

NASA/JPL-CALTECH

When applied to tape, the hydrogel's solvent droplets penetrate the backing and the adhesive, facilitating their removal.

The technique could be applied not only to tape removal, but also to cleansing objects such as scientific instruments destined for space, Baglioni says.

Proc. Natl Acad. Sci. USA
<http://doi.org/cp7f> (2018)

EVOLUTION

Asteroid knocked birds from trees

Although a few birds prefer life at ground level, most perch in the safety and shade of the treetops. But no tree-dwelling birds survived the immense asteroid strike that also killed off the dinosaurs, an ecological analysis concludes.

Daniel Field at the University of Bath, UK, and his colleagues compared the lifestyles and anatomy of birds before and after the asteroid impact, which caused a mass extinction 66 million years ago. The team found that all the birds that lived in the trees before the die-off became extinct at around the time the huge rock hit.

Fossil pollen records suggest that the impact's blast and the subsequent wildfires, acid rains and sunless summers destroyed forests worldwide. Treetop birds simply couldn't persist for 1,000 years in a treeless world carpeted with a 'disaster flora' of ferns.

Today's treetop birds derive from surviving ground-dwellers (artist's impression, **pictured**), and developed their affinity for the forest canopy in the time since the asteroid strike, the researchers say.
Curr. Biol. <http://doi.org/gdh9vt> (2018)

ASTRONOMY

Galaxy exceeds expectations

The Milky Way's disk of stars is much vaster than most astronomers thought.

One of the defining features

of the Milky Way (**pictured**) is a saucer-shaped disk of stars, among which is the Sun. A number of previous studies indicated that the disk's outermost stars lay roughly 15 kiloparsecs (nearly 50,000 light years) from the Galaxy's centre.

Martín López-Corredoira at the Institute of Astrophysics of the Canary Islands in La Laguna, Tenerife, Spain, and his team studied the abundance of iron and other metals in distant and poorly characterized stars. The group found that many of these far-flung stars have metal contents that mark them as belonging to the disk.

The results suggest that the disk's most distant stars lie at least 26 kiloparsecs, and possibly as far as 31 kiloparsecs, from the Galaxy's centre. This means that the disk might stretch more than 60 kiloparsecs in diameter — roughly 20% wider than even the largest previous estimates.

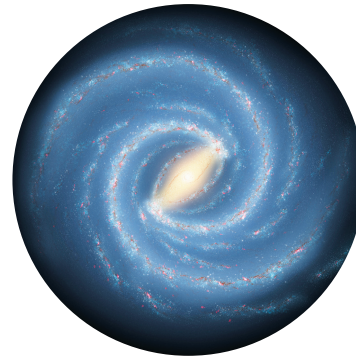
Astron. Astrophys. 612, L8 (2018)

HUMAN BEHAVIOUR

'Thank you' is rare around the world

Scientists who eavesdropped on nearly 1,000 conversations around the world report that people who receive favours rarely say 'thank you'.

To test that idea, Simeon Floyd at San Francisco University of Quito in Ecuador and his colleagues obtained informed consent to install cameras equipped



with microphones in homes and public spaces on five continents, allowing the researchers to monitor conversations in eight languages.

The team recorded almost 1,000 examples of people asking for a favour — such as a request for a cigarette — and receiving it. In only 5.5% of those cases did the recipient express appreciation with either words or a gesture. Speakers of Cha'palaa, an unwritten language spoken in Ecuador, did not once express thanks in 97 exchanges that included a favour being requested and granted.

The results indicate that explicit gratitude is not a universal social currency. Instead, people help each other on the assumption that others will help them.

R. Soc. Open Sci. 5, 180391 (2018)

ECOLOGY

Climate change set to roil streams

Rising global temperatures could prompt some streams to release more carbon dioxide than they do now, exacerbating climate change.

As their environment warms, algae and microbes living in streams photosynthesize faster and absorb more CO₂ from the air. But the organisms also grow faster, releasing extra CO₂.

To calculate the net impact of such changes, Chao Song at the University of Georgia in Athens and his colleagues monitored the temperature, dissolved oxygen level and other traits of 69 streams

around the world. They then folded the data into computer models.

The models suggest that, over time, the rising rate of photosynthesis in some streams will not keep pace with plant growth, leading to a net release of CO₂. If this pattern is scaled up, a 1 °C rise in global temperatures could result in a net 24% increase in carbon released from streams worldwide.

Nature Geosci. <http://doi.org/cp7d> (2018)

NEUROSCIENCE

Brain cells found for frog trills

Many frog species utter distinctive calls to lure mates. One group of neurons could help to explain the difference between two species.

Erik Zornik at Reed College in Portland, Oregon, and his colleagues studied the brains of two closely related species of African clawed frog: *Xenopus laevis* and *Xenopus petersii*. Males of both species emit fast trills while courting, but *X. laevis* produces longer, lower-pitched trills than *X. petersii*.

After dissecting the frogs' brains, the researchers identified two subtypes of neuron involved in the frogs' calls. When the scientists isolated and triggered these cells, one subtype, called 'fast-trill neurons', exhibited longer-lasting and slower responses in *X. laevis* than in *X. petersii*. Bathing the brains in serotonin evoked electrical activity with a pattern that resembled that seen during courtship calls. Again, the fast-trill neurons responded more slowly and for longer in *X. laevis* than in *X. petersii*.

Changes to these neurons probably contributed to the evolution of the two species' distinctive courtship calls.
J. Neurosci. <http://doi.org/cp69> (2018)

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