

Middle School Scholars' Newsletter

Michaelmas Term 2020

A Michaelmas Miscellany



Introduction

Usually this issue is filled with articles inspired by the fifth year academic scholars' Michaelmas trip to Oxford. Despite the Covid restrictions, however, it's amazing to see the range and rigour of the pieces in this issue, which is a testament to the scholars themselves, and their bright and inquisitive minds. Yosemite, Rembrandt, Hong Kong, Bicester - there's something here for everyone and we hope you enjoy reading it.

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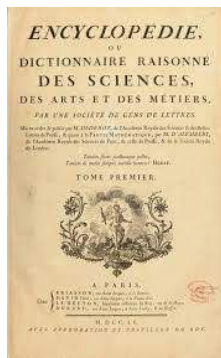
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Diderot and the Path to Enlightenment

by Noah Chandrasekaran



A particularly obscure book to have on one's shelf, Denis Diderot's 'Encyclopédie' has long been an eyesore of mine. However over the half-term break, I decided to broaden my knowledge of the

Enlightenment and the climate in which it arose, and, as such, took to dusting off and subsequently reading a selection of extracts from Diderot's first couple of volumes - publications widely recognised as having spearheaded the Enlightenment, a philosophical and cultural movement which would have significant social, political, and economic implications for Western Europe.

In the mid 18th century, French philosopher Denis Diderot invited some of his nation's leading intellectuals - literary men, scientists, scholars, and philosophers - to write articles for a then 'Classified Dictionary of Sciences, Arts and Trades', for which he was both editor-in-chief and contributor. The first volumes of his Encyclopédie appeared in 1751 whilst the full work was published 21 years later, in its totality, comprising 17 volumes of text

and a further 11 volumes of illustrations. The Encyclopédie, although not the first of its kind, was the first literary work to feature content by named authors and to place particular emphasis on the trades and crafts. Its most defining feature, however, was its critical analysis of contemporary rationales, institutions, and phenomena, with the work's multidisciplinary articles, which numbered around 72,000, distilling the ideas and theories of France and the rest of Western Europe's key thinkers.



The Encyclopédie was first published towards the end of the Scientific Revolution, a social movement during the 16th century whose proponents sought to apply reason and observation to explain the phenomena of the natural world; explanations which tended to contravene traditional religious doctrine (the primary authority in such matters). Notable figures which included the likes of Francis Bacon, Johannes Kepler, Isaac Newton, and Galileo Galilei fundamentally transformed

the study of nature and the physical universe, placing a direct emphasis on observation in tandem with rational analysis, drastically updating and expanding fields of physics, chemistry, biology, mathematics, and astronomy. These were fields previously dominated by pseudoscience and superstition. Enlightenment scientists took this investigation of reality further, facilitating for example, Swedish botanist Carl Linnaeus's development of an adequate, rational form of biological classification; the Taxonomic system, a system which stands to this day a founding principle of zoology. The reason-based approach of the Enlightenment also brought about dramatic technological advancements. In the 1760s, Scottish physician Joseph Black discovered carbon dioxide, whilst in 1769, fellow compatriot James Watt made considerable improvements to the efficiency of the steam engine, ultimately giving rise to the Industrial Revolution in Britain in the decades that followed. The *Encyclopédie* aided to publicise these, and other, scientific achievements of the 18th-century, as well as those of their predecessors. This enabled various works to find an audience in learned societies, academies, and universities which tended to flourish during the Enlightenment Period, proliferating theories and postulations which had previously been purely esoteric.

The Scientific Revolution and Enlightenment also encouraged the belief

that rationalism could define the natural laws in human affairs. Consequently, as opposed to drawing fact from faith and dogma, Enlightenment thinkers questioned the legitimacy of the Catholic Church's worldly authority, advocating its separation from secular politics, whilst propounding that neither should curtail the rights of an individual, emphasising that society deserves a right of opinion, worship, and information. This political doctrine, often labelled as liberalism can be derived from the works of 17th century philosophers such as Englishman John Locke. Locke asserted that there exists certain intrinsic human rights irrespective of law or the decrees of government, advocating that rulers should attempt to uphold these principles to ensure a prosperous and productive society. The notion that natural rights should form the basis of any system of government, was similarly upheld by esteemed French philosopher Voltaire. In his writings, such as the infamous *Philosophical Dictionary*, Voltaire elucidated on the injustices and abuses of the Catholic Church, and espoused values such as tolerance and the promotion of reason over dogmatic and religious sentiment. In similar spirits, fellow Frenchman Montesquieu showed a penchant towards the separation of government powers (legislature, executive, judiciary) whilst his contemporary, the renowned Jean-Jacques Rousseau repudiated the unsanctioned authority of monarchs in favour of the rights of

common society. Rousseau, mirroring the sentiment of Locke, argued that a constitution is only valid if decided by the people - a rationale known as the 'Social Contract'.

The works of the Locke, Voltaire, Montesquieu, Rousseau and numerous others had a profound impact on social and political orthodoxies. Like the scientific works of Linneaus and Watt, Diderot's Encyclopédie aided to promulgate philosophers' criticisms of conventional institutions and governments. The movement had a particularly lasting effect on the policies of monarchical rulers, evidenced by the Emancipation of the Serfs in the Holy Roman Empire during the 1780 (and in Russia nearly a century later). Many Monarchs embraced Enlightenment values and took on the movement's name; however, it was often the case that this came in the form of lip-service, as they continued to rule as autocrats. A desire for liberty, promulgated by the works of Rousseau, provided the intellectual fuel for the French Revolution of 1789, inspiring the repressed French citizens with the notions of 'liberté, égalité, et fraternité', resulting in the overthrow of the Bourbon dynasty and establishment of a republic (however, political infighting, paranoia, and the rise of Napoleon meant that this was merely temporary). Liberalism and other aspects of Enlightenment inspired political doctrine began to influence national legal systems,

most notably in the nascent United States whose constitution was heavily influenced by both Montesquieu's separation of power and Locke's social contract theory. More generally, the movement promoted the pursuit of knowledge for its own sake, highlighting the virtues of intellectual rigour and scholarship.



Ancient Egyptian Influences on the English Language by Mark Taylor



It isn't very hard to find words in our language that have roots in the main two ancient languages of the mediterranean: Greek and Latin. However, unbeknownst to many people, there are lots of words in English that do in fact come from the Ancient Egyptian language as well.

Let's start with a bit of background. Ancient Egyptian is an Afro-Asiatic language that was the dominant spoken tongue in Egypt from the beginning of the first states in the Nile Valley around 3200 BC to well after the region was conquered by the Romans in 30 BC. A form of this language, Coptic, was still the general spoken language among the Egyptian people up until the 16th Century, and is now spoken by only 300 people worldwide, used as a liturgical language by the Coptic Orthodox Church. This language, however, is only partly intelligible with its more ancient dialect, having been influenced a lot by Greek.

So let's find some English words that have come to us from Egyptian. We will start with the obvious ones, words that seem to be quintessential parts of Ancient Egyptian culture: Pharaoh, Egypt and Sphinx.

Pharaoh comes from the Egyptian word $\text{pr} \text{w}$ ($\text{Pr} \text{w}$) meaning 'great house', which was used to describe the palace in which the monarch lived, and became a colloquial term for the king. The actual Egyptian word for pharaoh was nsw (Nsw). w (Pr) in Greek was pronounced Per, and the w (w), pronounced like a short 'a' and then a long 'a', became an 'ao' ($\alpha\omega$) in greek, making the word 'Perao'. You can see how that became pharaoh in English.

Egypt (and all words that come from it e.g. Egyptian, Gypsy) comes from a Mycenaean Greek corruption of ḥwt kꜣ-ptḥ ($\text{Hwt k} \text{w} \text{ Pth}$) which was an alternate name for the city of Memphis, the long-time capital of Ancient Egypt. The Egyptian was pronounced 'oot ka peteh', and in the Mycenaean, the first two vowels, 'w' and 'w', swapped around, as did some of the consonants to make it easier to say in their language, forming A-ku-pi-ti-yo. The 'k' became a 'd', with the word becoming Aiguptos in greek and then Aegyptus in Latin, before coming into English as Egypt. The word Copt or Coptic originates from the 'kꜣ Pth' section of the word. Sphinx comes from the Egyptian word šꜣp nḥ ($\text{Šzp} \text{w} \text{nh}$) meaning sphinx, but literally meaning 'living image'. The 'z' (S), 'w' (a, which became an i), 'n', and h (kh, which became a g), came into greek as

Sphinga. The greeks thought that this word 'σφίγξ σφίγγος' was related to their word Sphingo, meaning to join together, as to them, a sphinx was just multiple animals joined together.



While also key parts of Egyptian culture, their words for Pyramid and Mummy haven't transferred into English in the same way. Instead of coming from their word ḥ (Mr), Pyramid comes from the name of a greek cake, a puramis, which was shaped like a pyramid. However, some scholars dispute this, saying that it does in fact have an Ancient Egyptian root, and that it comes from ḥm.w (Pri-m-wsi) (Pronounced 'pery em oosy'), which was a rough measurement for the height of a pyramid. The first part of this word having noticeable links to both the english and the greek (Pyramida) The egyptian word for mummy, ḥm (šs) (pronounced 'Shes') has come into English as our word for a piece of cloth, a sash.

Other words, such as Desert and Oasis have egyptian roots. ḏšrt (Dšrt)(Deshret) and whꜥ (Whꜥ)(Ooah) have both made their way into the English language, as have ḥbny (Hbny)(Hebeney) and ḥm

(ḥbw)(Aboo), their words for Ebony and Ivory.

Other notable Egyptian words in English include Gum, Ammonia, Barge, Ibis, Libya, Baboon, Chemistry, Pharmacy, Myth, and lilly, most of which come from Coptic or Greek loanwords. Even the names Moses, Susan, and Humphrey come from this ancient language.



Ramy Mina, an Anthropologist and Philologist from Tanta University in northern Egypt, published a theory in his recent paper 'The Influence of the Ancient Egyptian Language on the European Languages' which claimed that there were many more Egyptian words that had influenced Greek and Latin, spreading in this way into English. These include words which contains the letters 'act' (action, actor), 'fac' (factory, benefactor), 'gen' (genocide, genome), any word with the prefix 'im', 'in', or 'non', 'naut' (nautical, astronaut), 'or' (oral, orifice), 'part' (partition), 'semi', and 'via' (deviate, viable), with these coming from the Egyptian 'kat' (act), 'bak' (work), 'djenoo'

(race), 'im, en and nen' (no or not), 'inoot' (sea), 'er' (mouth), 'peretch or peredj' (seperate, or a part), 'sema' (half), and 'bia' (way or road), respectively. You can see how many of these words are similar, and there are many other word links in the paper. If these could be proven, then the sheer number of Egyptian loanwords in the english language would be recognised for the first time. This would not mean that the existing belief that Latin an Greek have influenced English would be wrong, only that some of their words came from Ancient Egyptian.

So, what does this actually mean. This is just one example of how languages change over time, and how we can trace back various aspects of modern speech throughout the years and through various languages. The words spoken by the ancients, in some ways, are still spoken today. And while this is not to the level that we could understand someone living 2 to 5 thousand years ago, it is to the extent that we are able to say things and remember that, somewhere in the ancient mediterranean, someone would have been saying something very similar.

The History of Yosemite Climbing

by Fran Trotter

Yosemite National Park is one of the world's greatest places to explore, it has enormous, low winding valleys surrounded by unimaginably large rock walls. There are some of the most iconic faces which are repeatedly found on postcards such as El Capitan and Half Dome. El Capitan, standing at about 3000ft, is about 1000ft taller than Half Dome. Despite their gigantic and impressive image, they are also the attraction of one of the most free and dangerous sports in history: rock climbing.



For many years before the year of 1957, Royal Robbins (and his team) raced Warren Harding (and his team) to climb the Regular Route up Half Dome. However, this type of climbing is very different to the climbing we all know today: it involved suspending the climber on equipment to propel themselves up the wall, rather than being suspended on their own fingers.

Nevertheless, this certainly did not make the feat a walk in the park. It took Robbins' team five days to conquer the summit after years of training and gathering techniques for the climb. Harding was there to 'greet' Robbins at the summit and immediately after a jealous remark they entered an intense rivalry.

After having to digest the pain of being the second best climber in Yosemite National Park, Harding, an alcohol-worshipping madman, decided that he would have to climb the only other monolith which would cement him in the climbing hall of fame: the nose of El Capitan. This was a significant step up from Half Dome as it was 50% taller. Despite this, his team surged on through 16 months of training and preparation to climb the monstrous face in 47 days over this long time period. Each of these days spent climbing were used to place lots of bolts up the face of the mountain so that they could use them to haul themselves up.



Now with both major walls in Yosemite being conquered the only other way for

Robbins to step up the competition was to increase the difficulty of the route. After repeating Harding's route up the nose of El Capitan he and his team took it a step further and fought with the Salathe Wall up El Capitan; they were so eager to do this feat that they took many unthinkable risks. The team took a total of 6 ropes, however, during the ascent, they decided to throw 3 of them down to decrease weight - but this eliminated any chance of retreating down. From that point, the only way was up. Another unbelievable risk that Robbins successfully executed was a huge rope swing. He gathered height for momentum to manoeuvre from one crack to another. This enabled his team to bypass an unclimbable section of the face. After all of these risks which would have resulted in a certain death if they had failed, the team reached the summit in September 1961.



The rivalry had not ceased after the supposedly unbeatable feat of Robbins. He greatly criticised Harding's climbing ethic. He argued that he was fixing in an inordinately large number of bolts (which are what the climbers clip onto as they climb up) for his routes. This made the

climbs much too easy and spoiled the point of the mental battle associated with climbing - especially on the Yosemite giants. Additionally, although less of a contributing factor to Robbins' poor relationship with Harding was the manner under which he climbed the mountains. In fact, Harding had attached thousands of feet of ropes from his mobile platforms so that he could haul up food and items. He and his team even celebrated Thanksgiving by pulling up a turkey which Harding's mother had prepared for him.

Robbins made a statement of his annoyance at Harding's climbing ethic by repeating many of Harding's routes and breaking off the fixed bolts. Also, during the first ascent of Salathe Wall, Robbins used as little bolts as possible. However, this completely changed climbing in Yosemite and also worldwide. It had, from tactics and endurance, added the element of brute strength. Rather than being suspended on fixed ropes, the climbs began to demand finger strength and proper hands-on climbing techniques. This new type of climbing became widely known as free climbing; it is the climbing variation that has most significantly survived today (this is not the same as free soloing which is without ropes and no safety equipment).

Free climbing was especially developed by a fellow Yosemite climber called Jim Bridwell who established many routes which required unthinkable strength and

which would have appeared utterly impossible to climbers years before. Also throughout the 70s, equipment advanced enormously such as the invention of rubber shoes which increased friction on the rocks allowing climbers to climb much harder routes by standing on smaller holds. From here up until the present day, climbers have been reducing the ascent times of these mountains, seeing how quickly they can reach the summit with just some rope and a bag of chalk (chalk is used to absorb moisture/sweat for better grip). From Harding's 47 days of climbing over 16 months to climb the Nose of El Capitan, the record presently stands at 2 hours 19 minutes 44 seconds by Brad Gobright and Jim Reynolds.

The following millennia developed another newly-born type of climbing: free soloing. This requires strength, technique and most importantly, nerves of steel. First introduced by Yosemite climbing legend Dean Potter on routes such as Heaven, Alex Honnold famously took it to the next level by climbing El Capitan (the Freerider route) and Half Dome with absolutely no ropes or safety equipment.

This climbing in Yosemite National Park started with long years of preparation using siege methods to conquer the monoliths, and once every face had been beaten, fixed ropes holding the climber's weight were removed and harder routes were established. But today, Yosemite is renowned for forgetting about safety and

racing up the vertical and even over-hanging faces without any ropes to see how quickly you can reach the summit. In the future, I have no doubt that more and more enthusiastic, extraordinarily brave climbers will repeat and create even harder routes which eventually may also become free soloed.

The Golden Age of Detective Fiction

by Matthew Rolfe



In 1930, a group of detective fiction writers, including Agatha Christie, G.K Chesterton, Ronald Knox, and Dorothy L. Sayers came together to form the ‘detection club’. Its aims were to establish rules for the genre and placed an emphasis on fair play within their stories. This so called ‘fair play’ creed was detailed in Knox’s Commandments, which dictated that ‘the detective is bound to declare any clues which he may discover’ and prohibited ‘all supernatural or preternatural agencies’, as well as ‘hitherto undiscovered poisons’, ‘more than one secret room’ and ‘twin brothers’.

The foundation of the club came at the time of its greatest popularity, the interwar period, which has been termed the ‘golden age of detective fiction’, when one in eight books published in Britain belonged to the genre.

In the 1920s, the British Government was struggling to adapt to post-war politics and David Lloyd George executed a

number of policy decisions without the consent of parliament in the early years of 1920. Lloyd George’s resignation in 1922 ushered in a period of political instability. This was compounded with civil unrest as workers took to the streets to demand an increase in wages.

Economically, the country, crippled by war expenses, plunged into its worst financial crisis of the 20th century in the Great Depression of 1929, in which Britain’s world trade halved, and industrial output fell by a third.

In this time of uncertainty, the detective novel provided relief in its use of structure, setting, and character.

Structurally, golden age detective authors drew upon a great tradition of detective writing. Edgar Allan Poe’s ‘Murders in the Rue Morgue’ of 1841 is one of the first works of detective fiction and the genre was advanced through Wilkie Collins’ ‘The Moonstone’, published in 1868. Its appeal had extended to a wide audience with Sir Arthur Conan Doyle’s ‘Sherlock Holmes’ series. These prototypes established certain precedents and themes for the detective genre: for example, the upper-class setting; the character of the unfathomable and somewhat eccentric detective and his sidekick; and the framing of the story as more of an intellectual puzzle than a thriller.

There was something strangely comforting in the formulaic, almost romanticised,

crime stories that emerged in the aftermath of WWI. This has earned them the nickname ‘cosy crime’, since they placed emphasis on the detective’s methods rather than the horrible details of a crime. The attraction of reading detective fiction resided in being totally removed from the story and viewing it as a puzzle or a game. Dorothy L. Sayers captures this idea when one character remarks: “You have creative imagination, which works outwards, till finally you will be able to stand outside your own experience and see it as something you have made, existing independently.”

The settings of golden age detective fiction further contributed to its appeal. Typical of the period were trains, rural churches, country estates and theatres - cultivating the concept of an idyllic, ‘quintessential’ Britain. Far less common became the harsh settings sometimes found in the Sherlock Holmes stories, such as the Docks of London. Use of these generic settings gave the writers’ worlds a homely feeling to the reading public and allowed a kind of escapism from the financial and emotional hardships of the inter-war period.

At the heart of golden age detective fiction is the story of a battle of wits between the master criminal and the master detective. Personal conflicts of this kind could not contrast more with the First World War and its incomprehensible levels of destruction, in which the role of the individual seemed to be lost.

However, this level of popularity could not be maintained. With the advent of the film, detective films, such as Basil Rathbone’s ‘Sherlock Holmes’ largely superseded the written novel. The onset of the Second World War is generally considered to have marked the end of the golden age as the public’s attention was redirected again to war. The longer-term social changes in England at this time also contributed to the decline of the genre; in particular, aristocratic settings lost their familiarity as the upper classes experienced a time of decline.



Yet these detective stories retain a special charm which ensures their enduring popularity. Many have been adapted for stage and screen (recently Christie’s *Murder on the Orient Express*).

But perhaps most importantly, the detective story represents the restoration of order to a community threatened by the crisis of crime. This ideal of the return of order to a society in crisis appealed particularly in the interwar period, following WWI. Perhaps the uncertainties of today could give rise not only to a

revival of interest in golden age detective fiction but even a renaissance of the genre.

Should we Prioritise Vegetarianism in Solving the Climate Crisis? by Rory Middlemiss



With the rapid increase in global warming, reducing your carbon footprint has become increasingly critical. I will explore why there are much more efficient and effective ways to reduce your carbon footprint. I chose this topic because, in my opinion, I see climate change as the main problem we all face in the 21st century, but there are much better ways to reduce your carbon footprint, rather than being a vegetarian. My main point will be that the transport you use and the things you buy are much more important and beneficial in reducing your carbon footprint. Personally, I think that vegetarianism reduces your carbon footprint, however, I think that we should prioritize other methods.

As we travel around, most modes of transport produce pollution, as you burn fossil fuels. This has led to 28% of our carbon emissions coming from transport compared to 13% of carbon emissions via

food. Therefore, a focus on sustainable transport is a much more efficient way of reducing your carbon footprint, than vegetarianism. Not driving for a year could save 2.6 tons of CO₂ emissions, which is twice as effective than a vegetarian diet. Therefore, to minimize your carbon footprint you could use public transport, such as trains, trams or buses. Moreover, you could switch to an electric car, which, on average, produces 3 times fewer carbon emissions than a car. Flying is the most unsustainable mode of transport, yet it has been used frequently in the 21st century. With flying becoming ever more prevalent, we should be treating it as a luxury rather than a daily feature due to its sickening environmental impacts. For example, a long-haul return flight from London to New York produces around 1 tonne of CO₂ per passenger, which is more than the annual carbon emissions of citizens in 56 countries. Accordingly, if you used trains, or boats or busses, you would reduce your carbon footprint exponentially. Consequently, it would be more effective to reduce your carbon footprint using more sustainable transport; buses, trains and bikes produce the least carbon emissions.

Since the availability of any product has increased, cheap single-use products are becoming a daily part of life. This has led to our shopping habits, such as buying clothes or technology making up 26% of our carbon emissions, which is double that of your carbon emissions via food.

Therefore, if you are more sustainable with the items you buy it's a much more efficient way to reduce your carbon footprint. Items such as an iPhone will produce 80kg of carbon emission, and a pair of jeans produce 40kg of carbon emissions. Therefore, to minimize your carbon footprint you could wear your clothes for longer, buy fewer clothes or buy sustainable clothes. An investigation by WRAP found that extending the average life of clothes by just three months would result in a 5-10% per cent reduction in carbon, water and waste footprints of items. Consequently, it would be more effective to reduce your carbon footprint being more careful with the things you buy. Another huge problem with excessive buying is single-use plastics. These single-use plastics, such as some water bottles, plastic bags and wet wipes are a huge problem because plastics do not biodegrade. Instead, they slowly break down into smaller pieces of plastic called microplastics. These microplastics can enter the water system and are therefore very dangerous to both plants, animals and us humans since we could be consuming them. Therefore, it would be more effective to reduce your carbon footprint by being careful with what you buy, not buying too much and taking care of your possessions.

I genuinely believe that vegetarianism is beneficial for the environment because it reduces our carbon footprint. For instance, millions of trees are cut down in the

Amazon to provide pastures for cattle. However, buying chicken from your local butcher is more environmentally friendly than buying the fruits of the world: mangos from India, lentils from Canada and beans from Brazil. All these items need to be flown to the UK, so they have a high carbon footprint compared with locally sourced meats. However, there has been a huge spike in the consumption of avocados in the past few years, especially in the vegetarian diet, with over 6,000 avocados sold each hour in the UK. The main exporters of avocados are Mexico and Israel, and therefore, to get these goods to the UK can cause between 4.5 and 5.5 tonnes of carbon emissions per flight. So eating avocados, rather than British locally sourced meat exacerbates climate change further. Moreover, most vegetarians find it hard to find a source of food, high in protein, which is vegetarian. Therefore, with soya containing 30g of protein per 100g, it is the logical source to go to. However, the USA, Brazil, and Argentina together produce about 80% of the world's soya. These countries being across the Atlantic produce between 5.3 to 7.1 tonnes of CO₂e, per flight. Therefore, it would be more effective to reduce your carbon footprint by being more careful with the food you buy, such as eating seasonally and locally rather than simply eating non-meat products that have been flown into the UK from around the world.

I believe I have demonstrated that in order to reduce your carbon footprints, we

should prioritize the transport we use and be mindful of the things that we buy, rather than relying upon a vegetarian diet to save the planet. This is because both transport and items which we buy contribute 10% more to our carbon footprint than the food you eat. Furthermore, you could aggravate climate change by buying the fruits of the world, rather than locally grown vegetables or locally sourced meat. In conclusion, although vegetarianism will reduce your carbon footprint, I don't think that it is an especially effective way to do so.



A Review of the Young Rembrandt Exhibition at the Ashmolean by Freddy Chelsom



Over the half term break, I had the pleasure of visiting the Young Rembrandt exhibition at the Ashmolean Museum in Oxford. My visit transpired to be fortuitously timed, as the country entered a lockdown not long afterwards. Unaware of my good fortune, I approached the visit with mild apprehension, but also a sense of excitement, due to the fact that I had not been inside of a museum in many months.

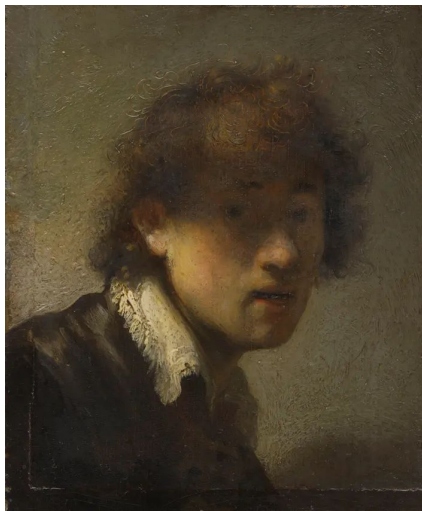
Arriving at the scheduled time of 7pm, my mother and I were greeted by a lady brandishing an electronic scanner which she used to check our “e-tickets”, before allowing us to proceed into the building. It

being 7pm, after the museum’s closing time, the museum itself was peacefully quiet and empty. As we ascended the many flights of stairs to the top of the museum, where the exhibition was located, we took in the eerily lit and desolate gallery spaces below us, which set a befitting tone for the experience ahead.

When we arrived, a little breathless, at the top, we were greeted, yet again, by a lady brandishing an electronic scanner. Repeating the, now familiar, ritual we continued into the first of the exhibition rooms. The first room was rectangular in shape and gloomily lit, but I could see the array of artworks set about the room, brightly illuminated by wall mounted lights.

As we went around the room we learnt about Rembrandt's early life and his first experiments with printmaking and painting. Rembrandt grew up in Leiden, a city in South Holland. His father was a moderately prosperous miller and he had 5 siblings. Prosperity was uncommon in Leiden at the time, which had been ravaged by wars with the Spanish for Dutch independence, which saw the city besieged, leaving many starving and dying in the streets. Rembrandt went to latin school before becoming apprenticed to painter Jacob Isaacs, some of whose work was placed alongside Rembrandt’s for comparison. The first room showed some of Rembrandt’s earliest works, including a

self portrait which I found very impressive, although the information next to the painting politely informed us of its various shortfalls, which were indicative of Rembrandt's early career, such as poor composition and incongruous lighting. Rembrandt was in fact one of the most prolific self-portraitists, and throughout the exhibition I enjoyed finding his face in the backgrounds of many of his big paintings. My favourite part of the first room was a set of etchings, in which we were able to see Rembrandt experimenting with printmaking. I found it fascinating to see where he had made mistakes and gone over them or repurposed the same plate for another practice. I felt that this part of the exhibition really gave an insight into Rembrandt's journey as an accomplished artist.



In the second room, which was more generously lit and had a lofty ceiling was filled with some much larger paintings from after Rembrandt had moved to

Amsterdam and established himself as a sought after artist. Many of the paintings in this room were of biblical scenes and some were commissioned by the court through Constantijn Huygens, secretary to the Prince of Orange, who was a great admirer of Rembrandt's work. It was around this time that Rembrandt ceased signing his paintings with his initials and began signing merely 'Rembrandt', a sign of his rise in popularity. Despite the many great paintings in the room, which were all very impressive, I was most interested in the etching Descent from the Cross: second plate, 1633, which, although a modestly sized, monochrome, etching, I found to be captivatingly beautiful. It depicts Christ being carried down from the crucifix after his death. I found Rembrandt's portrayal of light incredibly effective, with the figure of Jesus brightly lit by rays of light from above, and the skies in the rest of the piece contrastingly dark. Looking up close, I was amazed by the incredible detail of the night sky with minute crosshatching precisely etched by Rembrandt, in what must have been a painstakingly long process - of course, Rembrandt did not do all of this work himself and produced this piece in collaboration with Jan Gillisz. Van Viliet.

When we moved into the final room, similar in stature to the first, we were able to see works that began to show Rembrandt as an established and successful artist in Amsterdam. His self portraits showed him in prosperous

clothes and many of the pieces in this section were portraits, done on commission. We also learnt how Rembrandt taught many young artists in his workshop, who paid a lot of money to be his pupils. I did not find this final section as impressive as the giant biblical paintings in the previous room. I found many of the portraits to be discomfiting, perhaps because of the change from brightly lit and colourful scenes to more sombre and reserved portraiture. Despite this change, the quality of Rembrandt's work only continued to improve as he grew older, and we got towards the end of the exhibition.



Overall, I found the exhibition a very enjoyable experience, and it was interesting to see not only Rembrandt's great ability, but also the struggle and hard work along the way. It was inspiring to see his meteoric rise in both recognition and artistic merit, complemented by a feeling of quiet wonder at the beautiful depictions of emotion, humanity, and skill which were so generously arrayed throughout.

A History of Bicester by Louis Chan



During half term I had the opportunity to visit Bicester which is a town to the northeast of Oxford City. I strolled around town discovering interesting historic buildings which is the reason why I was interested in researching more about the history of these places and the town itself in general. The town is one of the fastest growing market towns in the county due to its convenient location of being halfway between London and Birmingham and being next to the M40 which links it well with other big cities. Although it is growing in popularity in recent years for its outlet village which made it a tourist destination, Bicester also has a long and rich history which can be traced back to the 6th century.

The town's earliest settlement was that of the Romans in the 5th century called Alchester although it was next to the ancient Roman route known as the Stratton Road, which was approximately 2

miles southwest of Bicester. However, the first definite source of the founding of the town was by the West Saxons in the 7th century of the building of a church. In the mid 7th century the King of the West Saxons was converted and so a minister was founded in Bicester which turned into St Edburg's Church. The site was just east of the ancient Stratton Road between Dorchester and Towcester that passed through the Roman town at Alchester. The church had a cruciform plan with no aisles. The surviving material includes parts of the north wall which was originally an external zigzag pattern, what was left of the north and south side were transepts and the clasping buttresses of the chancel. Also, three round-headed Norman arches at the end of the nave marked the position of the church tower which was later added in the 13th century. I was fascinated to read that the church was used to house the Saxon inhabitants in such a long time ago, showing that the history of Bicester is linked to the Saxon settlements.

The 2 main bodies of the town called the King's End and Market End are notably different, and these changes gradually came about in the 1700s. In the mid 18th century inns, various shops and more elegant houses clustered around the triangular marketplace. As a result, commercial activities were mainly concentrated in Market End. Sheep Street which is located just minutes from the marketplace looked tidy but the northern end used to be home to the poorest of the

town crammed with subdivided buildings with awful living conditions. King's End however was completely different. Firstly it has a much lower population and there wasn't much commercial activity happening on this end. Moreover, the Lords of the Manor, the Cokers, lived in this end of the town in the manor house which was remodelled in 1780.

Bicester has experienced multiple large-scale rebuildings, each time with a slight altering of architectural style. Disastrous fires in 1718, 1724, and 1730 led to much of the 18th-century rebuilding, but fashion and prosperity also led many house owners to reface their ancient houses of coarse rubble with stucco or with variegated brick. It was also a trend in the early 18th century to put in sash windows, and add classic porticoes to the front entrances.

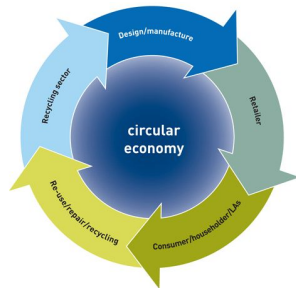
I walked past various houses that embodied these features and decided to research more on the specific changes that the past inhabitants made. One example would be an originally L-shaped 16th-century house. It was given a brick dentilled cornice, and its front door was embellished with a carved and bracketed hood. The east wing was extended by a rounded bay of two stories while the south wing bears the inscription gKe 1770 proving the history of the house. Its 18th century bay window was sadly removed during the Second World War, but the 16th-century overhang with carved ends is

still a remarkable feature of the house. There are many similar examples of house remodeling in the 18th century in Market Square and Sheep Street. It was said that the best house in the square is No. 28, which was refronted in around 1800 with brick. It was one of the main inns of Bicester in the mid-18th century which later became a private residence.

To conclude, the history of Bicester is rich and the town has steadily developed over time. From the building of churches in the Saxon times to the drastic changes in most of the town's houses in the 18th century, Bicester has proven to be a historically significant town. The next time you visit its touristic outlet village, I would suggest that you walk around the town and market square to witness its development.



The Circular Economic Principle by Leo Miller



In the mid-sixties, Kenneth Boulding promoted the idea of an “open economy” with unlimited resource inputs and outputs and in contrast, a “closed economy” where resources remain within the cycle of the economy for as long as possible before being discarded. Boulding’s essay “The economics of the coming spaceship earth” is commonly believed to be the first expression of the “circular economy” which is a relatively new economic system that has steadily gained momentum since then, led by a small number of businesses and academics. It is now pioneered by Ellen MacArthur who is using the platform she gained from sailing solo around the world and her shock at the waste in our seas and society to promote and educate people about this relatively novel idea.

The basic principle is that it revolves around designing products and manufacturing out of waste and pollution as well as regenerating natural cycles and

systems. It works similarly to a terrarium where plants grow in a sealed container and nothing is added to the miniature ecosystem apart from energy, therefore it recycles water, carbon dioxide and oxygen as well as all the other resources to continue to grow and when plants die, they are recycled by others.



A circular economy works in a similar way where waste is minimised and is recycled as much as possible whereas a linear economic system, like the majority of the world, prospers off a “take, make, waste” model of production which means that raw materials are in high demand and there are large amounts of waste. The most visible system is the textile industry where studies show that the equivalent of one rubbish truck of textiles is incinerated or put into landfill every second. There are two main reasons for this incredibly high figure, the first of all is that an approximated 15 percent of fabric meant for clothing is thrown away as cut-offs and unused and secondly the fast fashion ‘pandemic’ means that the average consumer throws

away around thirty kilos of shoes and clothing per year. This current model is clearly unsustainable and the issue will only grow in the coming years as fast fashion increases and so does waste.

The circular economy would dramatically increase the amount of recycling as up to 95 per cent of the discarded textiles could be recycled, making it far more efficient and decreasing the need for raw materials. Currently, around twenty percent of arable land is used for the production of textiles and this number is only growing. This land could be used to feed the world's population where more than six hundred and ninety million people go hungry every day but instead, it is channelled into textiles where much of it goes to waste. In order to shift the system, the whole world would need to be involved, from the consumer to the governments that implement the legislation dictating the production of products and the source of materials to the businesses themselves.

By designing out the waste and pollution of a linear economy, it would not only allow the earth to begin to thrive again but natural systems would begin to regenerate and humans could once again be in harmony with the natural world once more. The circular economic principle includes products, infrastructure and equipment and is easily applicable to every industrial sector from textiles to food.

Recycling initiatives are the most common circular economic businesses where waste

or discarded products are reprocessed into usable materials and resources that can then be fed into the industrial process again to create more economically sustainable products. Although many materials can currently be easily and efficiently recycled such as metals or paper, technological advances are required to find ways to cheaply and effectively recycle materials such as certain plastic and synthetic textiles as currently, it is impractical to expect these industries to incorporate waste materials as it is expensive or inefficient and can result in either lower profit margins or more expensive products which puts the burden on the consumer.

The linear economy needs to be transformed into a circular system where resources are managed, we change how we make and use products and how these products are recycled back into the system. Only then can the world flourish and benefit everyone within the constraints of our small planet.



Wellington Monument by Johnny James



During my half-term break I was fortunate enough to visit the Wellington Monument in west Somerset. While currently enclosed in a total of 7 miles of scaffolding it was still fascinating to see the rich history surrounding the monument as well as enjoying the impressive somerset countryside.



The monument was commissioned in honour of Arthur Wellesley, the 1st Duke of Wellington. He was born in Dublin though also spent time in London, before being educated at Eton College for 4 years. In 1787 he first joined the army and quickly moved up the ranks having a large amount of success in a number of smaller wars around the globe. Wellesley rose to prominence as a general during the Peninsular campaign of the Napoleonic Wars, and was promoted to the rank of

field marshal after leading the allied forces to victory against the French Empire at the Battle of Vitoria in 1813. Later he served as the ambassador to France and was granted a dukedom. However he is best known for when during the Hundred Days war in 1815, he commanded the allied army which, together with a Prussian Army, defeated Napoleon at Waterloo. Wellington's battle record is exemplary as he ultimately participated in some 60 battles during the course of his military career. Through his military successes he gained huge popularity and eventually became Prime Minister although his popularity sunk slightly due to his measures to repress reform.



The idea to erect a monument to the Duke of Wellington was first proposed in 1815 following the Duke's victory at the Battle of Waterloo. Following an architectural competition in

1817, Thomas Lee Jnr was appointed to design the monument. He proposed a triangular pillar supported on a plinth and surmounted by a massive cast iron statue of the Duke himself. The whole structure was intended to be 140 feet (43m) high.

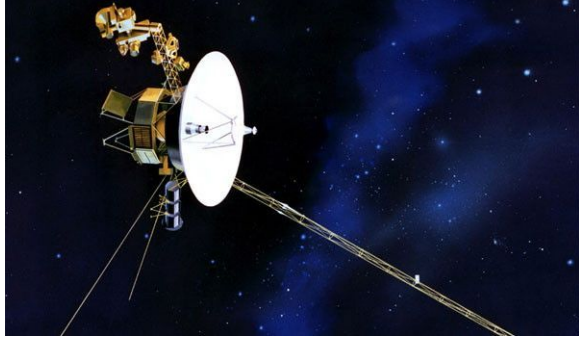
Funds ran out in a matter of months and building work ceased, by which time the pillar was only 45 feet (14m). When construction eventually resumed it continued in fits and starts for a number of years. By this time public interest in the project had waned and as a result the original design was pared down considerably. It was finished in the 1820s with the pillar the proposed height. The cast iron statue was never commissioned however and so in effect the monument became an obelisk rather than a plinth and statue as originally intended. Lightning strikes in 1846 and possibly again in the early 1850s caused serious structural damage. Charles Giles, a local architect, declared it a public danger. Giles was instructed to prepare a scheme for the repair and completion of the monument. These events coincided with the death of the Duke of Wellington. Giles came up with something very different from the original plan. He set out to transform the monument from a statue bearing pillar into the tallest obelisk in Britain. However by 1892 the monument had again fallen into disrepair. The top of the plinth was rebuilt and the shaft extended to the height we see today. Thereafter it has been subjected to repeated restoration work of a major nature but its character has remained unchanged.

The National Trust took over management responsibility in 1934. Since that time it has needed careful renovation every 10 to 15 years, an expensive and unsustainable

process given its height. With the condition of the monument reaching a crucial point, in 2018 the National Trust launched a national fundraising project to ensure its repair. The project to repair the monument will cost £3.45m. It is funded by both major and minor donors including those who bought a piece of fallen stone which managed to raise several thousand pounds. As of November 20th the project is at its halfway stage after work began a year ago with fundraising a year before that.

Voyagers 1 and 2 and their Space Exploration

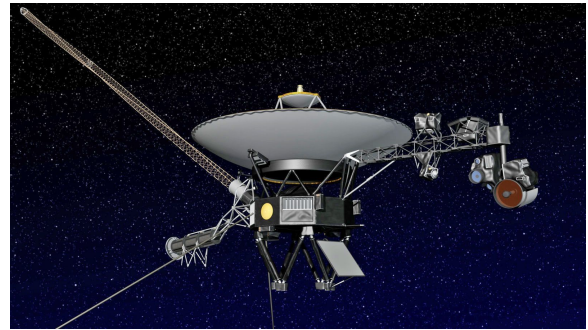
by Louis Trotter



The space race was a period in history in which there was intense rivalry between the USA and the USSR to compete for space and the most advanced technologies. This started in 1955 and ended in 1975. Following this, space exploration became a very significant concept around the world and only 2 years later Voyager 1 and 2 were launched from Cape Canaveral, Florida. The rockets launching the probes were Titan III-Centaur rockets which have also been used for the Viking probes (monitoring Mars) and the Helios probes.

On the 20th August 1977, the space probe Voyager 2 was launched into space in order to study the outer solar system and the two planets, Saturn and Jupiter. This mission was carried out because knowledge of the planets in our solar system was minimal, therefore, these were launched to discover new data about the systems of rings and the magnetic fields that these planets have. Incredibly, their original estimated flight times of around 5

years soon became 12 and (over) 43 years. As a result, scientists have been able to take the opportunity to discover many other planetary objects such as moons and even dark matter. For example, following the approach to Jupiter and Saturn, these Voyager probes then turned to Neptune and Uranus, therefore providing much more useful information. This new information meant huge improvements for textbooks and scientific research.



The journey of the two Voyager probes took place during a rare event in space. This was when the four planets, Saturn, Jupiter, Neptune and Venus were all aligned and therefore creating more efficient options for space travel. For example, the probes used a gravity-assisted trajectory in which the planet's gravitational pulls would move the probes between them. After recording the data of the planets and moons within our solar system, Voyager 1 and 2 travelled on to explore places outside of the comfort of our solar system. On the 16th September 2004, Voyager 1 crossed the Termination Shock. This is a region where the solar wind slows down and heats up as

it encounters the interstellar wind. This region is the inner boundary of the Heliosheath which is a highly turbulent area. The last ground-breaking event was on August 25th 2012 when Voyager 1 became the first man-made object in interstellar space. During this event, Voyager detected the many cosmic rays in interstellar space, allowing it to measure the magnetic field around the heliosheath. This crossing, however, was not noticed until April 9th 2013 when Voyager 1 was able to measure the density of the interstellar medium. This was possible because a coronal mass ejection from the sun (the release of plasma from a sun or star's outer area) reached the probe, as a result it caused the plasma in interstellar space to ring. The pitch of this ringing then allowed Voyager 1 to measure the density of the plasma surrounding it, which was 40 times higher than previously measured.

Over the course of their journeys, both probes have made many discoveries; however, there are some significant discoveries that Voyager 1 has made that have changed many things that we know about our solar system. For example, Voyager 1 discovered a thin ring around Jupiter and the G-ring around Saturn. These rings are important discoveries as they help scientists to understand the gravitational pulls of planets as the rings highlight where planets' gravity pulls have an effect on objects. In addition, Voyager 1 has also discovered five new moons

around Saturn and two Jovian moons (around Jupiter) called Thebe and Metis.

Due to the extreme lengths that Voyagers 1 and 2 have travelled, it was essential that scientists managed to produce a sufficient communications system ensuring the probes can send any data back to our planet. As a result, these two probes use the Deep Space Network (DSN), this is where the probes send waves that are detected by satellites around our planet. For example, there are DSN locations near to Canberra, Madrid and Goldstone (California), as these are situated on all sides of the Earth. This means that we almost never lose contact with any spacecraft. However, since the Voyager probes are now so far away, their signals have become very weak and in fact the power that the DSN satellites receive is 20 billion times weaker than the power needed to run a digital watch.

Finally, each of the two Voyager probes has a golden disc attached to the outside in case they encounter extraterrestrial life. These golden records include many things that aim to give the most positive impression of our planet as possible. The contents of these discs were devised by a committee chaired by Dr. Carl Sagan; they included a variety of natural sounds, 115 images, music, greetings and many more. Sounds such as waves, thunder, birds and animals were all included in order to give an idea of what our planet was like and to express the diversity that we have. In

addition, there were greetings in 55 languages and even a message from President Carter in order to express our welcome and peace. As well as the variety of sounds, music from Mozart to Chuck Berry were recorded and the many images taken could provide life with examples of our cultures, animals, people and scientific technologies. Finally, in order to give an idea of where we have come from, there is a map to our sun with reference to 14 known pulsars and there is also an ultra-pure sample of Uranium-238 so that life can determine the age of the probe on arrival.

Overall, Voyagers 1 and 2 are the most revolutionary probes that we have launched from Earth as they are the only ones currently in interstellar space and they have been travelling for 43 years and counting. These two probes have made many groundbreaking discoveries over the years and are still proving to be useful for scientific research to this day.

A Historical Stroll Through Abingdon by Isaac Ip

During October half term, I stayed at school over the two week period due to the situation regarding Covid-19. This allowed me to head into town and explore further the history of Abingdon-On-Thames.

On one such visit to the town, I walked along the somewhat empty streets of Abingdon and passed the sweet aroma of coffee radiating from the Costa. Then I reached the Abingdon County Hall Museum at the very centre of Abingdon. The rectangular shape of the building in combination with the many arches created a fantasy like structure that stood menacingly in front of me. Although I couldn't enter the museum, a sudden interest was raised in my head as I recalled the unique bun-throwing tradition in Abingdon town where buns are thrown from the County Hall Museum towards a crowd in order to mark a royal occasion.

Upon researching the Abingdon County Hall Museum, I found out that the building was originally built as a county hall for Berkshire and that its purpose was to serve as the principal sessions house and administrative home for the Justices, judicial officers that keep peace, of the country. This meant that it was originally a home for peace-keepers of the country and served an extremely important and

meaningful role. The Abingdon County Hall Museum was completed in 1683 and was designed in the Baroque style (an Italian style which is highly theatrical and decorative) by Christopher Kempster. The building itself stands on many pillars which provides a sheltered area underneath it for use as a market or other municipal functions. Furthermore, the County Hall Museum used to house a courtroom for the assizes (periodic courts held in England and Wales up until 1972) until 1867 when Abingdon town passed on the role to the now Reading Crown Court.

The Abingdon County Hall Museum's collections were started in 1919 and this collection has grown a lot to become what it is today. The museum mainly consists of two sections - the permanent collection and the temporary exhibitions. The museum has housed The Monk's Map of the River Thames around Abingdon since 1907 in its permanent collection and this map was created in the 16th century meaning it has a huge historical significance. The County Hall Museum also houses a reproduction of the Anglo-Saxon Abingdon Sword which was discovered in a river at Abingdon and shows traces of extremely old history. Aside from all these amazing artifacts housed in the museum, the building itself is also a Grade II listed building which once again hints at the rich history of Abingdon. In December of 2011, the last MGB Roadster sports car, which was last produced in Abingdon in 1980, was lifted through a window 9 meters high

for display in the main gallery of the museum and became part of the collection in the museum.

Since the 21st century's arrival, the Abingdon County Hall Museum has undergone a two year restoration project from 2010 to 2012 and was officially reopened by the Duke of Gloucester on 8th March 2013 with a new addition of a museum café in the basement of the building.

Nowadays, the Abingdon County Hall Museum stands proudly in the centre of Abingdon and holds a huge collection of artworks, historical artifacts and archaeological discoveries. These include many paintings done by Oswald Couldrey which tells the story of old Abingdon, historical monuments such as a Grinling Gibbons style mirror from the 1600s and a barrel chest from the 1500s, and finally archaeological findings such as a replica of the Abingdon sword, a cremation urn, a palstave axe from 2700 to 800 BC and Samian ware bowl from 100 AD.

I highly recommend giving the Abingdon County Hall Museum a visit as I'm sure their collection will give you a pleasant tour of Abingdon's history. Personally, although I couldn't visit the museum, I found images of the Abingdon Sword and I think that the history behind it is very intriguing. After restrictions due to Covid have been lifted, I would very much like to give the museum and its huge collection a visit. I deeply believe that all these items

show the deep roots of Abingdon history and that it is very worth investigating further.



The Monk's Map of the River Thames around Abingdon



Abingdon's Sword

A Rural Beach... And the History of Grey Commerce Between Mainland China and Hong Kong by Shawn Xu



Origins

East of the rapidly developing city of Shenzhen in southern China, north of the gulf between the Hong Kong peninsula and the mainland lies a number of beaches. The Yantian (literally salt farm) district is a particularly awkward location on the coast, with its sparse population, smooth rolling hills and a general lack of development. It is, however, precisely because of these characteristics that made it once the backbone of the smuggling supply chain of electronic products in China.

In the midst of the economic reforms in the 80s, the GDP per capita doubled in the span of a decade. With the massively increasing buying power of the middle class, imported Japanese electronic appliances quickly became a raging trend, with their incredible functionality and outstanding performance. They were a symbol of status for those living in cities. For the less fortunate middle-classes, the

15-25% tariff on imported goods at the time presented a major setback. It is for this reason that the smuggling supply chain quickly became massively profitable.

Prime Time

In the early 90s, when Hong Kong was still under British rule, Shenzhen was only just beginning to transition into being a “Special Economic Zone”. For quite some time, the main route for smuggling deliveries was to take a small speed boat from East Hong Kong, sail it to a beach in Yantian across the gulf, where another group of people would meet up and take the goods over into markets in the Shenzhen city centre. The rural rolling hills and the sparse population meant that smugglers are easily concealed by the darkness of night.

There were other possible locations. Hongshulin (literally Mangrove) is closer to the city, but the land there is very flat, which made smugglers incredibly easy to spot. The speed boat tends to beach there, due to the mangroves. Another location, Bao’an district, to the west of Shenzhen, is geographically sound, but lies outside of the economic zone, which required crossing another stringent border to get to the markets. This made the beach the only practical meeting zone for traders in all of Shenzhen.

After taking over the cargo on the beach, the meeting group secured the boxes on the back and sides of their bikes. They

would cycle on the mountain trails and deliver them to the city as quickly as possible, in the camouflage of the night without a flashlight to avoid getting caught. Motor vehicles were not a feasible option, as they attracted a great deal of attention, and there were no roads leading to the beach anyways. In addition, there is a cargo port in Yantian, so a road checkpoint is specially built on the motorway connecting the district to the city, screening for smugglers.



The lack of lighting on the precarious mountain route posed a great risk for the bikers doing the job, and many were injured in unexpected drops and bends along the dirt path. Despite the great risk of injury and getting caught, many young people were willing to take on such a job due to the incredible profit. For example, a Sony colour TV would have yielded over a hundred Yuan of profit, roughly four times the average daily income at the time. It is no wonder that there was no shortage of smugglers.

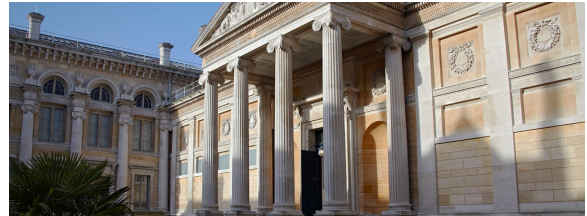
Decline of the Old, Rise of the New

In 1997, Hong Kong was handed over to Chinese rule. The tariffs decreased as a

result, and with the decreasing price of household appliances, the demand for the route was slowing. In addition, the trend of the time was shifting away from bulky TVs and CD players towards handheld electronic devices, such as pagers and first-gen mobile telephones. The border checks also became less paperwork-intensive, and many smugglers had a better time simply hiding the small items in their suitcases while going through security. The route on the beach became history.

And thus, the new route of smuggling took over, and it went straight through customs. The smugglers would take the device out of its packaging, carry it in their bags, declare it as their own if the inspector asks, and hand the device over to a workshop in Shenzhen, which would repackage the product with the cloned accessories, complete with plastic shrink-wraps. As the job was very simple and yielded a substantial amount of profit, the number of people going back and forth the border taking goods with them increased gradually. By the start of the millennium, the number of these self-proclaimed ‘tourists’ increased to such a scale that it overwhelmed the custom inspectors, so much so that even today, they mostly turned a blind eye to the majority of them. The meeting points on the beaches no longer exist, and this method took over as the new standard route and remains in use even today.

The Ashmolean’s Art and Archaeology by Tom Walters



Introduction

During my half term, I have visited several interesting places, but the one which truly piqued my interest was The Ashmolean Museum. This museum, displaying Art from around the world, and archaeological discoveries from as far back as 7000BC, currently resides on Beaumont Street in Oxford, and, as I later discovered, is a museum with a rich and bountiful history. It is widely recognised as the first modern museum: founded from the collection of Elias Ashmole right back in the 1600s, it has grown throughout the centuries and has undergone many changes and transitions to become what we know today as one of the best and most diverse museums in England.

The Ark

The story of the Ashmolean starts in 1634, in Lambeth, South London, with a much smaller museum, known as ‘The Ark’ or the ‘Musaeum Tradescantianum’. This was the first museum in England to be open to the public and was run by John Tradescant

the Elder and his son, John Tradescant the Younger: Two naturalists and gardeners who travelled the world in search of exotic plants for the Earl of Salisbury. During their travels, they had amassed a large collection of objects, possibly most famously a Stuffed Dodo, and the mantle of Powhatan, a Native American chief. Not long after it opened, a visitor is said to have depicted it as somewhere ‘where a Man might in one day behold and collecte into one place more curiosities than hee should see if hee spent all his life in Travell’, a statement that is clearly a testament to the great variety of objects and the intrigue invoked by Tradescant’s collection.



Involvement of Elias Ashmole

Elias Ashmole first met John Tradescant the Younger around 1650, and they became good friends whilst cataloguing the Tradescant collection in 1656. Due to this friendship, Tradescant later gifted the collection to Ashmole, who, combining it with his own, gifted it to the University of Oxford in 1677. The university decided to combine it with a third collection of their own artefacts, creating the set of objects

that were to make up the very first Ashmolean museum



The Old Ashmolean

The first Ashmolean museum was opened on the 24th May 1683, on Broad Street under the leadership of the first keeper, Robert Plot. Housing the combination of Ashmole, Tradescant, and the University’s collections, it was a clear leap forward in museum quality: It was the first purpose-built museum, even allowing members of the public in right from the start, although a secondary intention of the building was still education and research. It contained laboratories and lecture rooms, which links to the positive attitude towards scientific discovery and learning that had begun to emerge at that time. Later on, in the 18th century, there was an audit of the museum. This was a defining downturn for the museum. It highlighted the lack of preservation that was available at the time for artefacts and antiques. Most of the Tradescant’s original specimens had decayed beyond repair,

even including the prized Dodo: from this once amazing specimen, only a foot and the head could be saved, which now reside in the University Museum of Natural History.

Parks Road

In 1860, the Ashmolean opened in a second location on Parks Road, due to an increasing need for greater research facilities, as scientific advancement continued at a rapid pace. While this was not initially an exceptional museum, as it was still affected by the loss of the specimens during the audit almost a century before, it quickly grew under the keepership (1884-1908) of Sir Arthur Evans, who helped replace the lost objects, partially through acquiring not only the personal collection of Charles Fortnum (who donated it on the condition that the museum was put on a ‘sound footing’) but also a donation of £10,000 (£1.15 million as of 2020). In order to fully make use of these donations, and help the museum as Fortnum wished, Evans decided to move the location once more.

Beaumont Street

In 1894, the Ashmolean moved for one last time to its current location, on Beaumont Street, initially behind the University Art Galleries. Once again following Fortnum’s wishes, in 1908, the Ashmolean absorbed

the Galleries, becoming known as it is today: The Ashmolean Museum of Art and Archaeology. The art acquired from the Galleries was put to good use, being split between the Fine Art section, and the Department of Classical Archaeology and Art. Throughout the 1900s, this museum experienced growth in many areas, and also the introduction of several new departments. For example, in 1922, the Coin Room was established using the Bodleian collection of coins as a start (this was, at first, a subsection of the Department of Antiquities, although it was declared a section of its own in 1961), and a new Eastern Art department was formed, including collections from the Indian Institute after it became redundant. Furthermore, British colonial power in the Middle East and Egypt, especially at the start of this period, also enabled collections of many more wonders for the museum, and the Antiquities section also grew due to British finds in Greece.

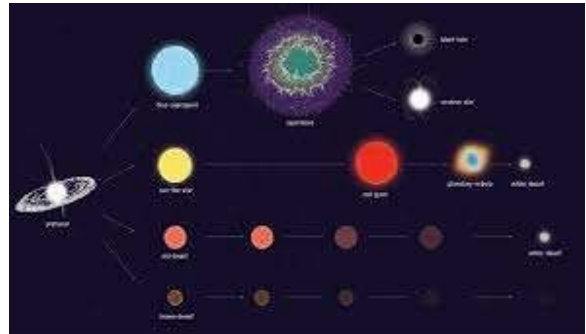
The Present Day

Following extensive renovations from 2006 to 2009, which cost \$98.2 million and extended the museum greatly, the Ashmolean is once again a place full of curiosities and wonders. The previous locations have also become excellent museums after the Ashmolean collection left the sites: the Broad Street location has housed the History of Science Museum since 1924, and Parks Road is now the

University Museum of Natural History. In the future, who knows how the Ashmolean will continue to grow, but one thing is certain: It will never cease to be a place filled with intrigue. Still, to this day, it holds true to the intentions held by The Ark right back in the 1600s: To spread the knowledge and wonders of the whole world to everybody.



Stellar Evolution by Thomas Wright

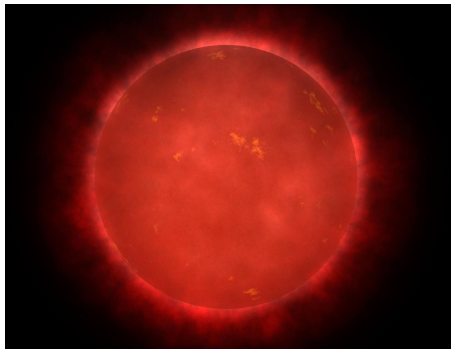


The night sky is full of stars which differ significantly in age and size. Starting as molecular clouds comprised of mainly hydrogen and helium, the stars produce enough energy from fusion to illuminate the sky for millions or even billions of years.

Main Sequence

The first stage of evolution of a star is a giant molecular cloud (nebula). This then collapses and splits to form protostellar clouds which then also collapse. At first the outward pressure of a protostellar cloud balances gravity. However, heat escapes from the core and so the kinetic energy of the particles decreases and so therefore the pressure decreases and so the core collapses, causing the temperature to increase. This process is repeated until the core contracts such that it is at a temperature of 106K, at which point there is sufficient kinetic energy of the hydrogen nuclei (protons) to overcome the electrostatic force of repulsion between

them and fuse together to form helium (actually 4 hydrogen nuclei combining to form helium). This creates an abundance of energy which is sufficient to balance out the loss of energy through radiation, and so keep the outward pressure constant, and balance gravity. It is now in a hydrostatic equilibrium, and thus begins the Main Sequence. It is self-regulated. Stars with higher masses will have a higher temperature as they need a larger pressure to balance gravity. This causes them to appear blue as they are emitting higher energy photons. They are also far more luminous as both their temperature and their radius are larger. However, as they have a higher temperature, the rate of fusion is greater which means that they spend less time in the main sequence as they exhaust their supply of hydrogen more quickly.



Red Giants and Supergiants

A star finishes being in the Main Sequence when all the hydrogen in the core has been fused into helium. The core will collapse due to the decrease in pressure. However, this means that the temperature in the

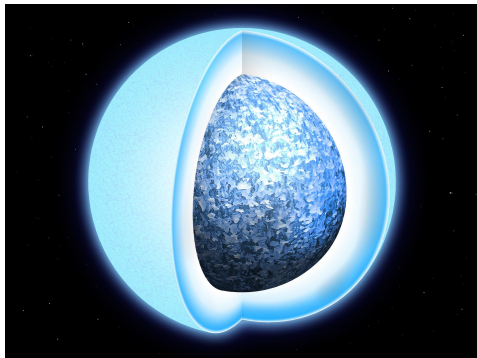
core increases until the hydrogen in the shell outside the core is at a sufficient temperature to fuse helium. As the core continues to collapse, the shell increases in temperature and so the rate of fusion increases. The increase in temperature and therefore pressure pushes the outer shell (envelope) outwards. As Red Giants expand, they cool (because the energy from the core is spread out over a larger area) and appear redder. Although the temperature decreases, the luminosity increases because of the larger radius. The sun will become a Red Giant in 7.4 billion years and it is estimated it will increase its radius to reach Earth's orbit.

However, the expansion stops as the core reaches a high enough temperature (around 108K) for helium to fuse into carbon (this requires a higher temperature as the electrostatic force of repulsion is greater between helium nuclei as they contain more protons). The helium fusion gives sufficient energy to keep the pressure constant and so the core stops collapsing. The temperature stops increasing so the expansion stops. The fusion of helium releases much more energy than hydrogen fusion and causes a higher luminosity in the core.

Planetary Nebulae and White Dwarfs

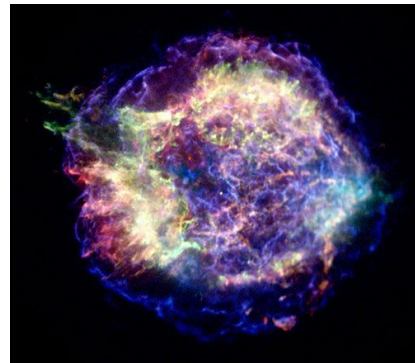
The next stage depends on the mass of the star. If the star is less than $8 M_{\odot}$ (solar masses) it will end up as a White Dwarf.

First, it will shed its envelope in the strong stellar winds produced by the high temperatures in the core (the gravity of the star is insufficient to retain the hydrogen envelope of the expanded star). Over the course of the Red Giant Phase most of the envelope will be carried away. The decreased envelope results in a lower mass and so the force of gravity is less (and so the process is exponential). The expanding envelope forms a shell of gas known as a Planetary Nebula. The nebula expands into the interstellar medium and enriches the gas with elements up to carbon.



After all the helium has fused, the core of the star collapses until it reaches a point known as the electron degeneracy pressure. When the M_{\odot} of the core is less than 1.4 (the Chandrasekhar limit) the contraction stops. The Pauli's exclusion principle does not allow two electrons to occupy the same quantum state at the same time. This means that a pressure is created once the electrons are compressed as they are closer together and so fill higher energy states. This will cause a large momentum for the electrons, generating a

pressure which overwhelms the collapse of a low mass star. This forms a white dwarf which is typically composed of carbon and sometimes oxygen and has a high temperature but low luminosity and will also cool without any energy generation.



Supernova, Neutron Stars and Black Holes

With higher mass stars or Red Supergiants, the process of fusion continues, with the core creating heavier elements as it contracts and increases in temperature and luminosity. The surrounding shells create lighter elements, eventually creating a gradient from the nuclear fusion of silicon to iron in the core to the nuclear fusion of hydrogen to helium. However, after this, the sequence ends because iron requires more energy to fuse than the output energy it has. The shells continue to fuse elements together, with the core collapsing. Eventually the iron core will reach the electron degeneracy pressure. However, as more of the mass of iron increases due to fusion, the gravity of the iron core is too large to be supported by the electron degeneracy pressure and so the core collapses. The result is a

supernova explosion, which is the release of the star's binding energy and ejection of the shells at velocities of up to 104 km/s. With the binding energy the shells can synthesize heavier elements than iron and enrich the interstellar medium.

At the high temperature in the core protons and electrons combine to form neutrons. If the mass of the star after the supernova explosion is less than $4 M_{\odot}$, it will be stopped by neutron degeneracy pressure and become a Neutron Star. These have a large angular velocity due to the conservation of angular momentum. They have a radius of around 10 Km. However, if it is more massive than $4 M_{\odot}$ then no known force can stop the collapse, causing a radius of zero, a singularity and a Black Hole. Because of its high density, its escape velocity is more than the speed of light, meaning that at the event horizon (the boundary of the Black Hole) time stops according to the theory of special relativity. This also means that they emit very little radiation (They emit some radiation in the form of Hawking Radiation).

In conclusion, stars evolve from molecular clouds through the Main Sequence to Red Giants and Supergiants. Depending on their mass, they then shed their shell as Planetary Nebula leaving a White Dwarf, or larger mass stars undergo a supernova explosion with formation of a Neutron Star or Black Hole. Within every star fusion is

occurring creating an abundance of elements from helium to iron 56. The subtle differences in the colours of the stars in the night sky indicate the age of the star, from the blue of high mass Main Sequence stars to the orange-red of Red Supergiants.

The Diary of a Prisoner of War by Oliver Hobbs

Based on the life of Bill Ash MBE



June 20th 1940

Today is possibly the greatest day of my life. I have officially become a pilot. There was some cost, of course: I was forced to give up my American citizenship in order to join the Canadian Air Force. But at this stage I'm more than prepared to fight for it back through my actions of nobility, of which there will be plenty. Anyway, after 8 months of training, I'm scheduled to fly over to Britain to fight on the front line. That shouldn't be too bad, as I'm pretty sure it's mostly 'going down' on the other side of France.

February 26th 1941

I'm here! The long haul flight over wasn't too much of a problem, although it could have been if I had no sleep. Today I was placed into 411 squadron RCAF, and some of the others there are seriously good, so I guess I'll have to try and keep up. We are what's known as the elite squadron to everyone else; we skip the queues, wake up last, eat first, and best of all, have no chores. Next Saturday is our official deployment day. We have 11 days to prepare until our lives are in the hands of fate.

March 12th 1942

I know it's been a while since I've written, but a lot has gone down. Last month I was flying over France on a simple recon mission. German technology had spotted an earlier plane that was too low down - stupid - and had already sent a whole squadron up to meet us in the air. We had a dogfight on our hands. And we were outnumbered.

There's not much you can do when 3 highly trained Luftwaffe pilots are on your tail. Even with my skill, a few bullets connected in just the wrong position. The left wing was my demise. In the panicked spiral to the ground, I followed the safety procedure and smashed the black button to the left of the yoke that launched me into the air. By the time the chute had released, I could see my plane crushing

trees and shrubbery on the floor. I glided for as long as I could, until the sound of whirring German engines was out of reach, at which point I softly touched down and started to make my way to the nearest town, which was in fact Paris. For two days I walked, without food, undetected by the Germans. To call this a miracle would be an understatement, because I was walking through the most recently procured patch of land by the Axis powers. Unfortunately for me, Paris had turned out to be the hub of German activity, so as soon as I stepped foot within the walls of the capital, my life was doomed. Bit of a shame that I had strolled right into their hands after narrowly escaping death, but at that point, my stomach was screaming so badly that I valued food more than anything else. When I was captured, I was taken here, a low security Oflag Prisoner Of War camp in Poland. To be honest, I'm glad I've been taken here, not to somewhere like Stalag Luft III, the most secure camp in the world. It just gives me more of an opportunity to escape, and outwit the lifeless guards. And we get enough food, which is a bonus.

June 2nd 1942

It has now got to the point where I will do anything to escape the grasps of the Germans, even if it means putting my own life at risk.

28 days ago, I staged my first attempt at escape. It was a flimsy plan; all I had in my

mind was just to crawl down the shower drain and run for my life. Of course, I had barely made it 10 yards before the pipe thinned and I was wedged in. After that, they had tried to tighten their hold on me, but I was not finished in trying to win my life back. 2 weeks later, some of the other prisoners and I had devised a relatively solid plan with the little materials we had: we were to distract the guards with a pretend fight, and then run into the toilets, where a latrine tunnel that lead right outside the camp would be waiting. This turned out to be successful, until 4 days later when I was recaptured by a guard out on patrol, only 20 miles away from the camp. Following this, the officers decided not to be so kind, and so sent me to Stalag Luft III, the very place I had been praying not to set my eyes on. Security here is more than anything you could ever imagine; some of the most important Allies to be captured are staying in the same building as me. But like I said, from now I will stop at nothing to escape the grasps of the Germans.

January 14th 1944

It has now been nearly 2 years since my unfortunate capture in Paris, and 12 attempts at escape, each one a failure in some way. I'm beginning to wonder if I will ever make it out of this place alive; it has been pure chance so far that's kept me from being dragged into a pit to never see the light of day again.

Earlier this week 76 lucky bastards managed to make it out of this hellhole alive through miles of precise tunnels. It was a shame that I had been locked in the cooler from last month's attempt when the actual feat took place. The poor few who are still trapped here are calling it the 'great escape' - I'd like to think my plans were much more secure and ingenious, and it was purely unfortunate circumstance that had kept me from freedom. But then again, they're out there, and I'm in here, so they must have done something right.

August 12th 1945

From the very beginning of this year, it has looked more and more likely that our freedom will be handed back to us. The guards and officers around the camp have nearly all been drafted out to the front lines, for what reason I don't know. All it means to me is more of a possibility to escape. Over the past few months the remaining capable prisoners and I have worked on an indestructible plan. As it turns out, the old tunnels from the great escape have not been properly blocked out by the guards, and in fact, two of the latrine tunnels lead right to the half-way house, surrounded by tracks. As always, a distraction will be needed. One of the old boys will cause havoc in the square while the rest of us are waiting in the toilets, and one by one, we'll make our way through

the soil to the outside, where a freight train will be waiting for us. I've heard that the British frontlines aren't too far away from here, so once we officially get out, we shouldn't have too much trouble.

September 9th 1945

We did it. Praise to God, we did it.

The war is won, our friends have been returned, and I will finally see the lands of a country to call home again.