

>>FINDINGS

paper submitted to *Physical Review Letters*. How quickly this is happening is unclear—for example, it is unknown whether convection in Jupiter's interior is vigorous enough to dredge up dissolved core material and toss it into the hydrogen-helium envelope. If so, Jupiter's core has been shrinking since the planet's birth, notes Militzer. That core erosion could happen even more rapidly at more massive gas giants with even hotter cores, he adds—perhaps so rapidly that some of the largest gas giants might be completely coreless. <http://scim.ag/Jupcore>

**A Shirt That Cleans Itself**

Washing your clothes may someday be as easy as hanging them in the sun: Researchers have developed a type of self-cleaning cotton. Titanium dioxide coatings have been known to have self-cleaning properties; when ultraviolet light strikes the compound, it emits oppositely charged particles known as electron-hole pairs, which encourage so-called oxidation reactions that break down organic material such as dirt. But now, researchers have made this process work in visible light, by



coating cotton with nitrogen-doped titanium-dioxide (N-TiO<sub>2</sub>) and an extra layer of silver-iodide (AgI). In visible light, the N-TiO<sub>2</sub> and AgI seem to work together, forcing any generated electrons and holes to separate so that they stand less chance of recombining—ultimately making them more efficient at oxidation. In their report, due to be published later this month in *Applied Materials & Interfaces*, the researchers describe how a piece of treated cotton stained with orange dye self-cleaned when exposed to a 1000-watt lamp for 2 hours.

THE TOP 10 SCIENCE NOWs OF 2011

At the end of every year, we take a look back at some of our favorite and most popular stories. Here are the top 10, including our most read story of all time. Visit [http://scim.ag/top10\\_11](http://scim.ag/top10_11) to read the full stories and view multimedia, including our year in pictures.

**10 Scientists Play World's Oldest Commercial Record**

No one's found a way to time travel (as far as we know), but this study comes close. Using a 3D optical scanning technique, researchers have played what may be the first record intended for sale to the general public. Check out the audio clip to hear a haunting voice singing "Twinkle, Twinkle, Little Star"—a recording made 123 years ago.



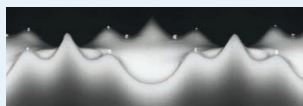
**9 How Humans Got Spineless Penises and Big Brains**



Some questions you probably didn't even think to ask. Like, why does the human penis lack spines? This study has the answer, and it gives clues to the evolution of our big brains as well.

**8 The Physics of Wine Swirling**

Here's one you can impress your friends with at a cocktail party: As you swirl your merlot, tell your companions that physicists have figured out the forces at play when we slosh our wine. (You can even show them a video.) And if you spill your drink, take comfort in the fact that the



scientists have figured out why that happens, too.

**7 Carnivorous Plant Feasts on Bat Dung**

The Raffles' pitcher plant has evolved into a curious object: a toilet for bats. The carnivorous plant is bad at catching insects, so it has developed a narrow pitcher that bats sleep in—and which they also use as a bathroom, leaving nutritious excrement behind.



**6 Hubble Confirms Nature of Mysterious Green Blob**

In 2007, a Dutch school teacher spotted something strange in the night sky: a glowing green smudge of light approximately 650 million light-years away. The object, which became known as Hanny's Voorwerp, is one of the most mysterious in the universe. Scientists say they may have finally figured out what it is.



**5 Diver Snaps First Photo of Fish Using Tools**

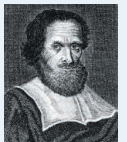
Humans and chimps use tools, sure. But fish? Yes, say researchers, who, after analyzing a video shot by a professional diver, have concluded that the blackspot tuskfish uses a rock as a tool to smash up clams. Not everyone agrees, including some of our readers. Check out the spirited discussion in the comments section.



**4 Sex-Crazed Astrologer Was a Stellar Records Keeper**

The headline alone is one of our favorites of the year. But if you dig deeper, you'll discover the fascinating story of a 17th century astrologer

who, though considered a quack by his fellow physicians, has provided modern-day researchers with the most extensive and systematic set of known medical records from his era.



**3 Convince Your Friends You're a Genius With Two Cans and Some Sand**

Feel free to try this one at home. Take two tin cans, one with the top removed and the other with both ends cut out to form a tube, and shove them into some sand, top first. Surprisingly, the can with the closed bottom sinks faster as you push it, exactly the opposite of what happens in water. Now physicists have figured out what's going on.



**2 Sex After a Field Trip Yields Scientific First**

Sometimes scientists bring their work home with them. After returning from a field trip to Senegal, a biologist appears to have transmitted the Zika virus to his wife by having sex with her. If true, the researcher inadvertently wrote virological history, providing the first documented case of sexual transmission of an insect-borne disease.



**1 And the number one story is ...**

Perhaps it was the Britney Spears reference. Or maybe we just highlighted a curious phenomenon that people couldn't quite put their finger on. Either way, this article really struck a nerve, becoming our most popular of all time. To find out what it is, visit [http://scim.ag/top10\\_11](http://scim.ag/top10_11).

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