Giving a hoot about restoration; open access to galaxies; ask a Nobel laureate; a collider inspires comic artists; Google commemorates the LHC first beam; eclipse chaser; letters.

Home sweet barn

Lifted out of a travel carrier, the owl screeched and bit its handler's leather glove.

The bird was returning to its historic home—and helping to save its species.

Barn owls are endangered in Illinois, pushed to the brink by pesticides, more tightly sealed barns, and the replacement of farms by shops and homes. Less than one-tenth of one percent of the state's natural prairie remains.

But the restoration of more than 1200 acres of prairie at Fermi National Accelerator Laboratory is giving Illinois its best shot at keeping and breeding the owls, says county ecologist Dan Thompson. Scientists have introduced two year-old males, both born in captivity, to an old red barn on the lab grounds.

Barn owls stand about a foot tall. Pepper-like black spots and brown freckles dust their tan bodies, and white down covers their flat, round faces. Their pink beaks form sharp Vs below intelligent black eyes.

The first owl struggled as it was taken out of its carrier. It flipped upside down and spread its foot-long wings, flashing its white underside. It screamed like a *Velociraptor* from the movie *Jurassic Park*. The second owl was no happier, clacking its beak in protest.

One at a time, Thompson carried the owls up a 20-foot ladder to a box mounted high on the inside of the barn wall. There they would stay, peering through a screen at the world outside, until accustomed to the sights and smells of the lab grounds.

"We chose Fermilab for the high-quality habitat and the abundance of open grassland," Thompson says. "It is one of the longest contiguous pieces of grassland in the state. We also chose it for Fermilab's commitment to ecological health." With much of its research machinery in underground tunnels, the lab is a haven for dozens of wildlife species and is one of six National Environmental Research Parks located on Department of Energy sites.

Thompson plans to release more barn owls onto Fermilab property each year; the red barn is big enough to house a number of the birds. Next time, he says, they'll wear satellite transmitters so researchers can track their movements.

Kathryn Grim

Photos: Reidar Hahn, Fermilab

Image: Sloan Digital Sky Survey

Sloan Survey shares starry snapshots

In the old days, astronomers who wanted to use a powerful telescope had to buy plane tickets and cross their fingers the weather would cooperate.

"You would apply for time," says Brian Yanny, a scientist in Fermilab's experimental astrophysics group, "and if you were lucky you would get three to six nights a year."

Astronomers still use telescopes the old-fashioned way. But today, all you need to access a decade's worth of images and information about the stars is an Internet connection. Fermilab, which handles data for the Sloan Digital Sky Survey, makes that data available through the Web to scientists and armchair astronomers alike.

Sloan surveyed more than a quarter of the sky using an imaging camera—basically a giant digital camera attached to the back of a 2.5-meter telescope in New Mexico. It also measured the distances to the brightest one million galaxies in its field of view.

On the survey's Web site, www.sdss.org, you can comb through images looking for undiscovered comets or new classes of stars, or simply find a cool background image for your computer screen. In a related project called Galaxy Zoo, created by researchers at three universities, volunteers have been classifying millions of galaxies seen in Sloan images.

Making all this data public "just makes a lot of scientific sense," says Michael Strauss, deputy project scientist for Sloan. "There was far more science than we could do ourselves anyway."

The Sloan Web site has gotten more than 467 million hits since 2001. In 2008, it has averaged 10 million hits per month, 1.6 million of which are requests for data. More than half of the more than 2000 published papers based on data from the survey were written by researchers not directly involved in it.

Two other projects, the Two Micron All Sky Survey and the UK Infrared Deep Sky Survey, are following the Sloan model by making all their data publicly available.

"One of the things we're proud of at SDSS is that we have been the inspiration for the next generation of projects," Strauss says. "One of the lessons is: You don't have to keep your cards close to your chest."

Kathryn Grim

Street-corner physics

Leon Lederman, a 1988 Nobel laureate and Fermilab physicist, plopped a folding table and two chairs on a busy New York City street corner and sat under colorful hand-scrawled signs offering to answer physics questions. Even in a city of people too busy for impromptu sidewalk conversations, the sight was too tempting to resist.

"They sat down and asked about the big bang and black holes," Lederman says. "They were good questions. People were very curious."

Soon about 20 people formed a line down the block. They asked Lederman about the strong force, time and space, fusion, and even time travel. Some asked follow-up questions to get a clearer understanding, while others just seemed thrilled at the chance to meet a Nobel Prize winner.

Lederman said he was impressed that most people asked about physics; there were no off-the-wall questions. The native New Yorker said he'd gladly do it again.

The idea stemmed from discussions in late May at the World Science Festival in New York about bringing science to the streets. Lederman and a film crew set up shop under a few hand-drawn "Ask a Nobel Prize-winning physicist" signs in front of a hotel on 34th Street, within view of the Empire State building.

Lederman shared the 1988 Nobel Prize in Physics for his contributions to neutrino physics. He is well-known for his book *The God Particle* and for his outreach and education efforts. His street-corner debut was filmed by ScienCentral in conjunction with the World Science Festival, and can be viewed in two parts on YouTube.

Rhianna Wisniewski

Image: YouTube

Image courtesy of Keisuke Mori, ILC Fan Club 2008

Boosting a collider one comic at a time

Comiket—short for Comic Market—is the world's largest comic convention. Held in Tokyo, it draws more than half a million people from all over the world to buy and sell *doujinshi*—self-published manga and graphic novels. Some of these artists and writers have become so famous that people wait in line for three hours to buy their work.

Getting a ticket to exhibit at Comiket isn't easy, either; sometimes there are six applicants for every slot.

"I was pretty surprised to get a table," says Masao Fujino, a student at the University of Tokyo Graduate School for Law and Politics. He and other fans of the proposed International Linear Collider came to sell their own *doujinshi* promoting the project.

One, called *The Scientist's Viewpoint*, featured physicists' reviews of science fiction novels. "The scientists have made serious explanations, not just criticizing them as impossible or ridiculous things," Fujino says. "I think this makes our publication very attractive." The ILC supporters expected to sell about 20 copies but wound up selling 150: "I am surprised to see a lot of people interested in accelerator and fundamental physics," Fujino said.

A second publication was titled *Kasokuki de Go!* or *Let's go with the accelerator!* It used comics, essays, and other formats to analyze the personalities of ILC scientists, based on their responses to a questionnaire. "We can feel the sense of closeness to the scientists this way," Shino Kojima, one of the founders of the ILC fan club, says.

In both cases, the fans were happy just to recover the costs of printing their books. "The deadline for the next Comiket is this coming Wednesday, and we are going to prepare the application," Fujino says. "We will be here on December 30th if we can get the tickets again."
Rika Takahashi

A special recognition

On Sept. 10, scientists at the European laboratory CERN sent the first beam of protons around the Large Hadron Collider. Forty-six minutes later, LHC controllers posted in the accelerator's electronic logbook a special version of the Google logo (see bottom image), which had appeared on the company's Web site that day. It's one of a series of logos Google has designed for its search page to celebrate holidays, historic events, and other occasions. For more on the LHC first beam, see the logbook on the inside back cover of this issue.
Glennda Chui

Life's one eclipse after another

On the wall outside Cherrill Spencer's office, a scientific poster describes a prototype for a new type of accelerator magnet; a card thanks her for donating her long hair to make a wig for an ailing girl; and a scribbled note points to a spot on a map southeast of Novosibirsk, Russia. It reads, "This is where Cherrill will be on 1st August, 2008 at ~17h Siberian time."

Above it is a photo she shot, from that out-of-the-way spot, of a total solar eclipse.

It's one of dozens Spencer has taken since 1983, when her first eclipse, on the island of Java in Indonesia, gave her a new focus for planning vacations. Eclipse-chasing has taken her to Hawaii, Zambia, Australia, and Libya. She saw the sun wink out from a ship on the Caribbean and waited in an English drizzle for the clouds to part—which they finally did, for 10 seconds.

Image courtesy of the LHC Remote Operations Center at Fermilab

Photos courtesy of Cherrill Spencer

"I like to travel," she says, "and it was an excuse to go to all these places. I choose my total eclipses based on where they are, and whether I'd like to visit that place, and whether I've been there before."

As the magnet engineer for SLAC National Accelerator Laboratory, Spencer designs magnets and follows them through construction and measurement. She also puts in many hours as a volunteer for programs that encourage girls and women to take up scientific careers.

It's no surprise, then, to hear that she started taking her daughter to eclipses at the age of three. Sierra is now 14, Spencer says, and "probably holds some sort of record for how young she is and how many total eclipses she's seen."

The experience is incredible, she says, and not just for the eclipse itself.

In Zambia, her group camped along the Zambezi River and drove three hours at about 10 mph—"along the worst road in the world," she adds—to a national park. When the sun dimmed, casting an eerie twilight over the land, "The animals thought it was time to go to bed. The baboons started chattering. They sleep in trees, and they started arguing about who gets to sleep where."

Spencer is already planning her next eclipse in July 2009, which she'll watch with 1600 other people from a cruise ship near Iwo Jima.

With six minutes and 39 seconds of totality, she says, "This is going to be the longest one in our remaining lifetimes."

Glennda Chui

letters

More physics license plates

I did not respond in time for the license plate issue, but I do have a good one from an old photo taken while on leave at Caltech in the '70s. The car (right) belonged to Murray Gell-Mann, Nobel Laureate in Physics. I don't know if he still has it.

Gene Sprouse, American Physical Society

I liked the plates shown in the current issue, but I think my Virginia plate is more original—FYZYKZ!

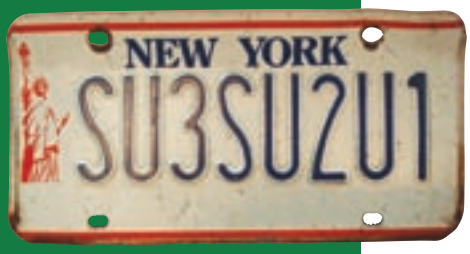
Greg Hood, Tidewater Community College, Virginia Beach,VA

I liked your cover showing physics-related license plates. The Maryland plates that I have had for several decades say QUARK. They have initiated many interesting conversations about science, literature, and cheese.

Bruce Barnett, Johns Hopkins University

I got this plate when I moved to Brookhaven National Laboratory to work in the theory division. I chose a plate with the gauge group SU(3) x SU(2) x U(1), the mathematical structure that underlies the theory of particle physics. A passerby once asked me if I was a lawyer; he had interpreted the plate as "Sue three, sue two, you won."

Scott Willenbrock, University of Illinois, Urbana-Champaign



To view more physics-related license plates and to submit your own photos and stories, please go to www.symmetrymagazine.org/licenseplates/