

THROUGH THE EYES OF A GREAT ASTRONOMER

The Norman Lockyer Observatory

David Strange and Christine Fullam talked to Alan Peacock about promoting astronomy and a school visit to the Norman Lockyer Observatory

The Norman Lockyer Observatory (NLO) in Sidmouth, Devon, is a historic working observatory and educational centre. The observatory promotes public interest in astronomy, and supports science education in schools, colleges and universities. It is operated by the Norman Lockyer Observatory Society, a registered charity, with the support of Exeter University.

The observatory was established in 1912 by Sir Joseph Norman Lockyer, founder of the science journal *Nature*, to continue his astronomical research when his South Kensington observatory was closed.

During the solar eclipse of October 1868, Lockyer had observed a prominent yellow line in the solar spectrum which could not be explained as due to

any material known at the time. He suggested that the yellow line was caused by an unknown solar element, which he named helium after the Greek word *Helios* meaning Sun. Helium was finally found on Earth 27 years later by William Ramsay. The telescope that Lockyer used to discover helium is still in use at the observatory today.

Why astronomy?

David Strange has been interested in astronomy since the age of 13. The dark skies above his Dorset home were ideal for developing the hobby, so he built an observatory on his farm at Worth Matravers, housing a 50-cm reflecting telescope. He explains:

As my children were growing up I became a governor of our local village school and developed the idea of promoting astronomy in the area.

To diversify, we converted some barns to holiday accommodation and hosted 'astronomy weekend breaks' over the years. In July 1994, many came to watch Comet Shoemaker-Levy 9 crash onto the surface of Jupiter. One of the highlights during that period was the appearance of Comet Hale-Bopp in

John Ponsford (NLO Chairman) shows the children the telescope used by Norman Lockyer to discover helium, which is still in use today





The children see how the transit of Venus was observed

the spring sky in 1997, when 1000 visitors came to view the comet through our telescopes.

I retired from farming in 2006. For the last few years I have lived in East Devon and become involved with the Norman Lockyer Observatory, which is a wonderful astronomical resource. I have been fascinated by the night sky for 40 years and enjoy passing that enthusiasm on to others. With primary school groups, we are just trying to stimulate an interest in the sciences and, in that respect, astronomy

It lies at the foot of a kite-shaped constellation known as Bootes – the Herdsman. In legend, Arcturus was the bear keeper that tends the two bears in the sky, Ursa Major and Ursa Minor, the Great and Little Bears. Ursa Major is also known as the Plough, or Big Dipper, and can be seen high overhead. Have a good look at Arcturus: its orange-red colour tells us that it is a cool, red, giant star approaching the end of its life. Star colour is a good guide to temperature: the hottest stars are blue-white, followed by white, yellow, orange and then red.

Saturn is the best-placed planet for evening viewing in May, lying at the foot of Leo, the lion: look out for the large backwards question mark in the sky, which marks the head and mane of the lion. Venus blazes in the early morning sky, rising a few hours before dawn, while Jupiter, the king of planets, can be seen rising about midnight. On 21 June, the Sun reaches its highest point in the sky, known as the summer solstice. As a result of the solstice we experience short nights and long days, which is not the best time of the year to do astronomy!

The school visit

Christine Fullam brought her class of 9- to 10-year-olds to the NLO as part of their topic on 'space'.

Preparation

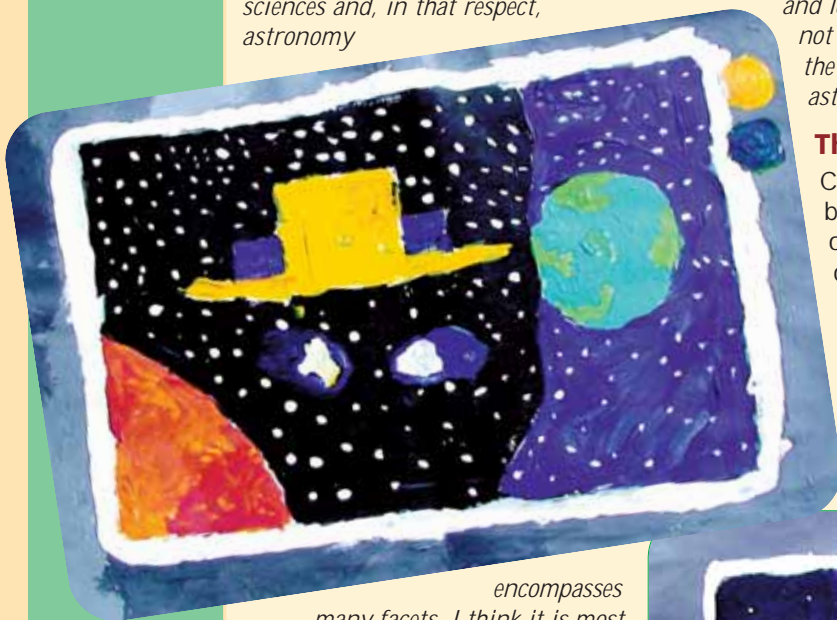
In preparation for their visit the children

had already researched areas of interest and put forward questions to which they wanted to find the answers. Most children focused on the solar system and specific planets; some looked closely at stars, constellations, moons and satellites. All the class carried out observations of the Moon, relating what they saw to the different phases. They had also begun looking into space exploration.

Before the visit, therefore, the children understood about the planets in the solar system and the size of the Earth in comparison to the Moon and Sun. However, they did not know much about constellations, and some were unaware that planets are occasionally visible from Earth. Nor did they know much about the equipment used to explore space (this was covered during the visit). The children's questions mostly related to the existence of other beings and different planets or solar systems. For example, they asked: *How can the Moon cover the Sun? Why are planets named after gods? What if you fall into a black hole? Can we go back in time if we travel at the speed of light? Is there life on Mars? Can we travel to Mars?*

The visit

During the visit, children were shown the different telescopes and learnt how they worked; they had many questions. The highlight for most of them, though, was their time in the planetarium. As one girl



Children's artwork picturing 'a journey into space' inspired by their planetarium visit

encompasses many facets. I think it is most important to develop an enquiring mind at a young age, and astronomy can help develop a sense of wonder, more so than any other subject. For example, the most common question children ask is, 'What would happen if I fell into a black hole?'

What can we see right now?

David explained that, in May and June, high up in the sky you will be able to see Arcturus, the fourth brightest star in the sky:



commented, 'Why is it, when it goes dark and the stars come out, that I can't breathe?'

Follow-up work

The children were still very excited after their visit, and were able to link their learning during the trip to the work we continued to do back at school. The work, especially their time in the planetarium, stimulated them particularly in art. They were encouraged to 'imagine a journey through space' using their observations from the visit to portray planets, constellations and satellites. They experimented with colours and textures to express the sense of what their journey might be like.

The children also tried out various websites to reinforce their learning (see end), including one where they create their own planet to be launched into the solar system, making sure it is given the right conditions to survive. They were also able to link some of their

learning to their fiction writing and reading. Ruari's story began:

It was an eerie night with a clear sky; the constellation of Orion shone over the cornfields ... suddenly, a great white spot appeared out of the second star in Orion's belt. As it blazed towards the Earth, the ground shook from Japan to Israel, whilst in the quiet realm of the Amazon basin, colourful tree frogs scampered around their bright green habitat to take cover in the hollows. (Ruari Mold)

There follows a gripping story about the panic on Earth as the meteor approaches, with an eventual intervention by the Iron Man to save the planet!

The follow-up work therefore mainly linked the science to maths/ICT (creating comparative graphs) and literacy (children created a two-minute documentary-style report about a particular aspect of Space). They also made posters and

completed online activities. All this became possible as a result of the vivid images and experiences they absorbed at the Observatory on a cold, wet morning!

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Websites

The NLO site:

www.normanlockyer.org

Two sites used by the children:

www.scienceyear.com/planet10/solar_preload.html

www.prongo.com/space/index.html

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