

FINDING YIRLINKIRRKIRR: PROTECTING COUNTRY AND EVERYTHING IN IT

COSMOS

THE SCIENCE OF EVERYTHING

ISSUE 101

GOYDER'S LINE

Australia's climate crystal ball

VECTURING IN

Insects conquer high-school maths

DRUGS 2.0

Can we prioritise health over profit?

WE FEAR IT

WE NEED IT

THE SCIENCE OF FIRE

HOW WELL DO WE KNOW IT?

Ri Aus

9 771832 522008

AU \$17.00 NZ \$19.00

101

ELECTRIC CAR MYTHS BUSTED 🔥 TREES GO TECH 🔥 ORANGE UNPACKED 🔥 BEST PHOTOS IN SPACE

COSMOS THE SCIENCE OF EVERYTHING

Starry, starry night

The Royal Observatory Greenwich's Astronomy Photographer of the Year competition isn't just about pretty pictures. Look closely: some of these images contain new knowledge of the universe.

▶ **Andromeda, unexpected**

When amateur astronomers peered up at our closest spiral galaxy, Andromeda, in one of the most observed areas of the sky, they didn't expect a surprise. But 22 nights and 110 hours of data revealed a huge arc of plasma across their image. This curved cloud of ionised oxygen gas is an emission nebula dubbed the Strottner-Drechsler-Sainty Object 1, and it's set the imagination of the astronomy community ablaze.

Winner (Galaxies); Overall winner

Photographers: Marcel Drechsler, Xavier Strottner and Yann Sainty

▼ **Neighbours**

Feet on the ground in the Bendleby Ranges, four hours north of Adelaide, photographer Paul Montague visited another galactic neighbourhood. These three worlds-of-worlds are (from left) IC 879, NGC 5078 and NGC 5101.

Highly commended (Galaxies)

Photographer: Paul Montague







▲ **Sky sprites**

During thunderstorms we're mesmerised by lightning striking the Earth, but electrical discharges occur high above storms too. Lightning sprites – flashing through the mesosphere in a tenth of a second – are difficult to see and capture on film. Photographer Angel An recalls standing on a ridge in the Himalayas, watching the dancing sprites: "They acted as fairy-like creatures, giving a transient firework show for the audience on Earth."

Winner (Skyscapes)

Photographer: Angel An

Brushstroke

We're used to seeing images of an aurora firmly placed in the context of the Earth: the flickering, ever-changing light paused over mountains or trees or ice. But this photograph frames the aurora borealis in isolation. Abstracted from the familiar, what do you see? Electrons riding the solar wind and striking oxygen molecules? The stroke of a paintbrush across an inky background? The veil between worlds? Or something else entirely?

Winner (Aurora)

Photographer: Monika Deviat



Circle of light

Skagsanden beach in Norway's Lofoten Islands is usually rolling with waves perfect for beginner surfers – in fact, the beach is home to a popular surf camp. But on this winter's night, the water stretched still enough over the sand to hold a reflection of the sky above, joining the curve of an aurora into an ellipse that encircles Hustinden mountain.

Runner-up (Aurora)

Photographer: Andreas Ettl



◀ **Close encounters of the Mars kind**

Immersed in cloudy layers, the full Moon is accompanied by Mars (the yellowish speck below the Moon, at right). “The colourful hue that surrounds the Moon is a lunar corona formed while bright moonlight is diffracted by water droplets in thin clouds, drifting in front of the lunar disc,” explains the photographer.

Highly commended (Our Moon)
Photographer: Miguel Claro

▶ **The solar question**

Though it appears other-worldly, this is a real image of the Sun, with a filament curved into the shape of a question mark. Filaments are structures on our star’s surface, made of plasma that is shaped and reshaped by magnetic fields. “[The Sun] wanted to show us in a very graphic way that it is a star with many unanswered questions,” the photographer muses.

Winner (Our Sun)
Photographer: Eduardo Schabberger Poupeau

▶ **The heart of Hydra**

In their quest to discover new nebulae, amateur astronomers Drechsler and Strottner not only captured the winning image of the 2023 competition (page 55) but also added to our understanding of binary star system evolution. By trawling through old star surveys, the pair found this binary system surrounded by a large and previously unknown galactic nebula, 15.6 light-years across – then photographed it.

Winner (Stars and Nebulae)
Photographer: Marcel Drechsler





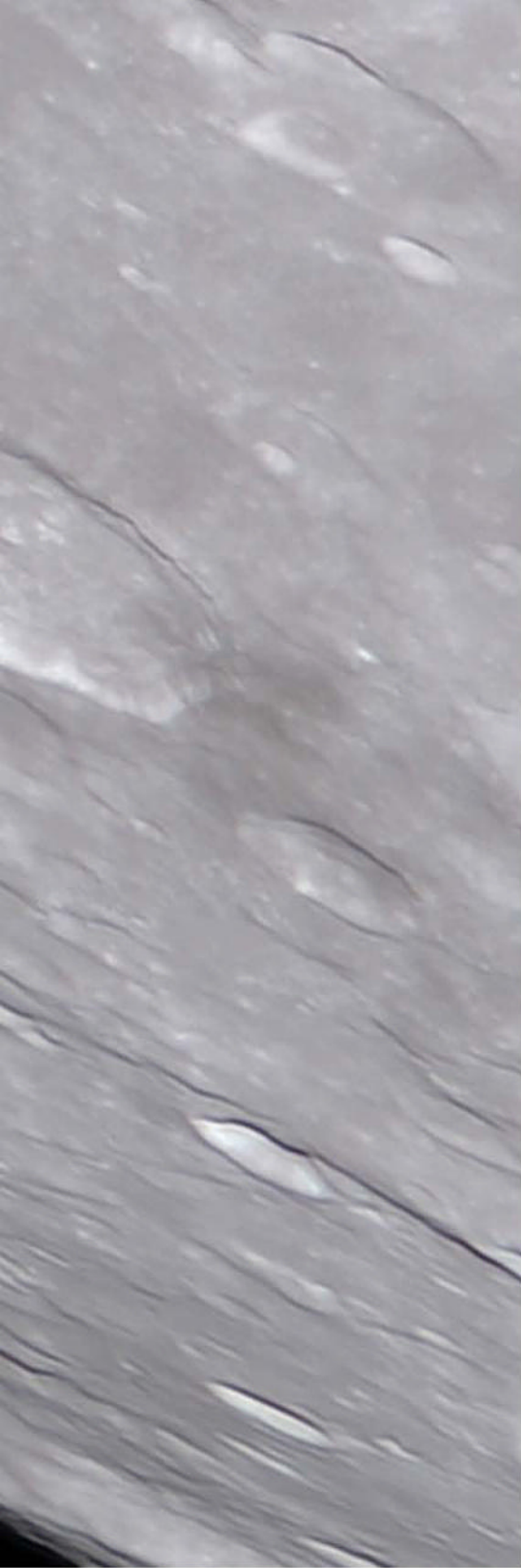


▲
Mars-set

Though this Earthrise-esque image looks like it was snapped by an astronaut orbiting above the lunar surface, it was in fact taken from Earth during an occultation of Mars. The Moon and the Red Planet were both at opposition (directly opposite the Sun relative to Earth) when the Moon passed in front of Mars, allowing the photographer to line up this incredibly tangible shot.

Winner (Our Moon)

Photographer: Ethan Chappel



▲ **Two bridges**

14-year-old Haohan Sun captured the progression of moonrise over the Xinghai Bay Bridge in Dalian, China, a major port city on the Yellow Sea. The colour change from molten red to pale gold is caused by atmospheric extinction. Nearer the horizon, the Moon's light passes through more of our atmosphere, which scatters away the bluer wavelengths of light. The effect can be magnified by dust or pollution.

Highly commended (Young)
 Photographer: Haohan Sun

▼ **Spielberg who?**

Nestled in the hills of Lancashire in the UK, this 18-metre-diameter sculpture lights up nightly with 500 low-energy LEDs, powered by a nearby wind turbine. Called Haslingden's Halo, it appears like a UFO hovering between the town below and the trails of stars above. The Halo is one of four large-scale sculptures built in the area, collectively called panopticons: structures providing a comprehensive view. But of the Earth, or of the universe?

Highly commended (People and Space)
 Photographer: Katie McGuinness

