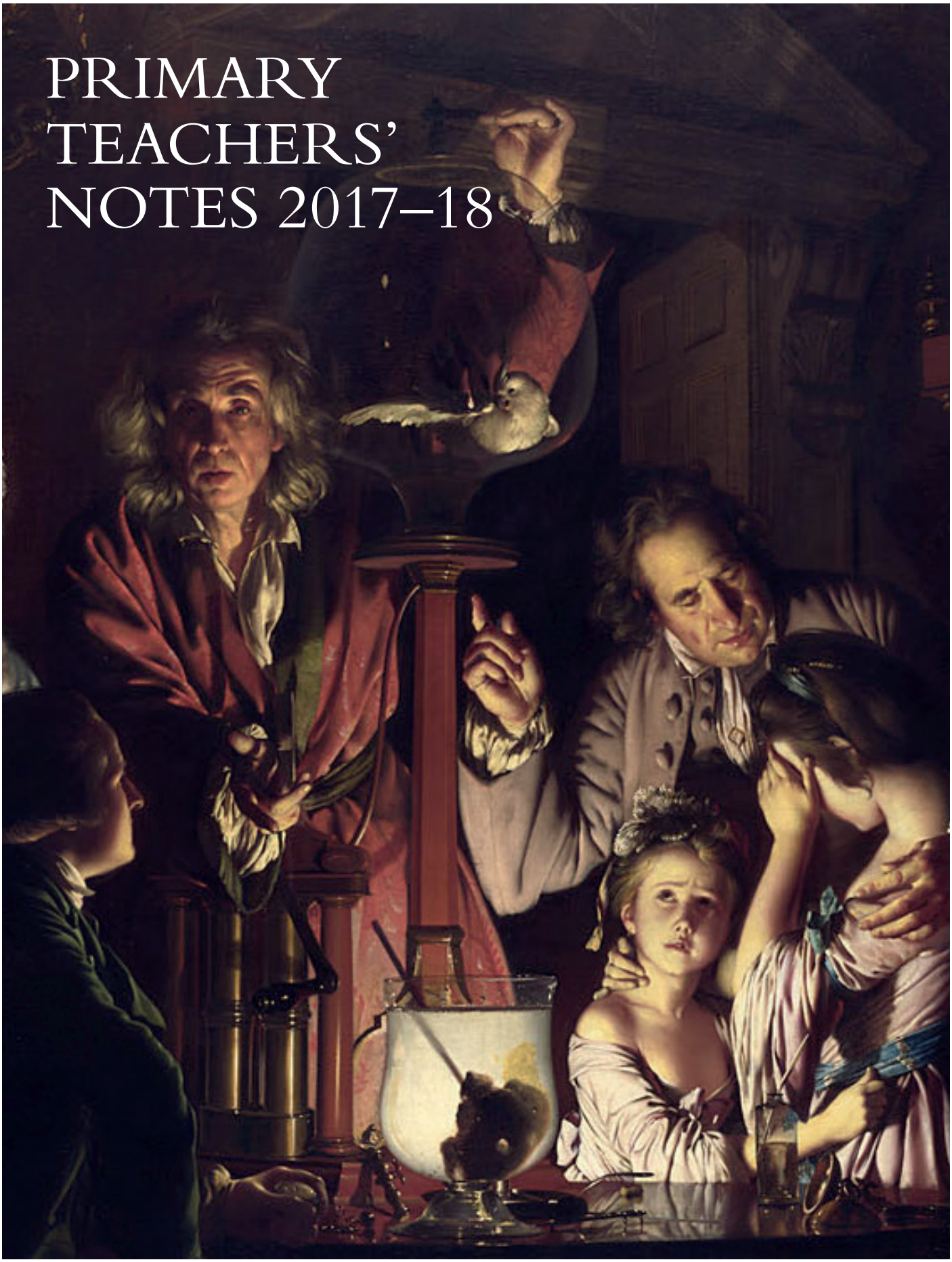
PRIMARY TEACHERS' NOTES 2017–18



THE NATIONAL GALLERY

‘AN EXPERIMENT ON A BIRD IN THE AIR PUMP’, 1768

JOSEPH WRIGHT ‘OF DERBY’

1734 – 1797

ABOUT THE PAINTING

On a moonlit night while clouds skid across the sky, ten people have gathered around a table in a dark room. Other than the moon outside, the only light comes from a candle behind a glass jug on the gleaming table. It creates a circle of light radiating outwards, illuminating the faces of the adults and children present, particularly the two girls to the right: one buries her face in her hand, the other looks up anxiously. Following her gaze we see a glass jar and, inside it, a bird, a rare cockatiel. Next to this jar stands an imposing figure robed in red, quite different to all the others present. With his hand outstretched towards us he is the only person to look out of the painting and make eye-contact with us. Is he asking us a question or perhaps inviting us to take a closer look?

The central man in red is giving a scientific demonstration. The instruments he has used are scattered across the table and the group have likely reached the grand finale of the night’s entertainment. The rare bird is most likely a family pet normally kept in the cage in the top right (notice its open door); the glass jar it has been placed into is an air pump. The scientist shows his audience how sucking the air out of a container creates a vacuum. What he demonstrates, as the bird flaps and grows distressed, is that nothing can breathe within a vacuum.

The group react to the scientist’s demonstration in different ways. The girls on the right show distress while the man above them seems to be either explaining the experiment or consoling them. The boy seated to the left looks on with interest (head cocked, leaning forward) while the man next to him holds a stopwatch to time the experiment. The couple in the top left seem to be only interested in themselves, gazing fondly into each other’s eyes. The boy to the far right holds a rope which both lowers and raises the bird’s cage. Below him sits a man lost in thought, leaning on his stick with glasses in hand, staring deep into the candle at the centre of the table.

We are left in suspense about the fate of the bird; is its cage being lowered so that it can be put back in or being raised because it is no longer needed? We might also speculate on the wider questions of life and death. While we do not know exactly what is in the glass container on the table, some believe it is part of a skull, something which in painting usually acts as a *memento mori*, a reminder we will all one day die. Candles and skulls are often companions in art, the candle demonstrating the passage of time and the skull its end.

HOW WAS A PAINTING LIKE THIS MADE?

A painting this size often started as a series of drawings, laying out the scene and experimenting with each figure’s posture. Wright would have used sitters to model for him, but it is unlikely that they would have been all assembled round the table on a moonlit night! He may have created a set with the table, chairs and apparatus, with each person invited into the studio individually to take their place in the composition. He may also have used a wooden model called a lay figure which could be posed and stand in for an absent person. Wright might have also used a *camera obscura*, a shuttered box which projects an image of an object or scene from real life onto a surface, much like a modern electronic projector. Carefully using this device enabled an artist to project an image onto paper or canvas so that they could then accurately trace its outline.

Wright used screens in his studio to control the light and here he has displayed a dazzling arrangement of light and deep shadow. The thin layers of dark glaze (paint mixed with varnish to give a translucent glow) are placed next to more thickly opaque highlights. Using extremes of light and shade in a painting to create a sense of drama is called chiaroscuro and is most usually associated with Caravaggio and his followers. Oil paint has a tendency to darken over time so the painting appears darker to us now than it would have been 250 years ago. The contrasts between light and dark would have been even more dramatic when it was first painted.

Gerrit van Honthorst, 'Christ before the High Priest', about 1617

ABOUT THE EXPERIMENT

The term scientist was not used until the 1830s; at the time he would have been described as a 'natural philosopher'. The equipment he is using is an air pump. Air pumps were developed in Germany in 1650 and then used across Europe for studies in pneumatics (the study of the nature and function of air). It was first used for animal experiments in England in 1659 by Robert Boyle and Robert Hooke who placed small creatures such as mice or sparrows in the jar, usually resulting in their death from lack of air. Oxygen was not identified or named as a separate element until 1774, so at the point the painting was made it was still not fully understood. By the time Wright painted this the air pump was standard scientific equipment and could be easily bought by wealthy amateurs.

The demonstration would have begun by taking a pair of Magdeburg hemispheres, seen on the table to the right, and demonstrating that if the air between them is completely pumped out they stick together and become inseparable. The high point however, would have been the demonstration of the potentially lethal effects of depriving living creatures of air. This could, in fact, be demonstrated less dramatically with the use of the 'lungs glass ', a bladder suspended within a glass jar which, replicating a lung, would crumple and shrink when air was removed. By using a family pet, Wright has heightened the drama of the painting. In reality the white cockatiel is extremely valuable and would never have been used for such an experiment.

THE PAINTING IN CONTEXT

Derby in the 1760s, with its silk and cotton mills, played an important part in the Industrial Revolution. Many of Wright's friends and sitters were connected with science and industry and this environment contributed to his highly original subject matter. His circle included members of the group of philosophers and scientists who came to be known as the Lunar Society; so called because of their monthly meetings on the Monday nearest the full moon. They met to conduct experiments and discuss developments in chemistry, electricity and medicine and through his contacts Wright may have witnessed such demonstrations.

'An Experiment on a Bird in the Air Pump' can be seen as a work of the Enlightenment; a term used to refer to an intellectual and scientific movement across Europe in the eighteenth century also known as the Age of Reason. Alongside the developments of the Industrial Revolution, this was a time of radical social, political and technological change. The younger figures so starkly lit in Wright's painting are part of the generation who will inherit this new world.

ABOUT THE ARTIST

Joseph Wright was born in Derby in 1734. In 1751 he moved to London to spend two years training with the portrait painter Thomas Hudson. This gave Wright access to Hudson's large collection of prints and drawings, allowing him to develop knowledge of other artists' work (there were no public art galleries at the time). Wright returned to Derby in 1753 to start his own portrait practice and by his late twenties he had become well established locally.

Joseph Wright 'of Derby', 'The Iron Forge', 1772 © Bridgeman Art Library

The effects of light became a focus of Wright's painting and something he became famous for. Other artists had explored the effects of candlelight in religious works and scenes of everyday life, but Wright's 'candlelight' paintings of modern scientific subjects were something quite new. The 1760s saw the beginning of the Industrial Revolution which went on to dramatically affect the lives of all British people. Wright produced many paintings of industrial environments with strong contrasts of light and shadow, such as blacksmiths' forges, glass blowing houses and blast furnaces.

In 1773 Wright spent two years painting in Rome, Naples, Florence and Venice, but most of his career was spent in Derby where he remained until his death in 1797. In the latter part of his career portraiture was his main source of income. He also painted scenes from literature and, increasingly, landscapes, which seem to have been his personal passion.

LOCAL CONNECTIONS AND WEB LINKS

Derby Museum and Art Gallery has a Joseph Wright Gallery and owns twenty-seven of the artist's works, including 'A Philosopher Giving That Lecture on an Orrery in Which a Lamp is Put in Place of the Sun'. There is a Joseph Wright study room with his prints and preparatory drawings, as well as clocks and scientific instruments by his friend John Whitehurst. The website itself is also a useful resource. derbymuseums.org.uk

The Walker Art Gallery in Liverpool has Joseph Wright's 'Annual Girandola at the Castel Sant'Angelo'. The website has some information on Wright and on 18th century Liverpool. liverpoolmuseums.org.uk

Soho House in the Handsworth area of Birmingham is an 18th Century house and museum that belonged to one of the Lunar Society members Matthew Boulton, who held their meetings there from 1766 onwards. birminghammuseums.org.uk/soho

Science Museum sciencemuseum.org.uk

STARTING POINTS

EYFS

With the pupils' eyes closed, introduce some key elements and vocabulary from the painting and use 'shared imagining' to build the scene in the children's imagination. "There is a group of people gathered round a table…"

Pass around objects from the painting in a canvas bag so that children can feel and describe them, such as silky material, feathers and cold metal.

Set the scene: as a group sit around a lamp in a darkened room. Does it make you feel any different? Which things really stand out, what gets lost in shadow? What happens if you move the light?

Ask pupils to look carefully at the faces of the people in the painting and describe what they think each person is feeling. Ask them to make their own facial expressions for each emotion.

Key Stage 1

Imagine you could join the people in the painting – they have left a space. Ask pupils to think about all the different sounds you might be able to hear. Then to look around the painting and find the smallest thing they can see, find something shiny, something soft…

What are the different objects in the painting made of? What about the clothes people are wearing? Make a list and think of things today, both natural and man-made, that have the same materials. Are there any in your classroom?

The painting is set at night with light from a full moon coming through the window. Imagine the sun is streaming through the window on a bright summer day; how different would the painting look?

Key Stage 2

Find the lightest thing in the painting. Gradually move to those things that are more shadowed until you explore the darkness around the edges of the painting. What can you see there? Have you missed anything?

Choose one individual or perhaps on small groups of figures. Stand or sit like your chosen character(s), look carefully and try to be as accurate as possible. Imagine zooming in on their face(s). Choose words to describe how your character might be feeling. There's a space at the table for you to sit down; would you want to stay and watch the demonstration? What might you be feeling?
The action in the painting looks frozen in time; what might have happened just before and what might happen in the next 5 minutes?

Using a viewfinder, or cropping on a computer, zoom in on small details of the painting and look very carefully. Using charcoal and chalk, or black and white paint see if you can copy this area.

LINES OF ENQUIRY

Experiment

You might consider how we find out about new developments today and how we share our knowledge with others. How does a modern science demonstration differ from the one imagined in the painting? Perhaps you could try your own public demonstration. The experiment in the painting uses a live bird; should we use animals in our experiments today? Are there limits to what science should do?

Light and shadow

How does light affect the way we see the world around us? How does it change how we view colours and shapes? You might want to experiment with different light sources and the effects they produce. Works such as Hendrick ter Brugghen 'The Concert', 1626, Gerrit van Honthorst, 'Christ before the High Priest', c.1617, and Geertgen Tot Sint Jans, 'The Nativity at Night', c.1480 -90 might provide inspiration.

Portraits

Through gestures and expressions, portraits can help us understand how people are feeling and what they might be thinking. How could you express this in other ways – poetry, dance and music? You might explore what else could be happening in the lives of the characters in this painting.

Storytelling

Artists often tell stories using just one picture to convey plot, setting, characters, and atmosphere. Explore how Joseph Wright has done this. Experiment with different ways of telling stories; what are the priorities, are there clues about what might happen, does the story have a definite ending?

18th century Britain

Use the painting to explore life in 18th century Britain. How did life change and do these changes affect the way we live today? What aspects of life do you think will change the most over the next 200 years? Can you predict what your home, school, local environment might look like?