plastic pieces also be found inside our salad leaves?

Well, it turns out that the possibility is there. Li and her team found that microplastic beads below a micrometre (0.2 μm) and even larger beads of 2 μm , could enter the roots of wheat and salad leaves species. This occurs at the junction where new lateral roots begin to form



Plastics have been found both on Everest and in the Marina trench

because, during this process, there is a small, vulnerable gap between plant cells where external organisms such as parasites (and now plastic) can enter. After gaining access inside, the tiny beads will

move throughout the rest of the plant.

But as with many scientific studies, there's a caveat – the study was only conducted on two species of plants, so we can't be certain that this is the case. More

importantly, the roots were isolated in a hydroponic culture – far different to the natural conditions in the soil where other the presence of microbes, fungi, symbionts and nutrients could yield different results.

The takeaway from this study, though, is not the specifics of which species under which conditions might be vulnerable. These are things that will hopefully be explored in future studies. For now, it's about understanding the dangers and potentials of microplastic invading, quite literally, every square inch of life on earth. If the idea of eating foods containing fragments of plastic doesn't set off alarms in societies that something must change, I'm not sure what will.

Responding to climate deniers

Flora Dickie Sustainability Editor

Climate change deniers: we all know one. They are randomly interspersed amongst our friends and family. So, this holiday season prepare yourself by getting your facts straight. We know how frustrating it can be and how uncomfortable it is when your great-uncle is divulging endlessly that climate change is a controversy or a scam. So, on that note, here's what to say when...

They say: 'Climate change is just part of the natural cycle.'

You say: 'Yes, the earth's climate has always changed. However, in the last 150 years, we have recorded exceptional changes in climate and modelling shows that the temperature is likely to continue to increase. Plus, the warm temperatures of the Medieval Warming period were only in some parts of the Northern hemisphere, not the whole earth which is happening now.'

They say: 'There is no evidence that we are causing catastrophic climate change.'

You say: 'There is a clear consensus from thousands of scientists across over 100 countries that we are causing climate change which will affect the lives of almost everyone on the planet.'

They say: 'Carbon dioxide is a gift of life, not a pollutant.'

You say: 'Yes, carbon dioxide is an essential compound for life on earth, and the greenhouse effect keeps us alive, but with the quantities that have been emitted anthropogenically the earth is warming'

They say: 'Sunspots are causing warmer temperatures.'

You say: 'Since 1978 there has been no upward trend in the amount of the sun's energy hitting Earth.'

They say: 'The Climate Cult is ready to declare on the developed world, especially the USA.'

You say: 'Oh dear...' The level of learning and unlearning needed is too high. Leave the conversation; you don't need this today.

They say: 'Climate change is good for us as it will make farming more productive.'

You say: 'Perhaps in the Global North there will be higher agricultural productivity; however, this benefit is likely to be offset by the losses in the Global South, as warming temperatures cause more frequent weather events and desertification.'

They say: 'We have other problems to solve; first, this isn't a priority.'

You say: 'Firstly, countries in the Global North, such as the UK, have a responsibility to act now to reduce emissions and the impact of climate change as they have contributed to the most of

emissions throughout history. Secondly, many climate solutions will benefit us directly, like reducing air pollution, creating jobs, and improving food security.'

When they say: 'The Climate Cult is ready to declare on the developed world,

especially the USA?'

You say: 'Oh dear...' The level of learning and unlearning needed is too high. Leave the conversation; you don't need this today.

This week's inspiration

Monami Miyamoto Sustainability Editor

Just last week in Eindhoven, a group of Dutch students managed to build the first electronic vehicle out of waste materials. This includes everything from the interiors, the seat cushions, and the chassis – a feat that has never been accomplished before.

Over 18 months, they integrated various forms of waste, including household products, plastic from the ocean, and even coconut shells and built the car from scratch. With the support of several companies, they constructed a chassis out of flax fibre combined with ocean plastic, along with a body comprised of recycled ABS (a hard plastic used in house-

hold products such as toys and TV). The final product, a car named Luca, is a two-seater capable of running up to 90km/hour. Also, the six batteries taken from disused cars can run Luca for up to 220km when fully charged.

Whilst companies are transitioning towards sustainable materials for their interior parts, these changes feel like nothing compared to the students' impressive feat of building. There is still plenty of room for technical improvements to be made. Still, it's exciting to see that with a shift in perspective, what we perceive as 'waste' can turn into valuable materials capable of replacing the harmful ones we use today.



Luca - Image source: electrive.com

Lockdown advice: recovery

Amanda Barden Sport Editor

This week's article we wanted to try covering something slightly different: rest, stretching, and active recovery. For anyone doing sport, we've always been taught practice make perfect, and pushing yourself to the limit is what will make sure you get better. Recently, it's been found that rest and recovery days are just as important as the exercise days; they allow your muscles to regrow, it helps prevent injury, and help your body not go into fatigue. Of course, the amount of rest and recovery is dependent on each person individually, however, since everyone does require it at some point, we thought we might provide some ideas to help. If you can, it is a very good idea to measure your heart rate first thing in the morning every day, or every few days, and that way keep a track of your resting heart rate. If, while you are in a phase of heavy exercise, your resting heart rate increases by five to ten beats per minute than this is a very good sign that you are either getting ill or over

fatigued and that you should take some time out to recover. If you have a smart watch that can measure heart rates, then this will make this resting heart rate tracking extremely easy. We do understand people take recovery differently: some enjoy stretching and meditating, while other people enjoy moving around more / doing lighter exercises; both of these forms are good and just as important and beneficial. One of the easiest things to do that can encompass both is walking. You can walk as quickly or slowly as you want, listen to good music, and enjoy some of the lovely views of the city (wherever in the world you are!). It's a great way to let off some energy (even though it sometimes may be frustrat-



IT'S BEEN FOUND THAT REST AND RECOVERY DAYS ARE JUST AS IMPORTANT AS THE EXERCISE DAYS

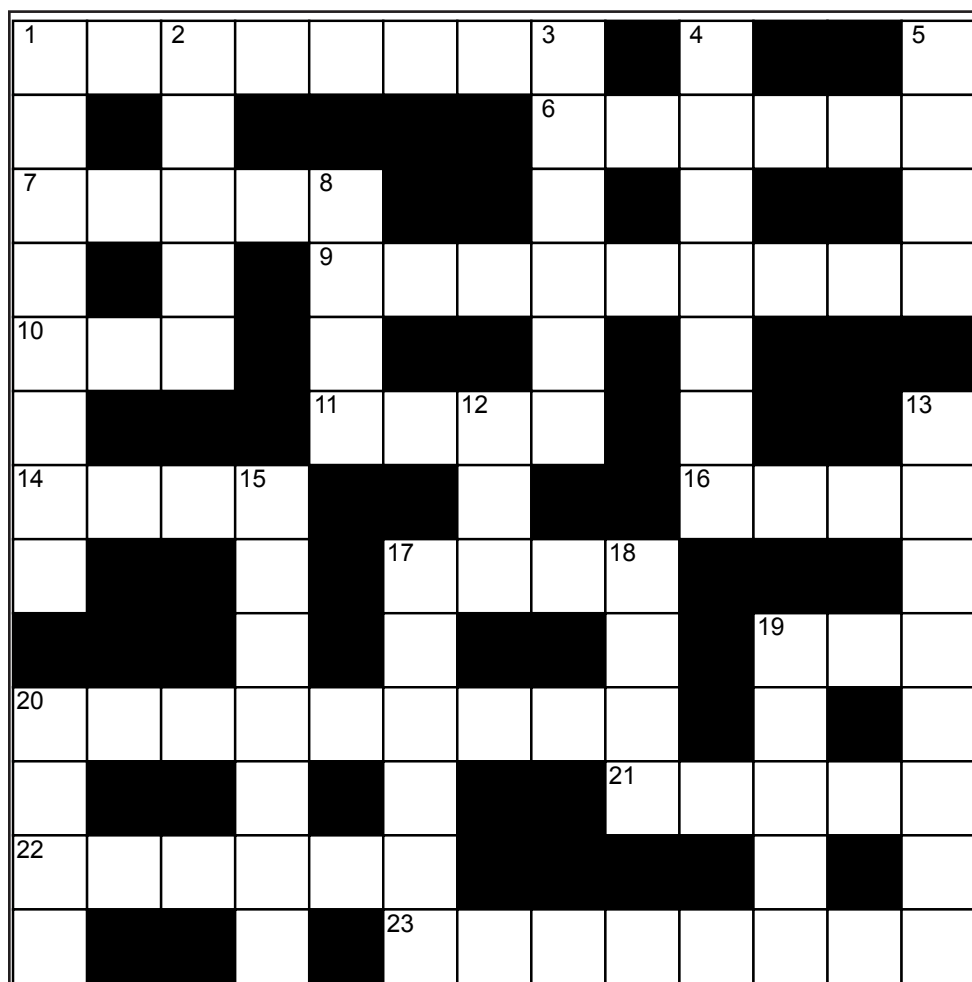
ing as you aren't moving as quickly as you wish), but it puts low stress on your joints, and you can go very far without feeling too fatigued but still feeling accomplished. The weather outside hasn't gotten too cold yet (but that doesn't mean it's always pleasant to walk around) and all of the parks are just going through autumn, so all the colours are stunning. One of the downsides to COVID has been the fact that life has moved indoors and online, which does make it much harder to get outside both due to fear of the virus and also due to the extra motivation needed to go outside purely for the purpose of exercise. Yoga is a great activity to do that can be both a very high intense exercise or a really good stretching and meditation session. If you've never done yoga before, there are so many websites and videos

on YouTube that are really helpful and easy to follow along! One of the main tips I learned when stretching is taking really deep breaths. For any stretch you're working on, once you've hit your limit of how far you're stretching, take a deep, full body breath in, and as you breathe out push your body further to stretch more. It always surprised me how much further I could go. Do make sure however that you don't overstretch and accidentally pull something. As always, remember to listen to your body, if it is telling you rest than that is exactly what you should be doing to get the best results!

How has your sports team kept going through lockdown? We would love to hear from you and see what Imperial's athletes have been up to over lockdown!

Felix cryptic Crossword No. 8

Horatio



Across

- 1 Muddied circlet hides variable wheeled machine
- 6 Clever rodent goes to sleep at dawn
- 7 Melt solid ponds
- 9 Girlfriend finally bares buttocks on romantic getaway
- 10 After 5 I am in the middle of copulating?
- 11 Smallest part of a machine running backwards?
- 14 Second highest loss of time in total
- 16 King follows day before eternity
- 17 Appeal to jumping insect. Softer!
- 19 Saint takes iodine to help posture
- 20 Top coin
- 21 Pluck out first the worst American nasal groaning
- 22 University romeo slips into beautiful office
- 23 Promising sign

Down

- 1 Stuff mail's contents into tan idol
- 2 Onetime free thinker now book-keeping
- 3 Respect appears oldly ersatz, even masking hostility
- 4 Century of tremores leads to breakdown
- 5 Noodles made of mud only stick together
- 8 Hush falls over inactive Muslim sect
- 12 Grease does not quite work
- 13 Female ward reformist spured on by drugs
- 15 Requested alternative red mirror
- 18 Relative calm as BBC is cut off
- 19 Tread water with Irish teacher
- 20 Noodles served on girlfriend's plane home

Think our clues are too easy? Too hard? Write crosswords for Felix puzzles
See page 20 for more information on our clue writing competition