



ENGLISH HERITAGE
EDUCATION

KS2

CAN SCIENCE SAVE THE CELL BLOCK?

RICHMOND CASTLE

LESSON 1

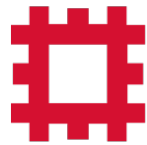


WE ARE LEARNING TO:

- Use science to **explain** why the graffiti on the walls in Richmond Castle is getting damaged.
- **Predict** what will happen to the graffiti if it is not protected.
- **Understand** how conservation techniques can reduce the threat to historic buildings.



Part of the graffiti on the walls of the cell block at Richmond Castle.



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STARTER

DISCOVER THE STORY
OF THE CELL BLOCK...

RICHMOND CASTLE AND THE CELL BLOCK



The 19th-century cell block was built next to the 12th-century keep.



One of the cells inside the block.

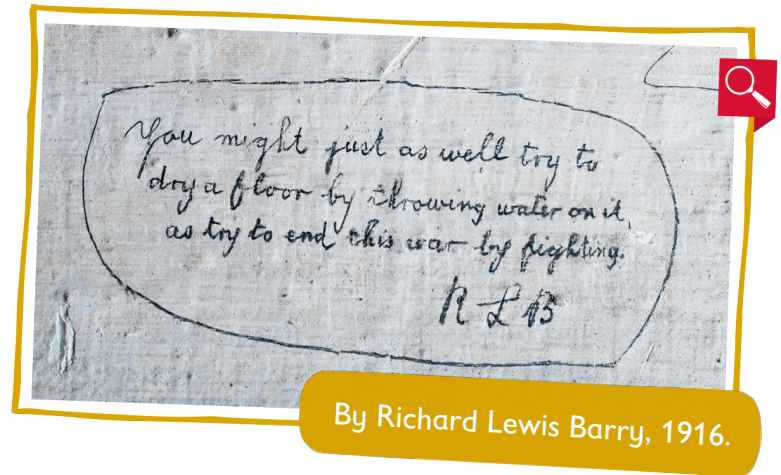
THE GRAFFITI IN THE CELL BLOCK



By John Hubert (Bert) Brocklesby, 1916.



By William Thomas Angrave, 1916.



By Richard Lewis Barry, 1916.

WHY DO WE NEED TO PROTECT IT?



G.  R.

**"ENGLAND
EXPECTS
EVERY MAN
TO DO HIS
DUTY"**

AND

**JOIN THE ARMY
TO-DAY**

Poster published in 1914 by Parliamentary Recruiting Committee. Te Papa (GH016013)



Dyce Camp, 1916, showing eleven of the Richmond Sixteen.
© Religious Society of Friends (Quakers) in Britain

CHALLENGE TIME



Talk to your partner:
why do you **think**
English Heritage should
protect the graffiti?

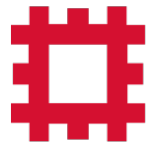
PROTECTING THE GRAFFITI

DR PAUL LANKESTER – CONSERVATION SCIENTIST

My job at English Heritage is to make sure that the environment in our historic places is as safe as possible for the objects and artefacts. I use scientific equipment to monitor **temperature**, **humidity** and **light**, so that each is at the correct level. The wrong levels of any of these things may cause damage to historic objects.



I need your help. We need to find out if the environment in the cell block at Richmond Castle is right for protecting the graffiti.



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INVESTIGATE

THE ENVIRONMENT OF
THE CELL BLOCK

WHAT'S THE PROBLEM?



1

The cell block walls are painted with limewash (calcium hydroxide).



The graffiti is drawn on the walls of the cell block.

2



3

The limewash is flaking off the walls.



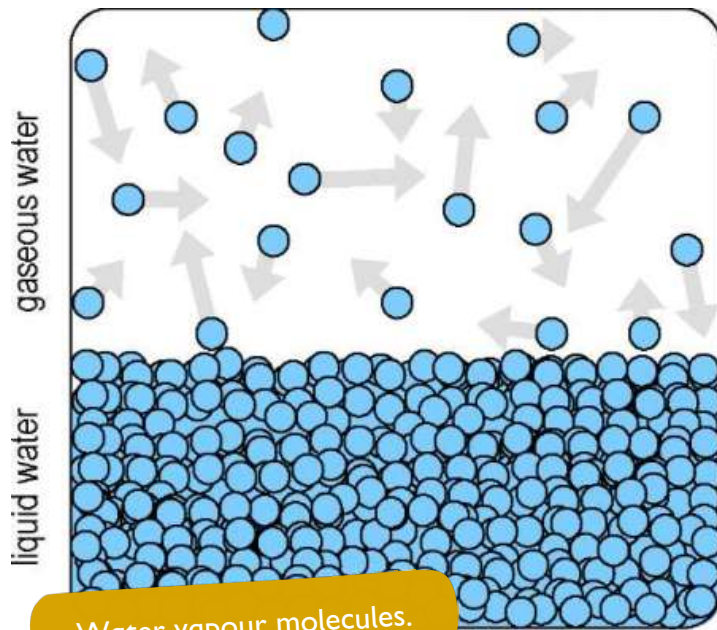
When the limewash flakes away, the graffiti disappears with it.

4



WHAT WE ALREADY KNOW

We believe the flaking might be caused by salt in the cell block walls reacting with moisture.



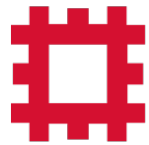
Water vapour molecules.

Water vapour
in the air
= moisture in
the cell block.

**DID YOU
KNOW?**

Humidity is the
amount of water
vapour in the air.

?



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EXPERIMENT 1

WHAT HAPPENS WHEN
SALT REACTS WITH
MOISTURE?

EXPERIMENT 1: EQUIPMENT AND METHOD

Equipment

- measuring cylinder
- container of water
- beaker
- salt
- teaspoon
- pencil
- stopwatch/timer



Method

- Add one teaspoon of salt to 100ml of water.
- Stir it for 3 minutes.
- Record on your worksheet what happens to the salt.



CHALLENGE TIME

How will your group make sure it is a fair test?

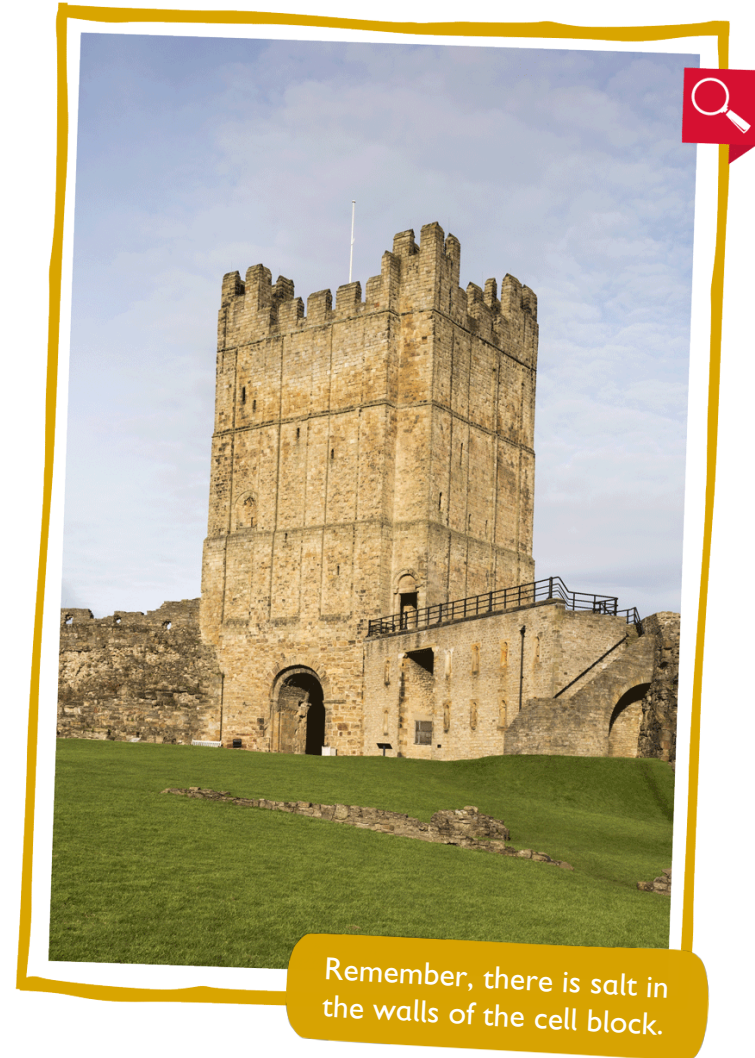
RESULTS: WHAT HAPPENED?

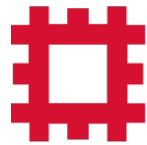
- When the salt reacted with water, the salt _____.
- Salt is _____. This means it _____ in water to make a _____.

soluble, dissolves, solution, dissolved

CHALLENGE TIME

Discuss in your group: how will dissolving affect the graffiti?





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CONCLUSION

WHAT HAVE WE
DISCOVERED?

CONCLUSION

When moisture gets into the cell block, the salts in the limewashed walls dissolve or liquefy.

This is not a stable environment for protecting the graffiti.



Next lesson:
What happens when
the moisture dries out?



The damaged limewashed walls.