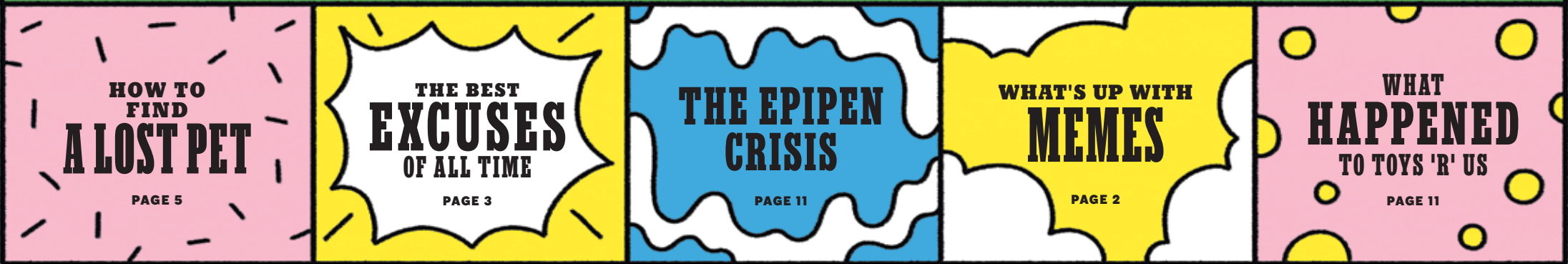




EDITORS' NOTE: THIS SECTION SHOULD NOT BE READ BY GROWN-UPS





Science



RECORD-BREAKING

WILDFIRES

BY CHELSEA LEU

The Delta Fire, one of several blazing through California at the beginning of this month.

RUBY MCKELLAR, 13, was taking a photography class at a summer camp in Idyllwild, Calif., this summer when a raging wildfire broke out nearby and forced her and her friends to evacuate. “The sky was red and orange, and the sun was covered by all this black smoke,” she says. “I started to see the flames, and I wanted to break down, but I didn’t.”

Record-setting fires have scorched the Western United States this year: Thousands of people in California, Oregon, Washington, Idaho, Montana and elsewhere had to evacuate their homes and watch as swirling flames destroyed countless buildings and killed 17 firefighters. Scientists say fires like these are only going to get larger and more severe in the future. “The trends are superscary,” says Eva Strand, a fire scientist at the University of Idaho. Wildfires have burned 66 million acres of the country (that’s the size of Colorado!) from 2008 through 2017 — double the area that fires burned in the 1990s.

Why are wildfires on the rise? Climate change is partly responsible. Warmer temperatures suck moisture out of plants more quickly, and all those crackly leaves and

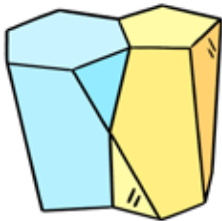
branches are fuel for a gigantic blaze. Climate change has also changed rain patterns. Another reason is that forest managers actually didn’t let enough fires burn in the last century. “We have too many trees in a lot of our forests,” says Park Williams, a climatologist at Columbia University. It’s a little confusing, but if trees don’t burn in fire-prone areas, they just become fuel for more disastrous fires later. Some ecosystems even need fire to thrive.

And then there’s us. Wildfires need a spark to ignite, and many are started by humans, caused by things like abandoned campfires and downed power lines. More people than ever now live close to flammable forests, increasing the chances that a person may accidentally start one. It also means more homes and lives are at risk during a blaze.

This summer wasn’t Ruby’s first brush with a serious fire: Five years ago, her house in Mountain Center, Calif., burned down. The Mckellar family rebuilt it out of fire-resistant cement and metal, but Ruby says, “Every summer you evacuate, you come back and you hope your house is fine.” ♦

INTRODUCING THE SCUTOID

BY NICHOLAS ST. FLEUR



JUST WHEN YOU thought you had learned all the shapes, scientists have found a brand-new one — and it has been hiding in our bodies this whole time. Meet the scutoid. The paired variation shown above has a pentagon (five sides) at one end and a hexagon (six sides) at the other. It also has a triangle cut into it. So weird!

Researchers uncovered the scutoid while studying epithelial cells, a type of cell in the body that covers you both inside and out, from your skin and lungs to your intestines and blood vessels. These cells “are like the Lego pieces of which tissues and organs are made,” says Javier Buceta, a biophysicist from Lehigh University in Pennsylvania. Buceta and his colleagues discovered the new shape while using a computer to predict what these cells would look like when tissue bends. The computer spit out the scutoid, and at first the scientists were confused, because it was something they had never seen before. Luisma Escudero, a biologist from the University of Seville in Spain, went home and sculpted the scutoid out of Play-Doh with his 2-year-old daughter, Margarita. A model made it much easier to understand. Later the team found scutoids inside a fruit fly and then a fish. Because every animal’s body is made of the same type of epithelial cells, you, too, have scutoids.

The scientists named it after the triangular midsection of a beetle, called the scutellum, which it resembles. Buceta says he was both excited and surprised to find a new shape that no one had named before. “There are infinite shapes, and there will always be infinite shapes,” he says. “It’s just the imagination that limits the kinds of shapes you can build.” ♦

HOW I BECAME A

METEOROLOGIST



BY KARI FLEGEL

WHEN I WAS a kid, math and science were my favorite subjects. In 12th grade, I decided that if I liked my chemistry class, I’d become a pharmacist. And if I liked physics, I’d go into meteorology. It turned out that I liked physics, so I applied to a program at the University of North Dakota.

In meteorology, you’re learning about how the atmosphere works and how circles of air move in the sky, how storms get together and how they move. You take classes that teach you how to use radar to predict weather patterns. It was tough. A lot of the students who started with me quit the program. There’s a lot of math — calculus, probability, differential equations. That scares a lot of people. But I stuck with it and made a lot of good friends along the way.

My first real job was as a forecaster for the National Weather Service. It doesn’t matter if it’s Easter, your birthday or Christmas, there’s always someone forecasting river levels across the country, informing pilots about storms and turbulence and creating the seven-day forecast that you might see on a phone or on the news.

I did that for a long time, and then I became what’s called an incident meteorologist. I use computer modeling, radar imagery and satellite imagery to put together the information that emergency responders need to keep people safe. Firefighters need to know about things like temperature, relative humidity and wind speed to make a safe plan to fight fires. They need to know how fast and in what direction smoke might move and how high in the sky it might go.

I’ve been sent to help with fires and other crises across a dozen states, including the Deepwater Horizon oil spill in the Gulf of Mexico in 2010. There are about 2,600 meteorologists with the National Weather Service, but only 76 incident meteorologists like me who help with fires and other emergencies. As told to Elise Craig

HOW TO FIND

A LOST PET

BY HEATHER MURPHY · ILLUSTRATION BY KATE PRIOR



LAST NOVEMBER, I arrived at my father-in-law’s house to find him distressed. Tammy, his cat, was missing. After breakfast every morning, Tammy would head out for a stroll, just to the edge of the housing complex. Within a few minutes, she would be back inside. But now it was 4 p.m., with no sign of Tammy. A walk through the neighborhood offered no clues. Was she lost? “I think it’s time for posters,” my father-in-law said. Wrong! If Tammy were a dog, he would have been correct. There are two straightforward steps to find a canine: Visit your local shelters and make posters. Cats, though, are trickier. Here’s how to find them.

1. SEARCH CLOSE BY

“Cats hide, dogs roam,” says Kim Freeman, a pet detective in Atlanta who has cracked hundreds of missing-pet cases. You and your parents should start with a thorough search of your property and the bordering bushes, storm drains and other spaces with openings the size of a fist or larger — preferably with a flashlight, which will light up a cat’s eyes. “If they can get their skull through there, the rest of their body is like liquid,” Freeman says. She finds lost indoor cats hidden within 1,000 feet of their home about 80 percent of time. So using advice from Freeman’s website, lostcatfinder.com, that’s where my father-and-law and I started.

2. BE A DETECTIVE

Freeman has special investigative tools: Sometimes she works with a tuxedo cat named Henry, who has been trained to sniff out hidden cats. She has also learned to listen for alarm calls from birds for hints of a nearby feline. You, too, can look out for telling details, like fur caught on a pipe. Or you can collect some information by having your parents ask neighbors, “Where did you last see a cat?” In the case of Tammy, one of my father-in-law’s neighbors said, “the parking garage downstairs.”

3. THINK LIKE A CAT

Calling out your cat’s name while walking around most likely won’t help. Even bold felines freeze in unfamiliar terrain: “Once a cat is hiding, it will stay hidden,” Freeman says. In our case, we heard a soft *mew* near a car in the parking garage. Upon opening the hood (with the owner’s permission), there she was! Hiding in a vehicle is common, Freeman says. That means accidental hitchhiking is, too. Hanging posters is the final step. Remember, it usually takes longer for people to notice a lost cat than a lost dog, so don’t give up if you are without leads for weeks — or even months. There’s still hope! ♦

OUR VANISHING NIGHT SKY

BY NICHOLAS ST. FLEUR



HAVE YOU EVER seen the Milky Way? It’s O.K. if you haven’t. One-third of people living on Earth cannot observe our galaxy’s true beauty from where they live. And in North America, it is hidden from 80 percent of people. “Everybody used to be able to see the night sky, the stars, the planets and the Milky Way,” says John Barentine of the International Dark-Sky Association. “Little by little over all these years, that has disappeared.” That’s because as the human population has grown and become more reliant on artificial lighting, like street lamps and building lights, our cities and towns have outshined the stars.

This environmental problem is called light pollution. You probably recognize it as that glowing orange haze that hovers on the horizon over buildings at night. But if you ever travel far from the bright lights and look up, you’ll witness what looks like a river of stars gushing across the inky black sky. Light pollution does more than just mask the stars, though. It also makes it harder for people to sleep and can disturb animals. Newly hatched sea turtles, for example, often become confused by beachfront lights and scurry toward piers or other human structures instead of the ocean. But as with any kind of waste, there are ways you can reduce light pollution. Barentine says to start at home by asking your parents whether you need certain outside lights on at night, and then turning them off if you don’t. Take a look at the map above to see the extent of light pollution where you live, and then turn the page to observe the night sky in its full glory. ♦