Young scientists journal photography competition 2012

Fiona Jenkinson

The King's School Canterbury, UK. E-mail: 08flvj@kings-school.co.uk

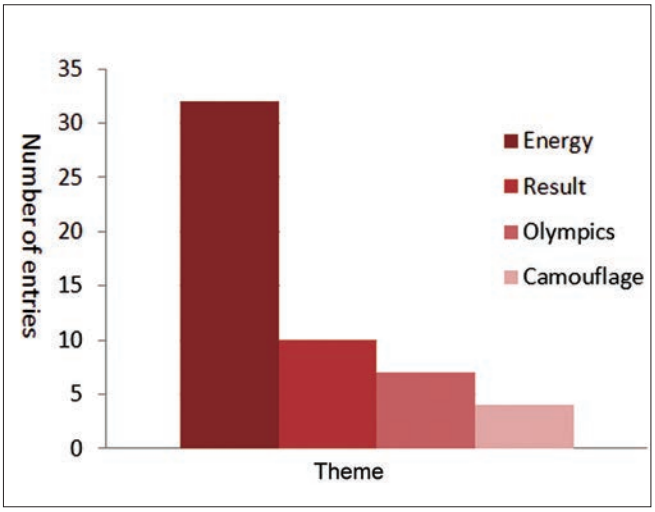
DOI: ****

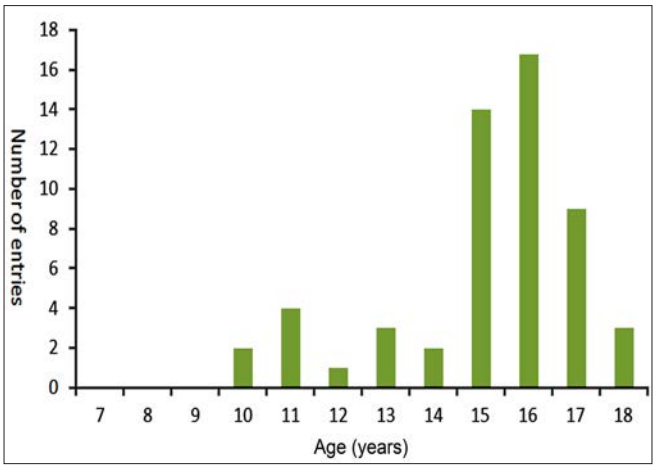
This year, the journal decided to run a photography competition from 1st February to 1st May in order to introduce a new form through which science can be communicated to the journal. We invited students aged 18 and under to take photos using any camera, phone, or other device to compete for prizes according to their age group, related to a scientific theme. These included: The general theme of 'Energy' open to all those aged 18 and under, 'Camouflage' open to those aged 12 and under, 'Science behind the Olympics' for those aged 12–15 years, and 'The Result of Science' for those aged between 16 and 18. The photos were submitted via our website along with an abstract to explain the photo.

The panel of judges, whom I would like to thank for giving their time and effort, consisted of: Christina Astin (chair IAB of *Young Scientists Journal* and Head of Science at the King's School Canterbury), Ajay Sharman (regional director of STEMNET), Duncan Armour (Science teacher at Simon Langton Boy's Grammar school and photographer), Ian Wallace (Head of Photography at the King's School Canterbury), and myself. The photos were both marked and discussed anomalously by the panel of judges according to the following criteria: Image Aesthetics/Artistic qualities, scientific relevance/explanation, Photograph Quality and Concept Originality. It was based on these criteria that the panel decided first place, runner-up, and those highly commended for each theme – although in many cases it was very close.

I am glad to announce that we received a total of 53 entries. Although the majority of submissions were from all over England and the USA, there were others from countries including Malaysia, India, Bali, and Latvia. We hope to see this list increase in length next year!

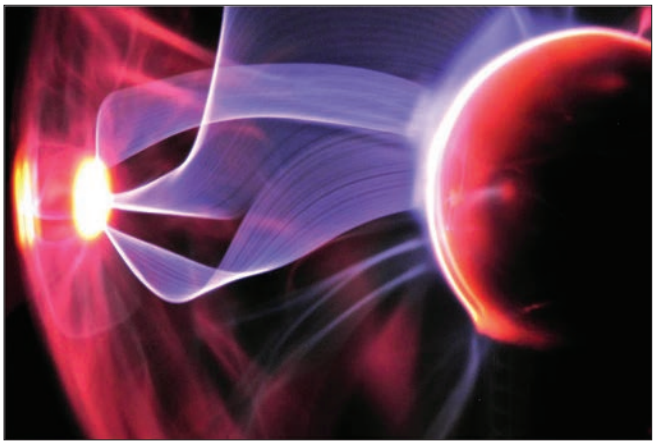
As can be seen from the graph below, the majority of entries were for the 'Energy' theme which, as well as being open to any age group, had the highest prize money. The other, age-restricted categories received a lot less entries although standards remained high. The range of ages of entrants is also shown below and perhaps with some of the most successful images coming from younger photographers, we would like to encourage more to enter our 2013 competition.





It is now with pleasure that we present the winners of each category. Both winners and runners-up received a sum of money in the form of Amazon vouchers.

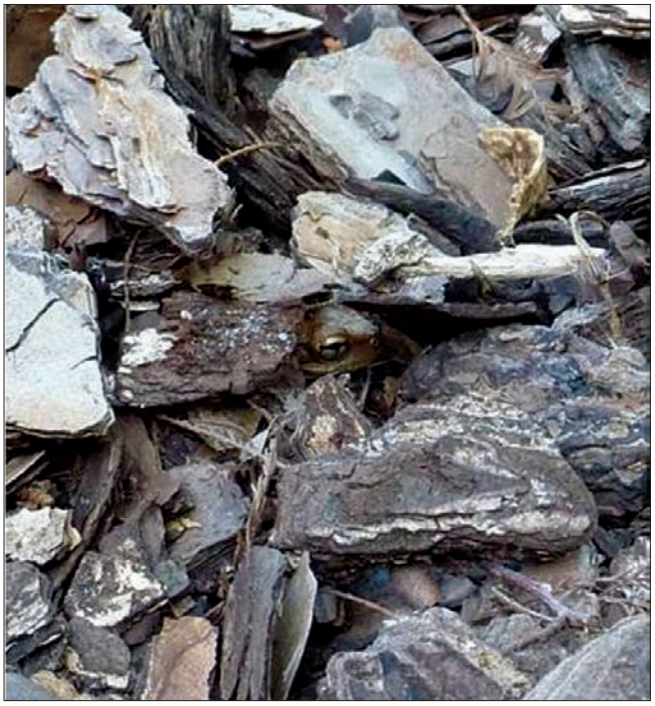
Prize-Winners



Title: Neon Beams
Theme: Energy
Award: Winner
Photographer: Emma Dyson
School: St Paul's Girls School, England
Age: 13

Inspired by electricity, Emma wanted to find a way to photograph this form of energy since it is hard to view. Having been captivated by the plasma ball in the science classroom when she was younger, she became interested in the vibrant currents of electricity being transmitted from the electromagnet through the neon gas. Her mother, a science teacher, has one of these plasma balls and this photograph is the result!

Emma explained, "A plasma ball works by the electromagnet in the middle of the glass bulb sending high voltage currents through the gas (which could be neon or a mixture of other noble gases). These gases, when an alternating current is passed through them, create vivid colours. The reason that it works when a hand is placed on the glass ball is, because a circuit is effectively created through the person, while he or she feels a slight electric shock. However, on smaller voltage bulbs you are unable to feel this shock."



Title: Hidden Frog
Theme: Camouflage
Award: Winner
Photographer: Jessica Bennett
School: Forest Lakes Elementary, USA
Age: 11

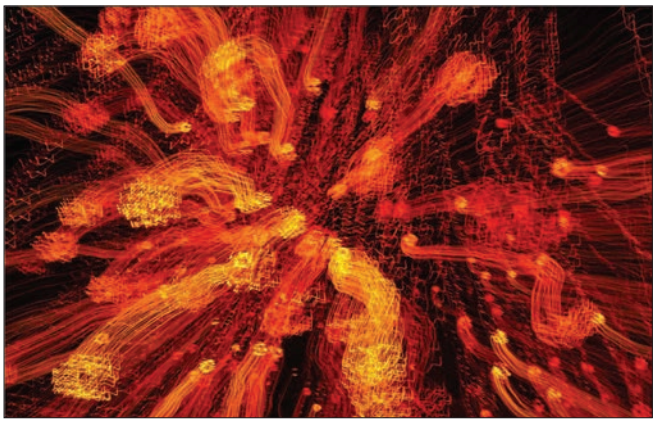
Jessica took this picture of a Cuban tree frog after finding it and remarking at how difficult it was to see, being the same colour as the sediment surrounding it.

She explained how the Cuban tree frog could do this. "[This frog species] can change a variety of colours including shades of green, black, brown and white. They have three different kinds of chromatophores, one that cases brown and black, one iridescent, and one yellow. Although some will have different colours like blue and red depending on whether they are poisonous or not and where they live. To change colour they move either the pigments or the reflective plates in these chromatophores. The colours are not usually based on the background, but they do it because of the amount of light, how they are feeling, and the temperature. Some will even turn white when they are hot and black when they are cold."

Title: Mystical Rings
Theme: Science behind the Olympics
Award: Winner

Photographer: Abegael Tomlin
School: Homewood school and sixth form centre, England
Age: 15

"The inspiration behind this picture was trying to capture the visual essence of energy as well as linking into the 2012 Olympic Games. I used a slow shutter speed on tripod, which enabled me to photograph the light over a certain amount of time and get it in the right position to show you what it actually is – the Olympic Rings. I used the deep velvety darkness of the background to enhance the brightness of the rings, which have an almost magical quality to them as they appear to be burning brightly like an eternal fire ball giving us a glimpse into the power and golden beauty of an energy that we either take for granted or never have the opportunity to fully appreciate its visual impact. I took this picture in the dark-room at school using an ordinary torch that was used to create this piece showing that sometimes, the ordinary can become extraordinary."



Title: Fireballs
Theme: The Result of Science
Award: Winner

Photographer: Gilda Rastegar
School: Lakeside School, USA
Age: 16

"This photo demonstrates the physics of how cameras capture light. Like humans who can only see a portion of the electromagnetic spectrum, cameras can only capture visible light. The quantum theory states that light is emitted from small bundles of particles called photons. In this photo, my camera captured a stream of photons coming from Christmas lights. I set the shutter for a one second exposure so that I could record the path of my camera's movement. I focused on my subject, and quickly zoomed out. Since my camera moved slightly during the zooming process, the zoomed path is not perfectly linear. Due to the long exposure, all the little Christmas lights look as though they are connected in long strings. The charge coupled device (CCD) sensor in my camera detected the collisions of photons. All of the points of lights hit one point, and since I moved my camera, the points of light made a path, creating a cumulative effect. When I moved my camera, the place the photons first hit was recorded and continued to add on the other registered places. As each photon hit an area on the sensor, there was more cumulative light.

There was no editing done to this photo. When taking this image, I hoped to show what one can do with a source of light and the science behind how a camera captures the image."

Title: Into The Sun
Theme: Energy
Award: Runner-Up

Photographer: Crystal Ng Pei Qi
School: SMK Aminuddin Baki Kuala Lumpur, Malaysia
Age: 16

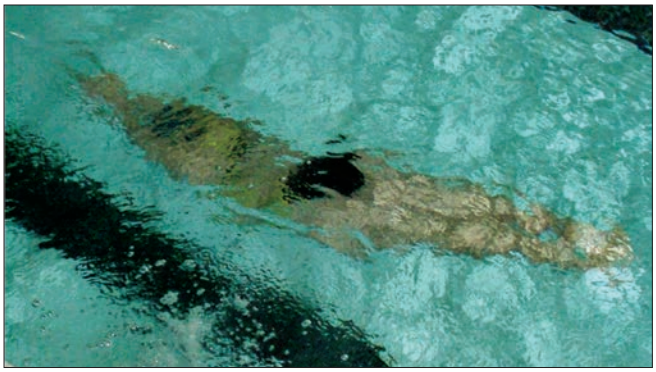
"Solar energy is energy that is present in sunlight. It has been used for thousands of years in many different ways by people all over the world. As well as its traditional human uses in heating, cooking and drying, it is used today to make electricity where other power supplies are absent, such as in remote places and in space. It is becoming cheaper to make electricity from solar energy and in many situations it is now competitive with energy from coal

or oil. Since ancient times, the sun has given earth life by emanating light and heat to empower life on earth. This image of the sun's rays has been given a minimalist theme with very few other elements in the picture to isolate the sheer magnificence of the sun's rays. Also included within the composition are pylons carrying electrical energy, also a form of energy generated by the sun's own energy."

Title: Lizard Hiding on A Rock
Photographer: Jemima Kingdon Jones
Theme: Camouflage
School: Hazelwood, England
Award: Runner-Up
Age: 10

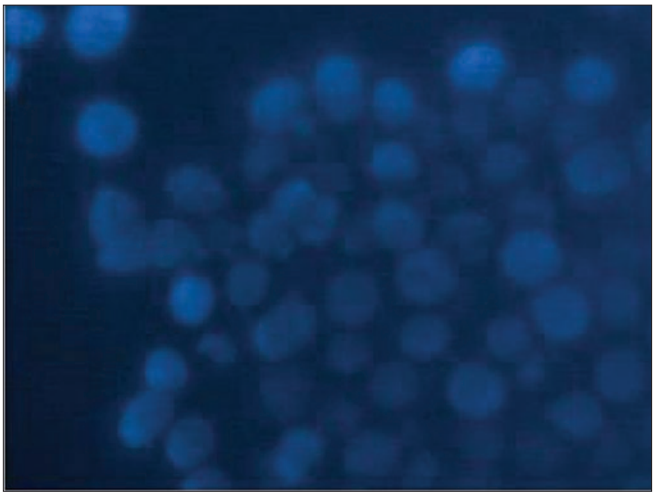
"I was recently on holiday at Bushmans Kloof, a game reserve in South Africa and was on a safari trip looking at wild animals and ancient rock art. I spotted the lizard near one of the rock paintings and took this great picture.

The lizard has a skin colour and texture nearly the same as the rocks so it is very hard to see, if it closed its eye it would be nearly invisible. You can normally only spot lizards when they are moving as most of the time they sit very still. The lizard likes to be on the rocks as it hides it from predators but can get warm from the heat of the rocks. The lizard is cold blooded so needs heat to warm it up."



Title: Minimizing Drag
Photographer: Jackson Algiers
Theme: Science behind the Olympics
School: Mcgill-Toolen Catholic High School, USA
Award: Runner-Up
Age: 15

Starting from the age of 5, swimming is Jackson's favourite sport. He decided to take a picture of a swimmer in the water in the streamline position as the reason swimmers are told to do this is to minimize drag. This is particularly relevant in an Olympic event. Jackson explained "In the picture, the swimmer has pushed off of the wall and is gliding through the water. She is not very efficient. A person looses 91 percent of their energy in the water through drag. The equation, $R = \frac{1}{2} DpAv^2$ is used in order to find the drag or resistance. R is resistance, D is the constant for the viscosity of the fluid, p is the density of the fluid, A is the surface area of the body travelling through the fluid, and v is the velocity of the travelling body. A swimmer can minimize their drag by tightening up and making the shape of a torpedo. They do this by putting one hand over the other with their arms above their head. They squeeze their ears with their biceps and keep their legs straight with their toes pointed. In swimming terminology, this is known as the 'streamline position.' It is assumed at the start and after each turn while swimming."



Title: BLUE 293t
Photographer: Elizabeth Ham
Theme: The Result of Science
School: The King's School Canterbury, England
Award: Runner-Up
Age: 17

"I took this photograph this Easter while interning in a stem cell research lab at The Children's Hospital Boston. Over the course of the time I was there I grew my own 293t cells to use for artistic purposes. The 293t cells originated as human embryonic kidney cells, and had been transferred by gene mutation to

cancer cells so they could be propagated in culture quickly by cancer growth. I used a program on the computer called Leica DFC300 FX, which connects the cells under a microscope to the computer where you can take snapshots of them. The cells shown are blue because I used a florescent nucleic dye called DAPI (4′, 6–diamino–2–phenylindole), which stains the nuclei of the cells being photographed blue. For this reason the photograph is made up of the cell's nuclei only.

I think this photograph represents the result of science because in an abstract way the photograph can represent a section of the planet Earth. The darker region in the bottom right corner is the 96 well plate where the cells grew. In my opinion the shape of this area represents the curvature of the Earth, the cell groupings represent areas of land, and the blank areas are oceans. For this reason the photograph looks like a section of the world itself, and the photograph shows how the results of science are universal."

Below is a list of those whose photos won, came runner-up and were highly commended:

Category	Winner	Runner-up	Highly commended
Energy (open to anyone aged 18 and under)	Neon Beams ***Emma Dyson***	Into The Sun ***Crystal Ng Pei Qi***	Birds and a Wind Turbine at Sunset, **Michael Hofmann** Hot Air Balloon, **Eleanor Powell** The Unique Purple of Chemistry, **Gwen Lam** Sun Halo, **Kiran Thapa** Lightning at Night, **Stephen Smith** Light from a Gherkin, **Adam Shortall** Water droplet, K**yle Meadows** Dancing light, **Emilie de Bree** Flower power, **Lauren Farrow**
Camouflage (under 12)	Hidden Frog ***Jessica Bennett***	Lizard Hiding on a Rock ***Jemima Kingdon Jones***	Chameleon Seahorse, **Emily Phang** The Preyer, **Jonah Linquist**
Science behind the Olympics (12–15)	Mystical Rings ***Abegael Tomlin***	Minimizing Drag ***Jackson Algiers***	The torch, **Ryan McDougald** Happy cyclist, **Eleanor Bennett** Hanging Mating, **Gusti Ngurah Prana Jagannatha**
The result of Science (16-18)	Fireballs ***Gilda Rastegar***	Blue 293t ***Elizabeth Ham***	Power Station, **Eleanor Powell** Light Show, **Sarah Cannavino**

The other photographs from the competition are shown on the back cover of this magazine and can also be seen on our website. If you think you could be in with a chance to win up to £150, then do not miss next year's photography competition!

About the Author

Fiona Jenkinson, Editorial Team Leader, is 17 years old and goes to The King's School Canterbury where she is currently studying for her A Levels. She is studying Biology, Chemistry, Physics and Further Maths and has already taken as French. In her free time she enjoys art, music, photography and reading. She wants to study Natural Sciences at University.