

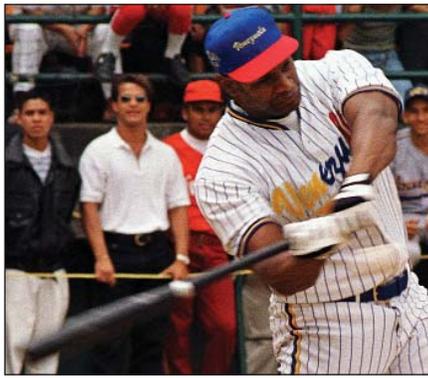
## Physics Throws Sluggers a Curve

It's the ultimate baseball show-down: bottom of the ninth with the game on the line, power pitcher on the mound, and burly slugger at the plate. Everyone in the stadium knows that the pitcher is going to throw a fast-ball and that the hitter has a good chance of smacking it out of the park. That's because a batted fastball will fly farther than any slower pitch.

Or will it? Contrary to common wisdom, a slow-moving curveball that is smartly struck will sail farther than a well-hit fastball, a team of engineers reports in the November issue of the *American Journal of Physics*.

Mont Hubbard of the University of California, Davis, and colleagues calculated how far a ball will fly depending on variables such as bat speed, the angles at which bat and ball meet, and the speed and spin of the pitch. Researchers had long known that, all other things being equal, a batted ball travels farther if it has more backspin to give it aerodynamic lift. Now, Hubbard and colleagues find that, because it's already spinning in the right direction, a perfectly hit curveball has enough extra backspin to carry it about 4 meters farther than a perfectly hit fastball—even though a curveball is significantly slower than a fastball.

That seemingly screwball conclusion

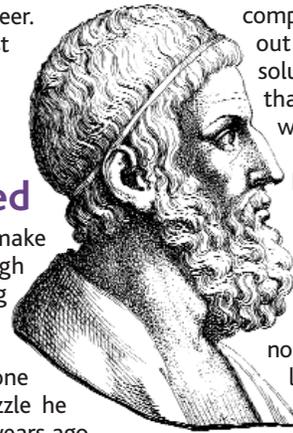


just might be right if the pitch is a "hanging curveball" that lingers high in the strike zone instead of "breaking" sharply toward the dirt, says Gary Matthews, hitting coach for the Chicago Cubs, who knocked out 234 homers during his own 16-year major league career. "If you catch that ball just right," he says, "it's going to go a long way."

## Problem Solved

Perhaps it wouldn't make him run naked through the streets shouting "Eureka!" but Archimedes would no doubt be pleased that someone has finally solved a puzzle he posed more than 2000 years ago.

In the third century B.C.E., Archimedes posed a geometric mind-bender: How can one arrange a particular set of 14 irregular



triangles and quadrilaterals to fit together into one big square? Finding one solution isn't that hard, but nobody knew how many solutions there are.

Just this month, however, puzzlemaker Bill Cutler of Palatine, Illinois, put the 2-millennium-old poser to rest. Using a computer's brute force, Cutler figured out that there are only 536 distinct solutions to the puzzle. One element that made the problem tractable was the fact that there are three pairs of pieces that must always be together.

With so many solutions, Archimedes' puzzle wasn't the most intriguing mental challenge, says mathematician Ed Pegg of Wolfram Research in Champaign, Illinois. Nevertheless, Cutler's exhaustive list counts as a mathematical victory, he says: "When you first start looking at it, it seems like it might have thousands and thousands of solutions."

## Please, Don't Get Up

It's about time they asked the ladies. Most older women aren't excited by the prospect of their mates taking the anti-impotence drug sildenafil, the ingredient that gives Viagra its amazing powers of levitation, report geriatrician Sameer Patel and colleagues at Jersey Shore University Medical Center in Neptune, New Jersey.

The researchers asked 146 of their female patients what they really thought about the blue booster. Sixteen percent said their mates were already using or should try the pill. But 84% said they'd be just as happy if their men passed on the little pick-me-up, the team reported at the annual meeting of the Gerontological Society of America, which was held from 21 to 25 November in San Diego, California.

The results aren't surprising, says Phoebe Liebig of the Andrus Gerontology Center at the University of Southern California in Los Angeles. Reduced sexual interest is a natural consequence of aging, she says, and women don't necessarily want their husbands "dancing around like a satyr."

In a discovery that makes the months-old Chinese food in your fridge look positively delectable, paleontologists have identified the oldest known food store. Seventeen million years ago, a very busy but forgetful rodent buried over 1800 filbertlike nuts in its burrow in what is now Germany. Miners unearthed them in 1992 while digging for lignite coal in the Garzweiler pit near Cologne.

The rodent burrowed into sand dunes behind a beach and adjacent to a freshwater swamp, report Carolee Gee of the University of Bonn, Germany, and colleagues in the November issue of *Palaeontology*. Measurements of the burrow indicate that its owner was about 245 millimeters long and weighed about 225 grams, close in size to a fossil hamster known from similar deposits at the nearby Hambach mine.

## Are These Still Good?



The rare find provides a glimpse of how ancient animals behaved, says Jerry Hooker, a mammal expert at the Natural History Museum in London. "Finding an actual food cache tells us that cache-hoarding of nuts was definitely employed by rodents, such as extinct hamsters, by early Miocene times," Hooker says.

As food, the fossilized nuts were well past their prime. When exposed to the air, they collapsed into coal dust.

## ON CAMPUS

**A cautionary tail.** Immunologist Chen Dong has a message for his fellow researchers: When in doubt, check with your Institutional Animal Care and Use Committee (IACUC). The University of Washington (UW), Seattle, has barred Dong from conducting animal research



for at least a year after the committee documented an array of violations, in-

cluding cutting the tips off mouse tails (for tissue analyses) without proper anesthesia. Dong, 36, who came to UW 3 years ago, has also had to retract a recent high-profile paper from the *Journal of Clinical Investigation* be-

cause the IACUC hadn't fully approved the study.

A contrite Dong says his inexperience led to the potentially career-ending missteps, and that he plans to repeat and resubmit the retracted results. And he's relieved that his studies will be able to continue under the watchful eye of colleague Andrew Farr, who has been given temporary oversight of animal work in Chen's 12-person lab. "I regret that I didn't understand how things worked," he says. "And I strongly recommend that everyone work closely with [the] IACUC."

## NONPROFIT WORLD

**Generation gap.** At 40, György Pálfi is technically 1 year too old to join the organization that he's just founded. But the World Academy of Young Scientists (WAYS) plans to keep the Hungarian biological an-



thropologist on call as it tries to provide a voice for the next generation of researchers.

Launched last month by 300 researchers from more than 50 countries, the UNESCO-backed WAYS aims to increase the participation of young scientists in international research programs and foster collaboration between developed and developing countries. Pálfi leveraged his current position as Hungary's science and technology attaché in Paris to establish the network, which plans to hold its first general assembly next year in Tunisia.

## JOBS

**Keeping it real.** After helping set standards for science in the classroom, Patrice Legro is taking on the burden of explaining science to a curious society. As the first director of a science museum in Washington, D.C., being built by the National Academies, Legro hopes to draw public attention to the science behind contemporary issues. The museum, to open in April, will feature exhibits that build on the academies' well-regarded reports, starting with one on DNA sequencing that details how the SARS virus was detected in 5 days and another on climate change.

"We are targeting an adult audience that is interested in current

events and hungry for authentic scientific data," says Legro, who managed the National Science Education Standards Project and helped start the academies' Office on Public Understanding of Science. The

new museum is being financed by a \$25 million gift from retired University of California, Berkeley, biochemist and former *Science* editor-in-chief Daniel Koshland in honor of his wife, immunologist Marian Koshland.



## AWARDS

**No strings.** A research group developing plastic displays and another working to improve global positioning and navigational systems are sharing this year's \$1 million Descartes Prize from the European Union. But catch them while you can, says Georges Vlandas, a scientific officer with the European Commission. "A research team is not a marriage. The winners are free to divide the award and go their separate ways."

Cambridge physicist Richard Friend and researchers from the United Kingdom, Belgium, Ger-

# RANDOM SAMPLES

PEOPLE

edited by Yudhijit Bhattacharjee

many, the Netherlands, and Sweden get \$700,000 for their work on polymeric light-emitting diodes. Geophysicist Veronique Dehant of the Royal Observatory of Belgium and collaborators from Austria, Germany, Poland, France, the Czech Republic, Russia, Ukraine, and Spain take home \$300,000 for developing an improved global positioning reference framework that takes into account the variability of Earth's rotation.

## AFTER HOURS

**Hanging it up.** Stephen Hawking doesn't like to accumulate things. So the famed theoretical physicist is letting go of his hot-air-balloon basket.

Hawking got the basket as a gift from his wife, Elaine,

Image not available for online use.

who had it specially designed for his 60th birthday last year. Built for wheelchair access, it allowed Hawking to fulfill a lifelong dream in March 2002 when he took a 1-hour balloon flight over the English countryside.

"He's the sort who likes to share things," says his wife. "He's had his ride; now he'd like others to experience the freedom he enjoyed." Not for free, though. Place your bid at [www.hawking.org.uk](http://www.hawking.org.uk).

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