

SCORECARD

**Hydrogen**

Hydrogen has been unfairly maligned as the cause of the Hindenburg airship disaster, according to Martin Chávez, mayor of Albuquerque. In the interests of promoting hydrogen fuel, he has called on the US government to pardon the gaseous element.

**Superconductors**

The authors of a citation study that predicted no more papers in high-temperature superconductivity after 2015 seem to have yielded to the wrath of physicists in the field (see *Nature* 443, 376; 2006). They have now removed the extrapolation to zero from their preprint.

**Canada**

It is usually considered that Canada is more environmentally friendly than the United States. But during fishing negotiations at the United Nations last week, Canada became the bad guy. It refused to sign up to a US-backed ban on bottom trawling, which devastates fish populations and the ocean floor.



P. MORRIS/ARND BRONKHORST

ZOO NEWS

Baby gorillas

Two orphaned gorillas raised by the John Aspinall Foundation (JAF) and released into the wild in the Republic of Congo have both been spotted with young offspring — only the second and third recorded births to reintroduced gorillas. JAF researchers are now planning DNA tests of the males in the group, to identify who the fathers are.

Nano spiders

Readers with arachnophobia may wish to avert their eyes. Researchers have created 'molecular spiders' with legs just 10 nanometres long. Biochemist Milan Stojanovic hopes the spiders could perform certain tasks: "We could have a simple predator-prey system in which one would try to cleave the legs of the other."

Sources: City of Albuquerque, CTV, JAF, BBC

Hard-hitting endeavour captures Ig Nobel

BOSTON

When Ivan Schwab first learned that he was slated to win an Ig Nobel prize for explaining why woodpeckers don't get headaches, his response was perhaps predictable for a man whose past had come back to haunt him: he denied everything.

"I didn't do the work," Schwab, an ophthalmologist at the University of California, Davis, told the event's organizer after being informed of the dubious honour in store for him. Ig Nobel prizes are given for "achievements that make people laugh, and then make them think". Schwab gave credit instead to Philip May, a former psychiatry professor at the University of California, Los Angeles, who died in 1986. A deal was soon reached: Schwab agreed to share the 2006 Ornithology prize with May for research initiated by May and associates in 1976 and taken up by Schwab a quarter of a century later.

To May, the woodpecker represented a unique "experiment in Nature" and a chance to understand how an animal could continually use its head as a battering ram without sustaining headaches, concussions or other brain injuries.

A pileated woodpecker may strike its beak against a tree 12,000 times a day for the purposes of feeding, nest construction, ritual drumming (to claim territory and attract mates), and even to relieve tension. They peck at rates of up to 20 times a second — each blow is comparable to striking a wall, face-first, at 25 kilometres an hour. This results in deceleration forces of about 1,200g, which is hundreds of times more than astronauts endure. Given the ill effects of headbanging seen in humans, May wondered why the countryside was not "littered with dazed and dying woodpeckers".

Clearly, woodpeckers do not get headaches or serious head injuries, May reasoned, or they would stop pecking. So how do they prevent it? After dissecting the heads and beaks of two woodpeckers (which were compared with similar toucan samples) and analysing high-speed photographs of live woodpecker strikes, May and his colleagues advanced several explanations (P. R. May *et al.* *Lancet* i (7957), 454–455; 1976; *Arch. Neurol.* 36, 370–373; 1979).

The woodpecker brain has relatively little cerebrospinal fluid, reducing the transmission of shock waves, and it is tightly packed in



R. NUSSBAUMER/NATUREPL.COM

Striking stat: the pileated woodpecker hits its beak against a tree around 12,000 times a day.

dense, spongy bone that keeps internal movements to a minimum. Muscles encircling the skull serve as shock absorbers, "holding the bill in resilient rigidity".

Like boxers, woodpeckers tense their neck muscles before absorbing a blow. And their drilling trajectory is essentially linear, with little or no rotation of the head, to avoid shearing forces. A third eyelid closes a millisecond before each strike to secure and shield the eye.

Schwab, a bird enthusiast since childhood, read May's 1976 *Lancet* article and later papers with keen interest. On occasion, he mentioned the woodpecker example in ophthalmology classes and at conferences, citing the potential for retinal damage, and always engaged his audience. Yet he yearned to do more on the subject.

He got his chance in 2000, when he became an editor of the *British Journal of Ophthalmology*. In 2002, Schwab put a woodpecker on the journal's cover and wrote an essay presenting May's findings and discussing anatomical features that might provide further protection, as a result of dissections and CT scans he had performed of a pileated woodpecker head