SIR RICHARD ARKWRIGHT'S CROMFORD MILLS

Wonderful Waterwheels KS2/3

2022 - 2027

The birth of the factory system – how one man and the power of water changed the world.

Led by an expert guide, enjoy a fully resourced, practical, enquiry-based STEM day of learning. Your pupils will use a variety of historical sources and investigate both Cromford Mills and the village of Cromford to understand how Richard Arkwright successfully harnessed waterpower on a large scale for the first time here at Cromford Mills.

Pupils will use their learning to work in groups on a 'design and make' challenge. This will involve building a waterwheel housing, creating water channels and ensuring the waterwheel can transfer power and movement.

Pre and post visit activities

The day can be a standalone experience with no prior knowledge needed, or it can support your wider learning around Richard Arkwright, Cromford Mills and/or sustainable energy sources. If you would like additional ideas and resources to support your learning about Cromford Mills and Richard Arkwright please follow this link: https://www.cromfordmills.org.uk/primary-school.

9:30 15 mins	**Arrival and welcome to Cromford Mills – Introduction and safety briefing** Your guide will meet you off the coach and take you to the Education Room, your base for the day.
9:45 15 mins	**What is the Derwent Valley Mills World Heritage Site (DVMWHS)?** An introduction to the DVMWHS, what it is, why it's important and how engineering and inventions from Richard Arkwright in Cromford changed the world.
10:00 15 mins	**The Arkwright Experience** Through the magic of CGI, meet Sir Richard Arkwright and learn about the ground-breaking systems he implemented at Cromford.
10:15 30 mins	**How was the water used around Cromford Mills?** Through a site tour and observation pupils will discover where the water wheels were located, the different types of waterwheel used and how the water was moved around the site. They will also find out how the factory system, now with continuous power, was organised to maximise productivity.
10:45 15 mins	**Break**
10:45 15 mins	**The Power of Water** Using historic maps, images and text we will build up a picture of how water courses were changed and harnessed to suit the needs of Cromford Mills.
11.00 1 hr 15 mins	**How did the water-powered mills bring changes to Cromford village?** Using old photographs and maps we will explore Cromford village where pupils will trace the source of the water that powered the mill. We will also look at aspects of Cromford Village that Richard Arkwright developed to ensure his mills were successful and had plenty of workers.
12:15 30 mins	**Lunch** – in the Education Room; in nice weather classes can picnic by the canal or in the mill yard.
12:45 15 mins	**How did the waterwheels transfer power to the machinery?** Pupils will find out about Richard Arkwright's inventions and systems and why he turned to waterpower. They will explore how the force of water was used by the waterwheel to transfer power to machinery on a large scale, together with the different kinds of waterwheels there are.
1:00 45 mins 15 mins 15 mins	**Lego Waterwheel Challenge** Working collaboratively, first designing labelled water wheels, then using construction kits, Lego, pipes etc. pupils will choose what kind of water wheel to construct and work together to create a mounted, moving water wheel, with water channels, that transfers its power to make something else move. **Demonstration of working water wheel models** Groups will present their models to the rest of the class, explaining and evaluating the key parts of their design and build process. **Transmission** – bonus challenge – see if they can turn 'machinery' within their mill
2.15 15 mins	**Prep to leave**
2.30	**Depart Cromford Mills**

For larger schools, split into 2 groups and activities will be swapped AM & PM. One group will do as above, the other will do the village tour PM and the water wheel challenge AM.

Please contact the Learning & Engagement Officers if you would like more information, or to book a visit and/or pre-visit: learning@arkwrightsociety.org.uk; 01629 343058/343053 (direct line)