

# WHAT IS THE POWER OF A VOLCANO?

## CLASS 1: HANDLING VOLCANIC OBJECTS

In this class we learn how to engage with primary sources and historical materials in order to ask interesting questions that will help us make sense of the past. We'll be starting with one of the most famous volcanic eruptions of all time, Pompeii. From dinner party wares to the archives of a banking family, we will look at all sorts of materials that can help us understand the customs, culture and challenges of people in Pompeii. We'll also learn how to date historic volcanic eruptions using a variety of methods, and then we will consider the role of the historian in preserving the very material that we've been looking at.

**SUBJECTS COVERED:** Archaeology, Classics, History, Geography

**RELEASE DATE:** 6 January 2020

**COMPETITION DEADLINE:** 27 January 2020

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For full details on all competitions, including instructions for submitting your entry, please see the [Competitions page](#) of the [Year 11 section on Inspire Digital](#).

The deadline for all competition entries is **5pm on Monday 27 January 2020**.

## ST JOHN'S INSPIRE PROGRAMME FOR YEAR 11





## WHAT WE CAN LEARN FROM THE ARCHIVE OF A POMPEIAN BANKER FAMILY

*One result of the eruption of Vesuvius is that we have an excellently preserved snapshot of Roman life in AD 79, meaning historians can build an amazing picture of what life at this time was really like! Discover how even the tiniest of details uncovered by historians can give us a fascinating insight into the lives of people who lived nearly 2,000 years ago...*

The eruption of Vesuvius in AD 79 would undoubtedly take a place of honour in any list of ‘ten most famous events of Greek and Roman history’; Pompeii and Herculaneum continue to attract both popular and academic attention, and important new finds constantly come to light. Just in the last year, a graffito seemed to confirm that the date of the eruption was most probably in November, rather than in August as most people assumed; a long inscription on a tomb provided information on bombastic gifts given to his hometown by an immensely rich Pompeian, including an enormous

combat of 416 gladiators (which would not have been bad for an imperial festival in Rome itself); and several rather lovely frescoes made international news. The *Forbes* magazine even called 2018 ‘the year of Pompeii’.

One of the most striking things about these towns on the bay of Naples for a Roman historian lies in our ability to reconstruct in detail – thanks to a unique combination of archaeological and written sources preserved by the eruption – what made these communities tick. The usual problems facing a historian of the ancient world are the very fragmentary nature of our evidence (one

**SUBJECTS COVERED:**  
Classics

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historian compared it to ‘fiddling with a jigsaw-puzzle, the pieces of which would not fit’) and the difficulty of dating it. At Pompeii and Herculaneum we have a snapshot of their urban society at a known date, and because these were also relatively small towns, even by the standards of the Roman Empire, we can have a more realistic attempt at a comprehensive picture than almost anywhere else in the Roman world. (This does not of course mean that the evidence is without its difficulties or that new excavations do not constantly change what we think!)

The range of possibilities for study is vast: from researching the complexities of local electoral politics through a really remarkable series of painted electoral posters, to trying to identify the social status and sources of wealth of the home owners. At Herculaneum, we even have what is probably a list of all adult male Roman citizens living in the town at the time of census in AD 73-4 (some 500 names survive), with some additions made in the five years between the census and the eruption. It gives us an idea about the demography, the range of different social statuses (the inscription separates the categories of freeborn, children born outside marriage and freed slaves), the role of slavery (how many slaves do you need to have this proportion of freedmen?), naming patterns and much besides.

In my own research, I am particularly interested in the fantastic archive of legal documents from the family of local bankers and middlemen, the Sulpicii, who had active business in the neighbouring harbour town of Puteoli: 137 documents on wooden tablets, found in a villa just outside Pompeii’s Stabian Gate and excellently published by the Italian scholar Giuseppe Camodeca twenty years ago. At the first sight they appear to be fairly dry



stuff, as business documents of bankers tend to be. Summons to court, sworn testimonies, judicial decisions, rental agreements, receipts, auction notices, sales, loans. But if we read them carefully, Roman life vividly emerges from seemingly small details. Let us take just one such document: a loan contracted in June 37 (the year Caligula became emperor) by a Puteolan merchant called Gaius Novius Eunus (*Tabulae Pompeianae Sulpiciorum* 51, to give its conventional scholarly reference), which I give here in my own slightly simplified translation.

*In the consulship of Gnaeus Acerronius Proculus and Gaius Petronius Pontius, on the 14<sup>th</sup> day before the Kalends of July (18 June 37), I, Gaius Novius Eunus, have written that I accepted as a loan from Evenus Primianus, freedman of Tiberius Caesar Augustus, in his absence, through his slave Hesychus, and will owe him 10,000 sesterces in cash, which I will return to him when he demands. Hesychus, slave of Evenus Primianus, freedman of Tiberius Caesar Augustus, asked me to swear that these 10,000 sesterces will be duly paid in good coin, and I made a solemn promise. I have given as security and pledge for these 10,000 sesterces about 7,000 measures of Alexandrian wheat, and 200 sacks of chickpeas, spelt grain and lentils, amounting to about 4,000 measures, all of which I have in my possession stored at the Bassian public granary at Puteoli, and for which I accept all risk against damage. Done at Puteoli.*

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## COMPETITION 1.1: TRADE IN ROME

Using the online tool at <http://orbis.stanford.edu/>, try to trace the route of an Alexandrian grain ship to the Bay of Naples. How long would it take? What might that mean to a trader in Puteoli?

Was the price of grain in this contract (1 measure, *modius*, equals 8.73 litres) high or low, given that 900 sesterces were the annual pay of a Roman legionary?

To judge by that, what could it mean to be a freed slave of the emperor?

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YOUR ANSWER**

This is part of a long series of financial documents, which also include a rental agreement for the space at the granary, and receipts for the money and the grain, and one can do a really interesting study of the whole dossier. But even when taken on its own, the text already reveals a lot:

- The date is by the consuls, old Republican officials – showing how Republican traditions lived in the Empire, even outside Rome itself.
- Our businessman got a Greek surname, so was an immigrant, or more likely a freed slave (or a son of one), but he is a Roman citizen, writes Latin and uses Roman law: was that enough to be a Roman?
- The man from whom Eunus borrowed money was a freed slave of an emperor and owned slaves himself, showing how connections at the top of society sometimes mattered more than your formal status (he probably wasn't a citizen).
- It is rather striking that the loan should be repaid on demand, showing both the power of an imperial freedman and the world of very rapidly moving business deals.
- Although the sum is pretty large, it is all paid in cash: while bankers already existed, financial transactions were still fairly primitive.
- The security for the loan was in grain from Alexandria in Egypt, giving us a glimpse of how these businessmen took part in the exploitation of the empire. The philosopher Seneca vividly describes how the whole population of Puteoli rushed to the quayside and tried to spot by their peculiar sails the first Alexandrian grain ships of that navigation season.
- Legal terminology in the original is both Greek and Latin (as with two similar terms I translated 'security and pledge'): such commercial networks spread legal and business practices across the Mediterranean.
- The grain was deposited in public granaries: a real mix of public provision for food supply and private commercial interests.

One of its more interesting features, though, is hidden in my translation. The text is copied twice, on the outside and the inside of a set of tablets. The text outside, by a professional scribe, is written entirely correctly. The text inside, in the hand of Gaius Novius Eunus himself, has the most spectacular spelling errors in just about every word, including the name of the slave from whom he got the money (who becomes *Hessuchus*); he can't even spell the name of his hometown, which twice becomes *Putoli* instead of *Puteoli*. We can see from that what advanced literacy meant to a very successful grain dealer in a harbour town: clearly not quite the same as you would imagine from reading classical literature. At the same time, the old ceremony of solemn promises was no longer enough; like ours, this became a society governed by documents.

It is through such everyday texts, which the eruption of Vesuvius preserved for us, that we can see Roman life and society beyond the imperial court, elite interests, and high politics. Paradoxically, it is the volcano that killed them that now allows us to take a really close look at the activities of these Pompeian business people.

*Dr Georgy Kantor*, Tutorial Fellow in Ancient History at St John's College

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## ST JOHN'S INSPIRE PROGRAMME FOR YEAR 11





## THE POWER OF VESUVIUS IN THE ANCIENT WORLD

*The eruption of Vesuvius has led to an interesting combination of destruction and preservation... Although the volcano buried the towns of Pompeii and Herculaneum, this means they are very well preserved. But recently they've come under threat from more destruction thanks to human activity. So what should we do next? Should we just preserve what's already been discovered, or carry on digging to see what else lies beneath?*

There is little more destructive than a volcano. The eruption of Mount Vesuvius in AD 79 buried the Roman towns of Pompeii and Herculaneum in the Bay of Naples, bringing their busy lives instantly to an end. The volcano's destruction of those towns, of course, led in the end to their preservation as archaeological sites: this paradoxical interrelationship raises some interesting questions.

Luckily for us, the eruption of Vesuvius was witnessed by a man called Pliny, a Roman author with a keen interest in natural phenomena; his nephew has left us a vivid description which combines detail with intelligent speculation about what was causing

what he could see:

*Its general appearance can best be expressed as being like a pine rather than any other tree, for it rose to a great height on a sort of trunk and then split off into branches, I imagine because it was thrust upwards by the first blast and then left unsupported as the pressure subsided, or else it was borne down by its own weight so that it spread out and gradually dispersed. Sometimes it looked white, sometimes blotched and dirty, according to the amount of soil and ashes it carried with it. My uncle's scholarly acumen saw at once that it was important enough for a closer inspection.*

Pliny Ep. 6.16 (tr. Radice, Loeb edition).

Pliny followed his curiosity and headed towards the eruption as most other people

were running away from it. Combining a rescue mission with a desire to observe and take notes on what he saw, he ended up trapped by the eruption and suffocated under the rain of ashes that also entombed Pompeii; the account we have above was written by his nephew, also a fine writer, who stayed at a safe distance. Volcanologists still call this distinctive kind of volcanic eruption, with an ejection of large amounts of debris into the stratosphere, 'Plinian'.

Pliny's death was of course a catastrophe for him and a tragedy for his family. But it resulted in this important, dramatic account (*it's worth reading all of it, in two letters which you can find here*), and to a sort of immortality: as his nephew wrote, the manner of his uncle's death was 'so memorable that it is likely to make his name live for ever'.

This paradoxical linked pair of effects – the volcano killed Pliny, but also helped make him famous, and left us a wonderfully vivid account – is also true for the towns of Pompeii and Herculaneum. No doubt their inhabitants would have been horrified to know that the volcano, a peaceful neighbour for centuries, would suddenly overwhelm their towns, destroy their homes and kill them and their neighbours. But the fact remains that this destruction was also a preservation, turning Pompeii into a sort of time capsule of the ancient Roman world, fascinating to tourists and to scholars alike (these towns, because they are so well preserved, can actually tell us more than Rome itself about some aspects of ancient Roman life like housing, shopping, streetscapes, local small scale politics, diet and more). Had Vesuvius not erupted, Pompeii would now be little more than a footnote in Roman history, one of scores of obscure small towns that were just names on the map. As it is, it is one of the most famous and important archaeological sites on the planet.

This rather double-edged benefit that Vesuvius conferred on the towns beneath its

summit raises some important questions, both practical and ethical. Should we be glad that Vesuvius erupted, creating such marvellous resources for modern scholars and tourists at the expense of the unfortunate ancient inhabitants? Well, we can't undo what Vesuvius did, and we should at least try to make the best use of the destruction wrought by the volcano. But what about, for example, those famous *plaster casts of bodies*, trapped in the rising ashes in the moment of their deaths and revealed by archaeologists? They are one of the most popular attractions in the town; it is undeniably fascinating to look at a 'face' from 2,000 years ago, and there is a certain ghoulish interest in seeing the last poses of the human (and animal) casualties of the volcano, in their attempts to flee, shelter, or struggle against their grim fate. Just this year the discovery at Pompeii of a skeleton whose head was apparently crushed by a falling block made headlines round the world. The body revealed some interesting information: the man had a leg problem that might have slowed his escape and was carrying a bag with a fair amount of money and a key; *careful excavation* revealed that the block now sitting over his head probably hadn't killed him after all, and that 18<sup>th</sup> century excavations might have disturbed his body – a series of little extra insights into the history of the site, and the decisions and challenges faced by the town's last inhabitants. But unsurprisingly, the striking image also became the basis of *internet memes*. Some were undeniably quite funny, but can humour be the right responses to a violent death in a natural disaster, even one so long ago? Does the passage of time make the suffering of Pompeii's inhabitants fair game, or should we feel uncomfortable? Do you think these body casts should be on public display? And if so, what sort of response

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Should the plaster casts of people killed in the eruption of Vesuvius be on display? [Click here and scroll down to the middle of the page to cast your vote!](#)

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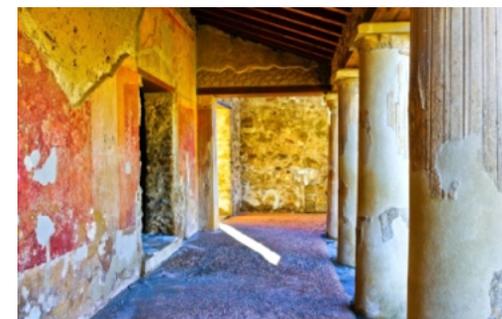
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## COMPETITION 1.2: THE ROLE OF THE HISTORIAN

Do you think that we should carry on excavating sites like Pompeii to see what else we can discover, or should we focus on preserving what has already been found?

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is appropriate?

The paradoxical connection between destruction and preservation raises other questions. Pompeii is so well preserved because it has been buried for nearly two millennia. Frescos discovered in new excavations this year, with astonishingly fresh and vivid colours, show how thoroughly the dense layers of volcanic ash have sealed them against damage: Vesuvius was in some ways a rather gentle destroyer. But the opposite is also true: excavators interested in restoring these artefacts to human sight, would-be rescuers of the lost world of Pompeii, immediately expose them to destructive forces – atmospheric pollution, looters, casual damage from tourists, frost and sunlight and rainwater damage, even the acid droppings of generations of [pigeons](#). The damage done

to Pompeii and neighbouring sites over the last couple of centuries is sadly immense, raising from the deliberate organised looting of the early explorers to Second World War bomb damage and recent [collapses](#) brought about by weathering and neglect.

Happily, there has been a strong response to this problem. The 'Great Pompeii Project' is funded by the EU and the Italian government, with a large and multi-disciplinary archaeological team. It has already begun to shore up and protect what has already been exposed, which will be an almost never-ending task given the scale of the ruins. But it has also begun to uncover new remains – the frescos and the unfortunate skeleton mentioned above, [horses still in their harnesses](#), an impressive [inscription](#) detailing huge public games and entertainments, a [graffito](#) that might redate the eruption and much else.

These discoveries are undoubtedly fascinating. But should we keep exploring? About a third of Pompeii remains buried. Left underground it will not decay further, and can await the future's as-yet-uninvented archaeological techniques. And excavating for new treasure can be a glamorous distraction from our duty to preserve what we have already uncovered. At Herculaneum, for example, the famous Villa of the Papyri has already revealed a [treasure trove of carbonised ancient books](#), now painstakingly unrolled and read by scholars. Most of the literature they have proved to contain is in Greek: might there be a lost Latin library still in the villa, perhaps containing contemporary poetry by Virgil or the lost books of Livy? Should we go and look for it? Or should we spend precious and limited resources conserving the crumbling above-ground ruins of Herculaneum, exposed by earlier excavators? Is human intervention in the

end a greater threat to the ancient towns than the volcano which unleashed such destructive, but also protective, forces?

Vesuvius might in the end resolve these dilemmas for us. For a volcano, two thousand years is not a particularly long time. Vesuvius has erupted regularly since AD 79, and last fell silent in 1944. Other parts of the volcanic system under the Bay of Naples are showing signs of activity. Sooner or later, Vesuvius will visit further destruction on the busy human habitations that crowd around its base.

*Dr Matthew Nicholls,*  
Senior Tutor at St John's College

[Learn more about the process of reading the Herculaneum scrolls here!](#)

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## Could you survive a natural disaster?

Earthquakes, volcanoes, wild weather, and rocks from space... the Earth can be a dramatic place! But human beings are a pretty resourceful lot, and we've been surviving natural disasters for thousands of years. How have they shaped our world, and how will we cope with them in the future?



### FOR NEXT YEAR: YEAR 12 STUDY DAYS

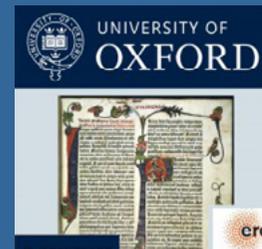
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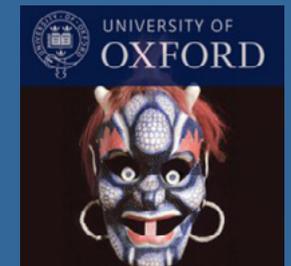
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## ST JOHN'S INSPIRE PROGRAMME FOR YEAR 11





Fig. 1. A Roman dinner party where the reclining guests raise toasts to each other's health and shout drunken messages: *Facite vobis suaviter* ("Make yourselves comfortable"), *Ego canto* ("I am singing") and *Est ita valea[s]* ("Go for it!"). Fresco from the House of the Triclinium in Pompeii. Painted around AD 50-79. Naples Museum, MANN 120031. (Bridgeman Education LRI4642475)

**SUBJECTS COVERED:**  
Classics, Archaeology

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## I CAME, I SAW, I ATE FRIED DORMICE

What's the connection between volcanoes and food? Archaeological discoveries (including preserved food remains from thousands of years ago!) can give us an amazing glimpse into the dining rooms of the Roman Empire. Take a look at artefacts from Pompeii and beyond to see if you'd have enjoyed some of the delicacies they were used for...

Imagine being a guest at a dinner party where roasted dormice, fried snails, fermented fish sauce, stewed eels and two-year-old tuna are offered to you as the most exquisite delicacies on the menu. The finest Falernian wine, matured for fifty years and mixed with water from a nearby spring, is carefully poured into gilded silver goblets decorated with the



Fig. 2. Bronze jug with a handle attachment in the shape of a satyr's head. Made in the 5th century BC. Ashmolean Museum, AN1971.920



Fig. 3. Attic 'little master' band cup attributed to the Tleson painter. Made around 545-535 BC. Ashmolean Museum, AN1964.621



Fig. 4. Fresco showing an Etruscan banqueting scene. The women wear the light-coloured tops and the men are bare-chested. The Tomb of the Leopards in Tarquinia, Italy. Painted in the 5th century BC. (Alamy DH057K)

drunken followers of the wine god Bacchus and the tragic heroes and heroines of ancient Greece. The evening begins with slaves pouring scented water over diners' hands from gleaming bronze vessels, the erudite conversation (tongues loosened by the Falernian wine) flows in Latin and Greek, and in the corner of the lamp-lit room musicians play flutes, cymbals and pipes to accompany the troupe of hired dancers whose graceful gestures form flickering shadows on the brightly-painted walls behind.

Where do you envisage this opulent gathering is taking place? In the last days of dry and dusty Pompeii in the summer of AD 79? In the commanding officer's house in the military fort of Vindolanda on a bitterly cold winter's night in northern England? Perhaps in Rome itself, in the sumptuous suburban villa of a Roman senator with lavish gardens and gushing fountains?

Archaeological finds and preserved food remains from hundreds of sites and settlements in Europe, Asia and North Africa – often supported by first-hand written accounts by ancient suppliers, craftsmen and homeowners themselves – reveal that the Roman dining experience spread throughout the provinces and territories of the empire and sometimes took hold in the remotest of locations. An exhibition at the Ashmolean Museum in Oxford entitled *Last Supper in Pompeii* (running from 25 July 2019 to 12 January 2020) brings together objects from Roman and pre-Roman dining rooms with new research into dietary changes in the ancient world, unearthing a thousand years of feasting and revelry. This article is illustrated by artefacts which are on display in the exhibition, many of which have been locked away in museum storerooms since their discovery or acquisition decades, and sometimes centuries, ago.

The sheer diversity of the material suggests

that no two dinner parties were the same. Regional delicacies made their way onto the menu alongside foodstuffs that had been transported from as far away as India and China, and locally-made vessels sat alongside treasured imports. The bronze serving or measuring jug shown in image 2 dates to the 5<sup>th</sup> century BC and is a typical product of the Etruscan people who made it, probably somewhere in northern Italy. The wine cup in image 3, which is decorated with a band of hens and fighting cocks, was found in an important and wealthy Etruscan city in central Italy called Vulci, but it was made in Athens in Greece a few decades earlier. Significant numbers of 'Attic' vases and drinking vessels have been found in Etruscan cemeteries suggesting that they were highly-prized possessions; so much so that they accompanied the dead to their final resting place. The importance of banqueting to the Etruscans – whose culture and traditions had a strong influence on their Roman neighbours – is reflected in the frescoes which decorated their tombs, where men and women dine together on richly-swathed couches, deep in conversation, drinking from a range of elaborately-shaped vessels.

The dining rooms of Pompeii were preserved in entirely different



Fig. 6. Glass jug. From the House of Petronia in Pompeii. Made around AD 50-79. *Pompeii*, SAP 12489.



Fig. 7. Glass rhyton. Made around AD 50-79. *Pompeii*, SAP 12493.

Fig. 5. Glass cup with white speckles. Made around 50 BC–AD 50. *Pompeii*, SAP 13028.



Fig. 8. A reclining satyr drinks from a rhyton. Fresco from the Villa di Arianna in Stabiae. Made around AD 45-69. Naples Museum, MANN 9116. (Alamy PGHEBK)

Fig. 9. South Gaulish terra sigillata bowl in Yellow Slip Ware, made in La Graufesenque, France. Made around AD 50-79. Found in Pompeii. *Pompeii* SAP 12669.



Fig. 10. South Gaulish terra sigillata dish in Yellow Slip Ware, made in La Graufesenque, France. Made around AD 50-79. Found in Pompeii. *Pompeii* SAP 12668.



Fig. 11. The maker's mark CELADVS F, short for Celadus fecit ("Celadus made it"), from the underside of the large dish.

circumstances, some laying undisturbed for almost 2000 years after the eruption of Mount Vesuvius. Many of the more fortunate residents of the town were able to flee from the disaster with their most treasured (and portable) belongings – money and jewellery being the obvious choices – meaning that breakable and bulky goods were usually left behind in houses, shops and bars. The preservation of glass seems extraordinary given the immense damage inflicted on Pompeian houses by the falling volcanic ash and pumice and the subsequent and devastating pyroclastic surges, but astonishingly, a number of glass objects survive intact. The examples in images 5, 6 and 7 showcase the skill of Roman glass makers and give a sense of the impressive range of tableware options available for those who had the money and means to buy them.

Each would have been used or displayed on the table during the *cena* (main meal) and were intended to show off the sophistication and refined taste of the homeowner. Dinner parties were a great opportunity for Romans to impress their friends and social betters, and the stakes were high if the host was hoping to gain favour with an influential local politician or perhaps to be elected to office himself. The speckled cup in image 5 was probably made in the Po Valley in the north of Italy and would have been an expensive purchase because of its unusual design. The jug with intricate, ribbed decoration at the base of the handle (image 6) would have been used for serving and pouring wine, and the *rhyton* (drinking horn, image 7) was a vessel whose shape went back millennia, but would mostly have been thought of by Romans as an import from the Greek world. Both objects were found together in a cupboard in the so-called 'House of Petronia' in Pompeii during excavations in the 1950s. The *rhyton's* popularity is also seen in the frescoes which once adorned the interior walls of houses and villas, showing gods and animal-like mythological creatures holding them proudly aloft at their own wild gatherings (image 8).

Some tableware came from even further afield. The small bowl and large serving dish in images 9 and 10 are

coated in a yellow slip with red marbling, with the aim of making them resemble extremely expensive and desirable coloured marble. They were made in workshops in La Graufesenque in Southern France and exported to Pompeii some time in the 30 years before the eruption. Although archaeologists can rarely be this precise when dating objects, the large dish is stamped with a maker's mark telling us that a man named Celadus made it (image 11). Extensive (and ongoing) studies into the pottery produced in this region – known as *terra sigillata* or sometimes Samian Ware – have allowed scholars to assign named potters to particular vessel types and specific workshops, meaning that we can trace their products back to them when they are found, and date them very precisely. Pots made by Celadus have been found in France, Germany, Belgium, Switzerland, the Netherlands, England, Italy, Spain, Algeria and Tunisia, and all date around the reign of the emperor Nero (the 50s and 60s AD). Crockery like this would have been used for serving food, perhaps fruit, nuts, cheese, bread or even pork sausages. Nowhere in Roman art or literature will you find reference to a tomato though. Although a staple of the Mediterranean diet today, the tomato was only introduced to Europe in the 16<sup>th</sup> century after Spanish conquistadors returned with it from Central and South America, making it a relatively recent addition to the European diet.

Occasionally, we find pieces of tableware that were clearly not meant to be used in the actual serving of food and drink, but intended primarily for decoration and display. Even in the 1<sup>st</sup> century AD, the *hydria* (water jug) in image 12 would have been regarded as a highly-collectable antique, but archaeologists only realised this after restoration work carried out in the 1970s removed centuries of encrustation that had built up on the surface of the bronze. To their surprise, a previously-hidden Greek inscription which translates as, “I am from the Games of Argive Hera” was revealed. This means that in around 460-450 BC the *hydria* had been awarded to a victorious athlete or musician at the prestigious games dedicated to the goddess Hera in Argos, and somehow made its way to Pompeii in the intervening years, most likely as looted plunder when the Romans conquered Greece in the 3<sup>rd</sup> and 2<sup>nd</sup> centuries BC.

The destruction of Pompeii occurred in the first few months of the reign of the emperor Titus, whose father Vespasian was a successful military commander in the Roman invasion of Britain in



Fig. 12. Bronze hydria once given as a prize at the Heraean Games in Argos in Greece, but found in the House of Julius Polybius in Pompeii. Made in the 5th century BC. *Pompeii SAP 21803*.



Fig. 13. Four stacked, terra sigillata cups made in Lezoux, France, which were part of the Pudding Pan Wreck. Made around AD 160-200. *Ashmolean Museum*.

Fig. 14. Severn Valley Ware handled tankard found in Alchester. Made between AD 100-400. *Ashmolean Museum, AN1929.774*.



AD 43. In the decades that followed the conquest, once Roman domination appeared inevitable, wealthy and ambitious Britons began to adopt Roman customs, realising the advantages and prestige it would bring them. There is archaeological evidence to suggest that for up to a century before the conquest the tribal chieftains who were constantly at war with neighbouring tribes – in fact those with the most to gain from befriending the largely unbeatable Romans – considered imported ‘Roman’ goods from modern-day France and Italy to be of extremely high status and chose to be buried alongside objects mostly relating to the consumption of wine: amphorae (transportation and storage jars), silver drinking cups and serving flagons.

*Terra sigillata* or Samian Ware seems to have been as popular in Roman Britain as it was in Italy, and museum storerooms and handling tables are usually filled with its distinctive orangey-red sherds. Occasionally, complete vessels survive, but these tend to come from undisturbed tombs or burial sites. The drinking cups in image 13, however, mysteriously washed onto beaches in south-east England in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries. (Look closely and you can still see the barnacles encrusted around them.) It appears that in the early 3<sup>rd</sup> century AD a trading ship containing a consignment of *terra sigillata* vessels made in central France and destined for Romano-British customers was shipwrecked off the coast of Kent, near Pudding Pan Rock. So far, around 285 cups and bowls from its cargo have washed ashore, including these 4 which are now in the Ashmolean Museum. Although each cup is of a very similar shape they have different maker's marks stamped into their bases, telling us that they are the products of the potters Primanus, Maternus, Materianus and Severianus.

As demand for prestigious tableware increased, the potteries in central and southern France were unable to meet the needs of consumers and so entrepreneurial local craftsmen sought both to emulate the Gaulish merchandise and to produce distinctive vessel ranges of their own, at (we would imagine) a fraction of the price. The tankard in image 14 was produced in the Severn Valley in the Midlands and found during excavations of Roman Alchester in the 1920s. The distinctive band of criss-cross lines is typical of Severn Valley workshops and the handle suggests that it was not used for wine but for hot drinks, which may have been welcomed by the unfortunate soldiers guarding the legionary fortress at Alchester in the depths of winter. The shape of the

tankard is thought to be an 'upgrade' of an earlier wooden cup form used in Iron Age Britain before the Roman conquest, suggesting that the process commonly (and problematically) described as 'Romanisation' was not as straightforward as we might imagine. The archaeological evidence leans instead towards a more fluid, two-way interaction between the conquerors and the conquered, resulting in the creation of a hybrid, Romano-British culture.



Fig. 15. Etruscan bucchero bowls with suspicious inscriptions. Ashmolean Museum AN1933.1625 and AN1933.1626.

## BEHIND THE SCENES OF THE EXHIBITION:

*Beware of unfamiliar objects lurking in museum storerooms...*

In the initial research stages of *Last Supper in Pompeii*, on the hunt for long-neglected or forgotten objects to include in the exhibition, curators found two unusual but impressive-looking inscribed bowls in the bowels of the Ashmolean Museum's storerooms (image 15). They were acquired by the museum in 1933 but, puzzlingly, never selected to be put on display. This type of distinctive black pottery with a glossy surface is known as 'bucchero' and is found in abundance in Etruscan tombs and graves. And many bucchero vessels have inscriptions scratched onto them, usually naming the owner or the person who dedicated the object to the gods. So researchers set to work in translating the inscriptions which – unusually – run around the upper side of the rim, rather than underneath it or on the base.

A number of issues arose. First, some of the letters are written upside down. Second, although the bowls themselves date to the 6<sup>th</sup> century BC, the shapes

used for the letters don't correspond to the lettering found on other inscriptions from this period. Finally, the sequencing of the letters doesn't make sense, meaning that the words are mostly untranslatable. But because the Etruscan language in all of its periods of use is not fully understood, and since *some* of the words were similar to known forms, photos of the bowls were sent to linguistic experts who would be able to confirm whether we might have had on our hands, perhaps, a previously unrecorded dialect of Etruscan. If this was the case, it would be a very significant find...

Alas, the experts all concluded – resoundingly – that this discovery was not the new Rosetta Stone, but two authentic Etruscan bowls with nonsense inscriptions scratched into them at a much later date. The bowls were probably 'enhanced' in the Victorian period when public interest in new archaeological discoveries in Italy, Greece and Egypt was on the rise and wealthy young men embarking on the Grand Tour were eager to purchase the relics of Classical civilisations for themselves, prompting a burgeoning market of fakes and forgeries.

And so the bowls have been packed safely away once again and returned to the storeroom, but now with an extra layer of history added to their story.

*Dr Alison Pollard*, Lecturer in Classical Archaeology at St John's College

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## POMPEII IN VIDEOS

### LAST SUPPER IN POMPEII

This major exhibition tells the story of the ancient Roman city of Pompeii's love affair with food and wine.



### DINING IN POMPEII

Curator of the Ashmolean's 2019 Last Supper in Pompeii exhibition, Dr Paul Roberts, tells us more about the Roman culture of dining.



### POMPEII: UPPER CLASS MEETS WORKING CLASS

Tour through Pompeii with this 3D reconstruction of the city before the eruption of Vesuvius.



## ST JOHN'S INSPIRE PROGRAMME FOR YEAR 11





**SUBJECTS COVERED:**

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## TELLING THE TIME WITH VOLCANOES

*It's not all gushing lava and pyroclastic flows – sometimes the excitement of volcanoes lasts long after they erupt, in the form of radioactive rocks! Find out how radioactive decay and preserved ash can be used to date volcanic eruptions...*

### *Dating Volcanic Eruptions*

For geographers and geologists, one of the most obvious questions to ask when we see a volcano is when did it erupt?

There are a few ways that we can answer this question. If the eruption was in recent history, people might have recorded it. For example, we have many different record types for the eruption in Pompeii, such as diary entries, paintings and archaeological artefacts. This type of data is fine for eruptions which happened in the recent geologic past, but what about older volcanic eruptions?

To go back into the past, we can use

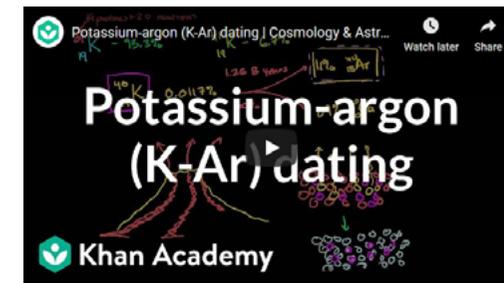
radioactivity to help us to date the eruption. Some elements within the minerals of a rock are radioactive, which means that they transform into different elements through time. This process is called radioactive decay. During radioactive decay, the parent (or the original) element decays into the daughter element at a certain rate through time. You can think of this process like an hourglass, with the sand at the top of the hourglass as the parent element, which will move through the narrow part of the hourglass at a fixed rate, into the bottom (the daughter elements). You can judge how much time has passed by

looking at how much sand is in the top of the hour glass compared to the bottom of the hourglass. In the same way, if we compare how much of the parent element there is in relation to daughter element, we can tell how much time has passed.

We can use this idea of radioactive decay to date volcanic eruptions. One of the most common techniques uses the element Potassium. The isotope Potassium-40 is a parent element which decays into the daughter product Argon-40. Potassium-40 has a half-life of 1.25 billion years, which means it takes 1.25 billion years for half of the original Potassium-40 to decay to Argon-39. Knowing this rate, we can tell the time since a volcanic eruption by comparing the amount of Potassium-40 and Argon-39 in a lava sample.

Using radioactive decay as a way to tell the time, or to date a geologic event, is called

radiometric dating. There are many other radiometric techniques, including radiocarbon dating, which you may have heard of. These techniques are used in the science of Geochronology, which allows us to determine the age of rocks, sediments and fossils that we find on the Earth's surface.



## ST JOHN'S INSPIRE PROGRAMME FOR YEAR 11



## Eruption Signatures

Scientists from many different disciplines work to understand how the climate and environment of Earth has been different in the past. There are many, many different ways that this can be done. We can look at records of past vegetation by analysing fossil pollen. We can drill into ice cores to reconstruct past changes in temperature. We can look at the chemistry of sediments to trace where that sediment has come from. The list goes on...

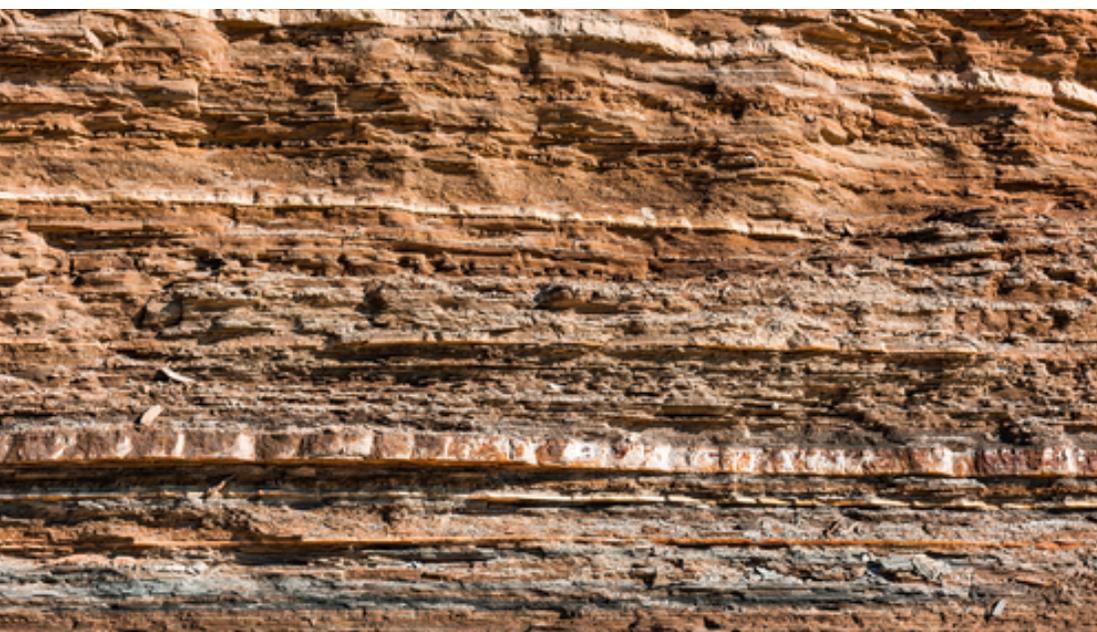
One key thing is to know *when* something has changed, as well as *how* it has changed. This is where volcanic eruptions can help, by a dating technique called *tephrochronology*. Tephra is volcanic ash, and the tephra from each volcanic eruption has a unique chemical signature. This means that any tephra we find deposited can be linked back to one specific volcanic eruption.

Tephra is small and light, and when a volcano erupts, the tephra (the ash) can be

carried long distances before it eventually settles onto the Earth's surface. When other sediments are deposited on top of the tephra, it is preserved in the sediment record. When they sample the sediments, earth scientists can find the tephra, and know that if they can identify it, they can gain new information on how old the sediment is. As an example, the *Laacher See volcano* in Germany erupted between 12,900 and 11,200 years ago, and the tephra from this eruption has been found in *Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Poland, Sweden and Switzerland*. Finding Laacher See tephra at different locations means that we have a time marker wherever it is found.

Tephrochronology has become a very powerful tool, both for providing dates for sediment sequences around the world (both on land and in the sea), but also for linking sediment sequences from different parts of the world together.

*Dr Julie Durcan*, Supernumerary Teaching Fellow in Geography at St John's College



## COMPETITION 1.3: TELLING THE TIME

Can you think of reasons why we would want to date volcanic eruptions?

Can you think of some things that tephrochronology can help us with?

**CLICK HERE TO SUBMIT  
YOUR ANSWER**

## EXPLORE THESE TOPICS FURTHER:

[BBC News on tephra](#)

[Tephrochronology at the Encyclopaedia Britannica](#)

[Geological Society lecture: A little goes a long way](#)



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## FURTHER READING, RESOURCES AND PRACTICE QUESTIONS

Questions on Inspire Digital: Try your hand at the many questions featured on our website Inspire Digital! Use these questions to challenge yourself in your subject area, to try out something new, or to prepare yourself for an Oxford interview.

Super-curricular material on Inspire Digital: We've put together this collection of super-curricular resources to help you delve deeper into your favourite subjects.

Staircase 12: An online hub of resources and information for students thinking about applying to top universities, hosted by University College, Oxford.

Suggested reading and resources: The University of Oxford provides reading lists for every subject that is offered at the undergraduate level. This is a great place to get started if you are looking for more to read in your subject!

## UPCOMING

Remember to submit your competition entries by **Monday 27 January 2020!** [Click here to see the guidelines for competition entries.](#) We'll also send you the materials for Class 2 on the 27 January, and the winners of Class 1 competitions will be announced about a week afterward.

[Click here to check our calendar of upcoming events](#)—we include University-wide programmes, events and competitions here, so keep an eye on this for anything that might be interesting to you!

## FOOTAGE OF RECENT VOLCANIC ERUPTIONS

[Volcano tourism in the spotlight after New Zealand eruption \(2019\)](#)

[Mount Etna eruptions light up night sky \(2019\)](#)

[Stromboli volcano eruption seen from the air \(2019\)](#)

[Time-lapse footage captures Mexico volcano erupting \(2019\)](#)

[Watch the moment a volcano erupts! \(2019\)](#)

[Europe's highest active volcano erupts \(2016\)](#)

[Footage of the 1980 Mt St Helens eruption \(1980\)](#)



## SHOULD WE FOCUS ON FIXING OUR PLANET OR MOVE TO A NEW ONE?

*The Oxford Scientist*, a student-run science magazine at Oxford, is hosting a writing competition for pupils in Years 10-13 themed around this question. The deadline for submissions is 24 January 2020; [click here for more information!](#)

