



Aerial lizard unfurls and grips its 'wings' for a unique glide

THE dragons in the Harry Potter movies fly using wings made from modified forelimbs, just as birds and bats do. But real dragons – gliding lizards of the genus *Draco* – form their “wings” from flaps of skin stretched over elongated ribs. Their forelimbs have a different role: to help spread the wings and maybe even steer.

Maximilian Dehling at the University of Koblenz, Germany, photographed about 50 flights as *Draco* lizards glided from tree to tree in southern India. In every case, the lizard would launch itself and then immediately reach back with its forelimbs, grabbing the unfolding wing and

spreading it forward. “This is a very rapid movement,” says Dehling. The lizard continued holding its wing until the last moment of the flight.

To grab their wings, the lizards must rotate their wrists forward about 90 degrees. By examining museum specimens, Dehling found that while *Draco* lizards can do this, their relatives cannot (bioRxiv, doi.org/bvdx).

This suggests that their limbs have evolved for the task. Besides helping to spread the flaps of skin, the lizard’s grip could also let the animal bend it to steer its flight path, says Dehling. If so, it would make the lizard unique among modern flying vertebrates in controlling flight with something other than the flight surface itself. Some fossil reptiles could have used a similar control method, he speculates based on previous finds.

A brainwave for Alzheimer’s therapy

COULD the answer to fighting Alzheimer’s disease be as simple as a flickering light?

An hour a day of light therapy has been found to break down brain deposits in mice with Alzheimer’s-like symptoms. That’s a long way from it working in people, but because it seems a safe therapy, it could move quickly into humans trials.

Ed Boyden at the Massachusetts

Institute of Technology and his team exposed mice to a light flickering at 40 hertz. This triggered brain cells to oscillate together, creating gamma waves – a type of brain activity that is often weaker in people with Alzheimer’s.

After they had been exposed to the light for an hour a day for a week, the rodents’ brains contained fewer amyloid plaques

and tau tangles, which are hallmarks of the disease. The light seemed to boost the activity of cells that clear amyloid, and cut amyloid production (*Nature*, DOI: 10.1038/nature20587).

These changes happened only in the animals’ visual cortex, not in the memory areas that the disease damages first. But Boyden still plans to try light therapy in people, as well as to induce gamma waves in other areas using electrodes.

Quantum particles act like a prism

IT’S a kaleidoscope in the sky. We’ve just seen virtual particles in space acting like prisms, polarising light from a neutron star.

In the 1930s, physicists suggested that a strong magnetic field can polarise light, like glare bouncing off a window – provided there are particles to nudge it.

The effect could happen in the vacuum of space, because virtual particles are constantly popping in and out of existence thanks to quantum uncertainty.

Roberto Mignani at the National Institute for Astrophysics in Italy and his colleagues used the Very Large Telescope in Chile to probe the idea. They looked at light from a neutron star – a dense stellar corpse with a colossal magnetic field – through a series of filters.

They found that the light had been polarised to about 16 per cent, demonstrating this phenomenon for the first time (*MNRAS*, doi.org/bvcw).

Copying plants for better solar cells

THE next wave of solar cells might be green... literally.

A big problem in solar power is that if solar cells get too much or too little light, they don’t work efficiently. This should affect plants, too, but they manage to make the most of what they get.

Nathan Gabor at the University of California, Riverside, was trying to design a solar cell to do the same thing. Using quantum mechanics, he found that plants’ green colour may be an advantage (*NanoLetters*, doi.org/bvcx).

The sun emits more green light than any other colour, but that may make it the hardest to absorb efficiently. Reflecting green light, and absorbing two other colours instead, could be the key to efficiency, Gabor says.

Nearest stars to the sun are a trio

THEY'RE a happy family, after all. The three closest stars to our solar system do indeed all revolve around one another, a finding that resolves a century-old debate.

The nearest of the three, Proxima Centauri, is a red dwarf 4.24 light years away. In August, we learned that it hosts an Earth-mass planet where temperatures might be right for liquid water to exist.

Just beyond, 4.37 light years away, are two bright stars named Alpha Centauri A and B. They orbit each other every 80 years, blending to the naked eye to appear as the third brightest star in the night sky.

Proxima Centauri is too dim to see without a telescope, so it was only discovered in 1915. Ever since, astronomers have thought it might revolve around Alpha Centauri A and B - but no one could prove it.

Now, Pierre Kervella at the Paris Observatory in France and his colleagues have measured Proxima Centauri's velocity precisely enough to show that it is genuinely bound to the other two.

The team found that Proxima Centauri's velocity differs from that of its bright partners by just 270 metres per second - half the speed it would need to escape their gravitational grasp (arxiv.org/abs/1611.03495). The little star orbits its companions every 550,000 years.



DIGITIZED SKY SURVEY 2/DAVIDE DE MARTINI/MHD/ZAMANI

Magnetic brain stimulation can turn you on (or off)

TALK about good vibrations: a brain zap could alter your libido.

Nicole Prause at the University of California, Los Angeles, and her team wondered whether transcranial magnetic stimulation (TMS) - applying a magnetic field to the brain to boost or lower the activity in a particular spot - could alter someone's sex drive.

Asking someone how aroused they feel is too subjective a way of measuring sex drive. Instead, the team asked 20 volunteers to wear a vibrator on their genitals.

These people received 2 minutes of TMS to excite or inhibit the dorsolateral prefrontal cortex, a brain area involved in reward. Electrodes were then placed on participants' heads to measure their alpha brainwaves, which have been shown to weaken with sexual arousal.

The participants then waited to be given genital buzzes lasting between 0.5 and 5 seconds. "They know they're about to be sexually stimulated, but it hasn't actually happened yet," says Prause. Measuring their alpha waves

during this time is the closest analogue for measuring desire in the lab, she says.

As expected, the volunteers appeared more aroused after excitatory TMS than inhibitory TMS. People's overall sexual responsiveness, as gauged by their brainwaves, also correlated with the number of orgasms they had over the next three days (*PLoS One*, [doi.org/bvb4](https://doi.org/10.1371/journal.pone.0161444)).

"If it works there would be a huge market for it," says Cicely Marston at the London School of Hygiene & Tropical Medicine.

Tiny crustaceans are bees of the sea

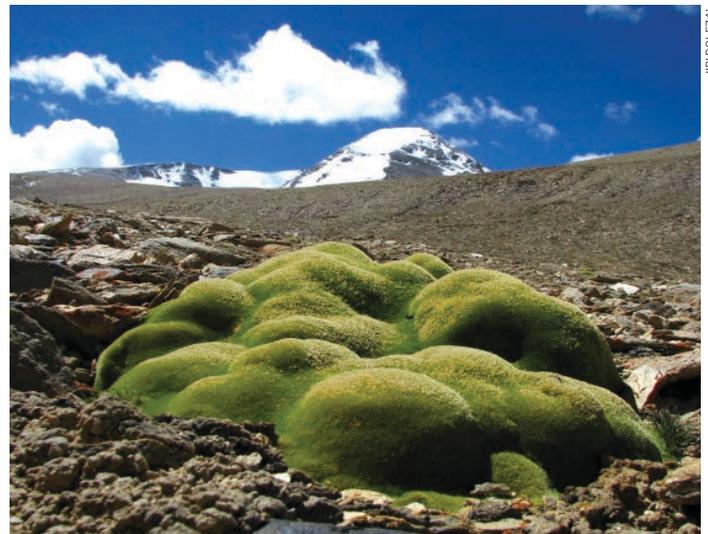
SEAGRASS pollen swirls around on currents and tides, but it turns out that the grains can also hitch a ride on minute marine creatures.

Underwater invertebrates can ferry pollen between flowers, just as animals pollinate plants on land, say Brigitta van Tussenbroek at the National Autonomous University of Mexico in Puerto Morelos and her colleagues.

The team had noticed hundreds of invertebrates, mostly small crustaceans, visiting turtle-grass flowers. "We saw all of these animals coming in, and then we saw some of them carrying pollen," says van Tussenbroek.

To see if they can act as pollinators, the team added them to lab aquariums containing turtle-grass flowers, some of which already bore pollen grains. Within 15 minutes, several extra grains appeared on the female blooms, something that did not happen in control tanks lacking invertebrates.

With the water kept still, the turtle-grass often produced grain - indicating pollination - when marine invertebrates were present, but rarely or never did so without them (*Nature Communications*, [doi.org/bvcm](https://doi.org/10.1038/ncom11444)).



JIRI DOLEZAL

World's highest plants come to light

PLANTS have been found growing at 6150 metres above sea level for the first time. The six species of cushion plants cling to a gravelly patch, no bigger than a football pitch, in the Himalayas.

It's a record for vascular plants - those with special tissues to transport water and carbohydrates - although algae and mosses can grow even higher because they are more drought and frost-tolerant.

A team led by Jiri Dolezal, of the Institute of Botany at the Czech Academy of Sciences in Pruhonice, found the plants had features to

withstand the long, bitter winters and lack of water. Each was no bigger than a coin, contained a high-sugar antifreeze, and had leaves arranged as rosettes that help them to enfold warmer air.

The team was able to make out 20 growth rings in a 1-millimetre root, implying that one of the plants had been there for two decades.

As the climate warms, the number of frost-free days is increasing. That could allow plants to establish even higher up the dizzying peaks over the coming decades (*Microbial Ecology*, [doi.org/bvcc](https://doi.org/10.1007/s00248-016-0644-4)).