

# **Let's Talk About X 2020**

**Using Roman history to teach Heritage Science and Chemistry.**

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## History

The Roman empire lasted for over 1000 years and built many structures.

Decorated structures with pigments mined across the empire and refined to Rome.

One of the most famous being vermillion derived from the mineral Cinnabar. Pigments like this were used locally on the Antonine Wall.



## **Antonine Wall**

The Romans most northerly frontier was based in Scotland as the Antonine wall.

Old Kilpatrick in the West to Carriden/Bridgness in the East.

It was constructed under the orders of Roman Emperor Antonius Pius and the primary role was to divide the North from the South.

It is now one of Scotland's six UNESCO world heritage sites.









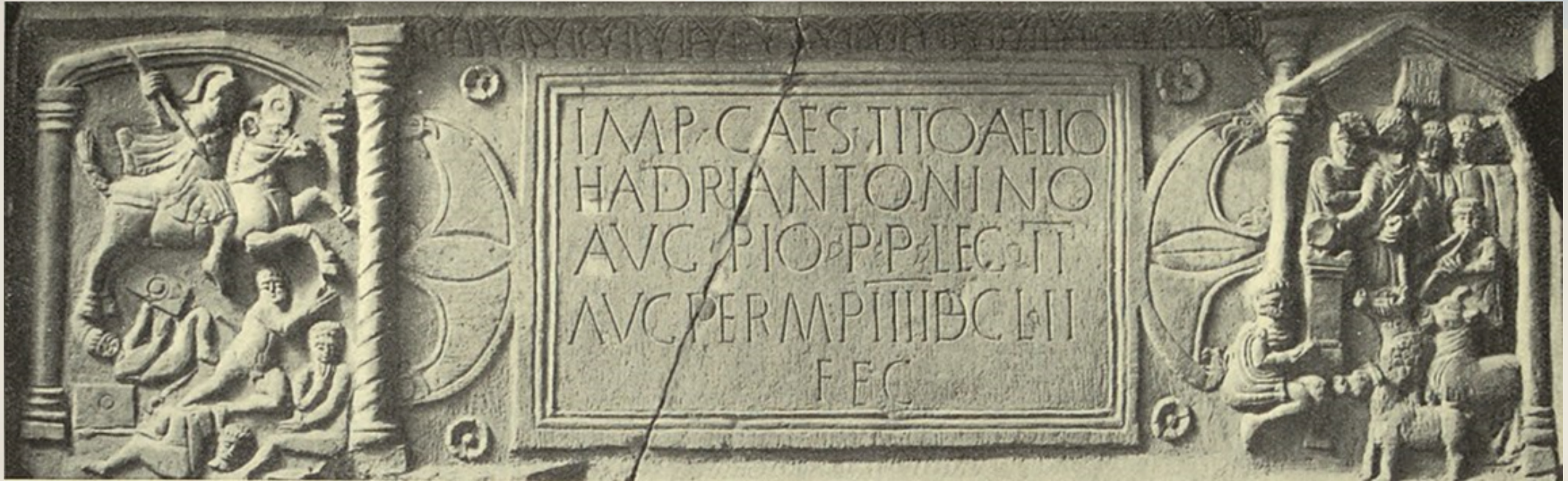
## Distance Stones

Stones that were placed along the wall to mark the lengths built by each legion.

Made from sandstone that was sourced locally and inscribed upon.

The stones were decorated with pigments then set into frames along the wall so they could face south into the empire.

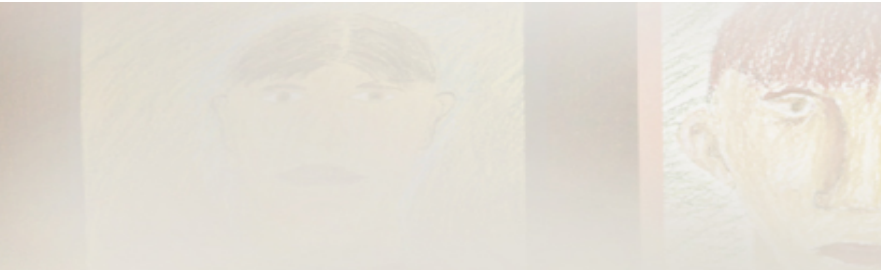












Bridgeness/Carriden/Bo'ness



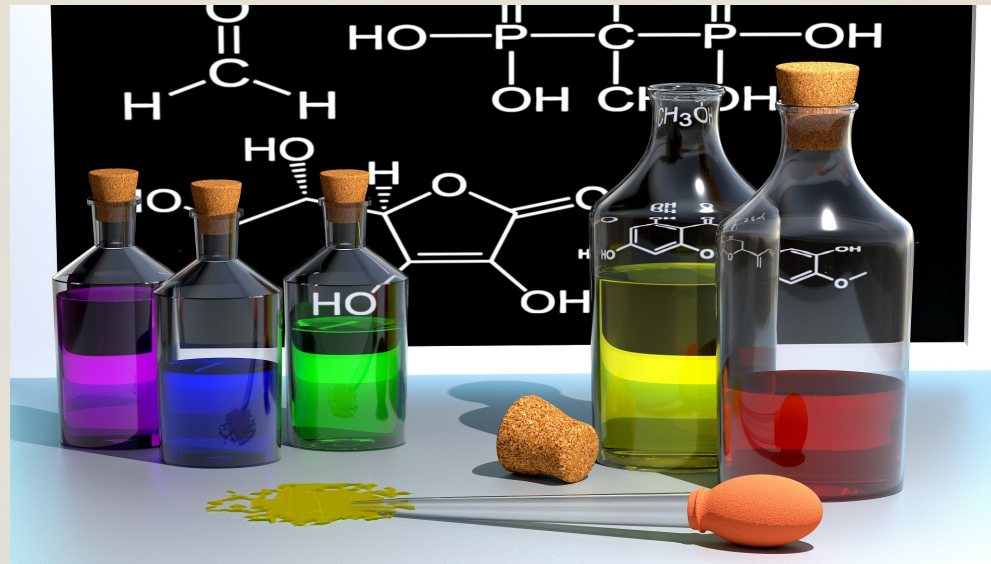




# Why?

I am a chemist so why am I telling you about Roman history?

What do you think a chemist does?



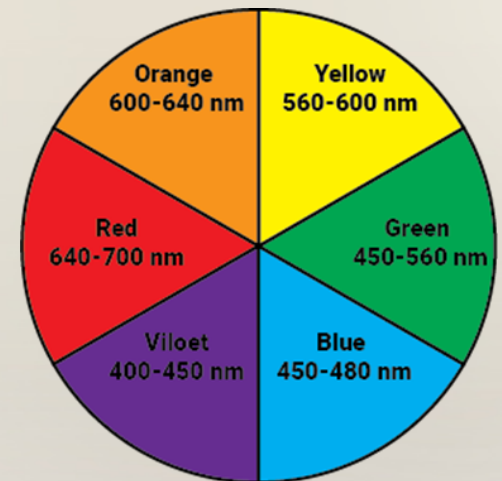


## Diversion: What is a pigment?

A substance that alters the colour of incident light through selective absorption of other colours.

Pigments are more rugged and suited to outdoor use compared to dyes. E.g. on the distance stones of Antonine wall.

Pigments are generally insoluble in water making them better for outdoor use.



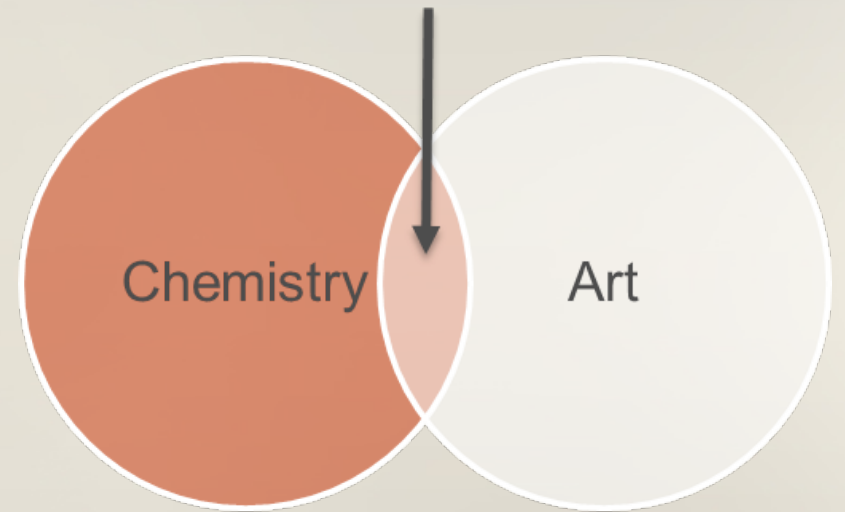
# Heritage Science

Defined as an *“interdisciplinary research domain spanning the humanities and sciences”*

A field of research that brings science like chemistry together with aspects of human culture in order to relive the past and preserve for the future.

**Uses science to preserve and protect the past for the future.**







## Time travel?

By uniting chemistry with art we can analyse the historic artefacts to determine their composition to allow further preservation to take place.

As well as preservation it allows for the original state of the distance stones to be reimagined by analysing the pigments.



From this?



To this



## What was done?

Using the Antonine Wall and the pigments on the distance stones final year pupils were taught about Heritage Science.

A teaching pack was constructed from scratch that taught pupils new chemistry.





## Reasoning

Support pupil's curriculum using problems and critical thinking.

Allows pupils to develop interdisciplinary skills that can be used further down the road.

Promotes the field of Heritage Science.



**Thank you**

Does anyone have any questions?

