

Collection Protection!



Science Week
with the Hunt Museum

Book 2

Experiments

Objects made of both organic and inorganic material break down over time. Many of the objects in the Hunt Museum are very old and at risk of damage.

Try the science experiments on the following pages to discover how different materials break down. Use the results to figure out how the Hunt Museum can protect its collection!

Experiment 1. Decaying Plant Material

Plant materials decay over time. Different forms of energy can make that decay faster or slower.

Question What makes plant material decay faster?

Hypothesis - *what do you think will happen?*

1. Heat

Does

Does Not

make food decay faster

2. Light

Does

Does Not

make food decay faster

3. Water

Does

Does Not

make food decay faster

Result

Materials

- Packet of dried beans
 - Four ziplock bags
 - Water

Procedure

1. Place ten beans in a ziplock bag. This will be the **control** meaning we will be able to see what happens to the dried beans if nothing is done to them. Soak the rest of the beans in water overnight.
2. Place 10 soaked beans into the other three bags. Squeeze out the air, and seal them. Label them bags 1, 2, and 3.
3. Put **bag 1** in a *warm bright place*. Put **bag 2** in a *warm dark place*, and **bag 3** in the *refrigerator*.
4. Place the control in each condition during the experiment. Leave them for 1 week. Observe what happens to the beans.

Observations: Describe how the beans changed during the week?

Bag 1

Bag 2

Bag 3

Which object does this experiment relate to?

What does the Hunt Museum need to protect this object from?

Experiment 2.

Iron Rust Experiment

Iron objects can become rusty over time. Try this experiment to determine what causes rust.

Question What conditions make iron rust faster?

Hypothesis - *what do you think will happen?*

1. Oxygen

Does

Does Not

make iron rust faster

2. Water

Does

Does Not

make iron rust faster

3. Acid

Does

Does Not

make iron rust faster

Materials

- 4 nails
- 4 cups
- Tap water
- Boiled water, cooled
 - Vegetable oil
 - Vinegar (acid)

Procedure

1. Place one nail in each cup.
2. In **cup 1**, pour in enough tap water to completely cover the nail. In **cup 2**, pour in enough cool boiled water to cover the nail. Then pour some vegetable oil on top. In **cup 3**, pour in tap water mixed with a few spoons of vinegar. Leave **cup 4** as a control.
3. Label each cup.
4. Leave the experiment for 5 days, checking each day and noting any changes.

Result

Observations: Note the changes to the nail observed each day.

DAY 1

No rust

Small amount of rust

Large amounts of rust

Cup 1

Cup 2

Cup 3

Cup 4

DAY 2

No rust

Small amount of rust

Large amounts of rust

Cup 1

Cup 2

Cup 3

Cup 4

DAY 3

No rust

Small amount of rust

Large amounts of rust

Cup 1

Cup 2

Cup 3

Cup 4

DAY 4

No rust

Small amount of rust

Large amounts of rust

Cup 1

Cup 2

Cup 3

Cup 4

DAY 5

No rust

Small amount of rust

Large amounts of rust

Cup 1

Cup 2

Cup 3

Cup 4

Which nail rusted the fastest?

Which nail rusted the slowest?

What conditions cause rust?

Name an object from the Hunt Museum that may rust

Experiment 3.

Calcium Carbonate Erosion

Materials such as limestone, animal bone, ivory, and egg shells contain **calcium carbonate**.

Calcium carbonate can be eroded.

Question What makes calcium carbonate erode?

Hypothesis - *what do you think will happen?*

1. Water

Does

Does Not

make calcium carbonate erode

2. Acid

Does

Does Not

make calcium carbonate erode

Materials

- 3 Eggs
- 3 Cups
- Tap water
- Vinegar (acid)

Procedure

1. Place an egg in each cup
2. In **cup 1**, pour in enough tap water to completely cover the egg. In **cup 2**, pour in enough vinegar to cover the egg. Leave the egg in **cup 3** as a control.
3. Label each cup.
4. Leave the experiment for 4 days, checking each day and noting any changes.

Result

Observations: Describe how the eggs changed during the experiment?

Egg 1

Egg 2

In which egg was the calcium carbonate eroded?

What conditions cause calcium carbonate to erode?

Limestone erosion can be caused outside by the rain. From your experiment, can you explain why this is?
(hint: the rain must contain more than just pure water!)

Name 2 objects from the Hunt Museum that may erode in the rain:

Experiment 4. Photobleaching

The Hunt Museum has many old paintings on display. Light has an impact on the pigment (pigment gives paint its colour) in paint. Try this experiment to find out what that is!

Question How does light effect colour?

Hypothesis - *what do you think will happen?*

Light will:

Fade colour

Make colour stronger

Materials

- Dark Coloured Paper
(the darker the better)
- Objects like leaves, stencils, fruit, string etc.
 - A sunny day

Procedure

1. Place objects on the paper in a sunlit area outside. Be creative in how each object is positioned.
2. Leave the paper out in sunlight for as long as possible (at least 3-5 hours).
3. Remove the objects from the paper.

Describe what has happened

Why is this a problem for museums that have paintings?

Suggest how the Hunt Museum could protect paintings from sun damage?