Members of the Sudanese women's soccer league play in Omdurman, Sudan.

Going to Goal

Women in Sudan defend their right to play soccer.
When I visited Union, I could see the unique community that is fostered here. This community draws people in and was a big reason that I chose Union. I was also welcomed so well by the music faculty when I came for my music audition. I knew that this would be a place where I would be challenged academically as well as spiritually.

LEAH CAMPBELL
music education major
Knoxville, Tennessee

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Villagers pluck water chestnuts from a pond in Kanpur, Uttar Pradesh state, India. The Indian water chestnut is also known as singhara and water caltrop. Workers earn about 250 Rupees ($3.50) per day after spending five to six hours pulling the starchy aquatic vegetable from the pond by hand. Indian water chestnuts are actually large white seeds covered in rough, thick skins. They grow mostly in stagnant (not flowing) water. (AP Photo/Rajesh Kumar Singh)
Panama: A Costlier Canal

The big shortcut that moves mariners quickly between the Atlantic and Pacific oceans is carrying a bigger cost. The Panama Canal began collecting a freshwater surcharge in February. The fee applies to all vessels over 125 feet in length. The charge consists of a fixed fee of $10,000 per passage, plus another variable amount determined by water levels at nearby Lake Gatun. Why the increase? Panama is in a rainfall shortage. 2019 was the fifth driest year in the last seven decades. Operating the canal’s locks requires a vast amount of fresh water—millions of gallons per passage. The same watershed that supplies canal operations also supplies Panama City’s people—who make up about half the country’s population. Canal administrator Ricaurte Vásquez says the measure aims to conserve water for both shipping and human consumption. And if by God’s grace rain falls, the surcharge will fall accordingly.

Antarctica: Adventurer Sets Ski Record

On Thursday, January 9, 2020, adventurer Anja Blacha pushed a flagpole through the ice crust at the South Pole. She had crossed the face of the continent solo, on skis, unassisted, in just 57 days, 18 hours, and 50 minutes. Her feat is a world record. The 29-year-old from Germany is the first person to travel this distance alone on skis without support. She pulled a lightweight sledge with all her essential supplies for the trip. Her trek took her 869 miles from the Antarctic coast at Berkner Island to the geographic Pole. She faced wind gusts up to 62 mph, temperatures down to -32° F and snowstorms causing complete whiteouts. Numerous outdoor athletes take guided tours across Antarctica in the Southern Hemisphere’s summer months, but only six set out this season to go it solo and unassisted. Blacha plans to ski solo to the North Pole this spring.
The Mekong River has recently acquired a beguiling aquamarine color. But pretty as it may seem, experts say the lovely hue indicates a problem. The Mekong usually has a yellowish-brown shade due to the sediment it carries downstream. Lately, it’s been running clear. The experts say sparse rainfall combined with a large hydroelectric dam upstream in Laos have reduced sediment levels. Less sediment means less nutrition for plants and fish. It also means faster-moving water, a condition called “hungry water.” Rather than depositing sand and silt as it flows along, “hungry water” gobbles up loose soil along riverbanks, causing erosion. About 70 million people depend on the Mekong for water, food, commerce, irrigation, and transportation. They hope to see it beautifully murky again soon.

The International Olympic Committee moved the Tokyo Olympic marathons and race-walks out of the Japanese capital to avoid stifling heat and humidity. Now swimmers and their coaches are asking for something similar. The distance-swimming venue is set to be Tokyo Bay. But water temperatures there were near danger levels in test events last summer. When the water warms up, E. coli bacteria thrive. Athletes already complain of a foul stench from the small inlet. The swimming world’s governing body says the max water temperature for competition is 87.7° F. The tests showed the bay temp climbing to 86.9°—barely under the limit. Tokyo’s Governor Yuriko Koike opposes moving more events away from the city. Local organizers have few other options. They could move all swim races to early morning to try to beat the heat, but beyond that, there is no “Plan B” for Olympic swim competitions.

For more than a century, Jews serving in Germany’s military had no access to religious counseling specific to their faith. The German army has had only Catholic and Lutheran chaplains. But the current government, under the leadership of Chancellor Angela Merkel, announced earlier this year that Jewish rabbis will be restored to the military. In response to the decision, Defense Minister Annegret Kramp-Karrenbauer tweeted, “Today, we set an important example for our Jewish soldiers.” She said the move was a clear commitment to Jewish life in Germany. Rabbis were relatively common in the military until Adolf Hitler’s Nazis came to power in 1933. That regime excluded Jews from all spheres of public life.

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Athletes dive into Tokyo Bay during a triathlon event.
Kids’ YouTube Fame May Fade

The title of “Most Popular Babysitter in the World” once belonged to television. Now YouTube is Kid-Watching King. But today’s kids aren’t just viewing. They’re creating content and a few are attracting millions of followers—on a site not meant for kids at all.

Researchers at the Pew Institute are studying the kids-and-Youtube phenomenon. Their research shows that most parents (81%) allow children 11 or younger to watch YouTube. YouTube’s own rules state: “If you are under 13 years of age, then please do not use the service.” Yet millions of youngsters watch YouTube cartoons, science experiments, and other videos anyway.

Of the top three YouTubers in the world, two are kids. Five-year-old Anastasia Radzinskaya has the number three spot. “Nastya” was born in Russia with cerebral palsy. Her parents started her YouTube journey by posting videos of her progress with the disease.

Soon, what started as videos of playing with toys and pets became a global sensation. In just one year, the Like Nastya YouTube channel raked in $18 million. Nastya’s visit to a petting zoo with her dad got 767 million views. All those viewers have earned Nastya advertising contracts, merchandise deals, and other perks.

Eight-year-old Ryan Kaji is 2019’s biggest YouTube sensation. His Ryan’s World channel has 23 million subscribers. Target and Walmart carry clothing and toys branded for Ryan’s World. He has a TV show, a cereal, and more.

Ryan’s channel began when his parents took video of him, at age three, “unboxing” presents for the camera. Squeals, giggles, and comments like, “Oh, look! There’s more!” delighted viewers. Today, Ryan reviews toys. He is the world’s most-watched toy reviewer. Ryan’s stamp of approval can mean increased sales for a company.

Think you could be the next Ryan or Nastya? You might want to re-think that. Kids’ YouTube success may be short-lived. The Federal Trade Commission (FTC) is investigating violations of the Children’s Online Privacy Protection Act.

Google is YouTube’s parent company. Every time someone views an ad on YouTube, Google collects data, including location and search history—without consent. That’s against the law when the viewer is under 13. All those ads aimed at kids on Nastya’s and Ryan’s channels may be illegal.

So Google is making changes. It’s banning ads that target kids. Search engines could stop placing kid channels in the top results. Google also plans to limit income from children’s channels.

U.S. Senator Edward Markey pushed the FTC to examine YouTube’s privacy policies for children. Of YouTube, he says, “I think the day of reckoning has arrived.”

Whoever walks in integrity walks securely, but he who makes his ways crooked will be found out.
— Proverbs 10:9
At first glance, the beds in the Tokyo Olympic Village appear to sit atop white shoe boxes. It looks that way because the frames are made of cardboard. Sturdy cardboard—but still, cardboard. Could cardboard beds become the new gold (medal) standard?

The Tokyo Organizing Committee of the Olympic and Paralympic Games wants to prevent waste from the 2020 Olympics. The goal is to reuse or recycle 99% of the items purchased in preparing for the games. Even the winners’ medals will be made using metal from discarded electronics like cell phones or televisions.

“The organizing committee was thinking about recyclable items, and the bed was one of the ideas,” explains Takashi Kitajima, general manager of the Athletes Village.

Local Japanese Olympic sponsor Airweave Inc. is custom-making recyclable frames and mattresses for the housing units. After the Olympics and Paralympics (for athletes with disabilities), the single-bed frames will become paper products. The mattresses—which thankfully aren’t made of cardboard!—will also be recycled. They are made of many layers of polyethylene fiber mesh, which can be melted and formed into new products after use.

For any athlete, sleep is an important factor in performing well. Not only are the cardboard frames recyclable, but they are also lightweight and customizable. That will allow athletes to rework the room layout to suit their needs—or extend the frames for tall competitors.

Olympics organizers showed off the zero-waste beds at their headquarters in January. Kitajima addressed questions about durability. “Those beds can stand up to 200 kilograms,” he explained through an interpreter. “They are stronger than wooden beds.”

Since that weight limit equals about 440 pounds, Kitajima is probably correct. No Olympic athlete in modern record-keeping has weighed that much. (The heaviest 2016 participants were a weightlifter and a judo competitor—each weighing about 375 pounds. They were heavy but could probably still have caught some shut-eye on the cardboard beds.)

The entire Athletes Village complex should be completed in June. The Olympics open on July 24 followed by the Paralympics on August 25. The complex will contain 26,000 beds for both events combined. That’s a lot of cardboard!

Organizers say this is the first time that the beds and bedding in the Athletes Village have been made entirely of recyclable materials. “Of course,” Kitajima admits, “wood and cardboard would each break if you jumped on them.” So much for those post-victory pillow fights.
Lions and tigers and . . . coyotes, oh my! Other predators may be better known, but for destroying livestock, coyotes win. So the U.S. government has endorsed bursting poison capsules to kill these wily hunters.

Opponents are concerned. They say the devices harm other animals—and potentially people too.

Coyotes once roamed mostly the prairies and deserts of the West. Today, they inhabit forest and mountain areas. They show up at farms, in yards in rural areas—even in heavily populated cities throughout most of North America.

God made coyotes intelligent. They see and smell well; they run fast, swim strong, and bound easily over fences. This makes them dangerous to other animals. Plus, coyotes will eat almost any living thing, including calves, chickens, lambs, and pets.

For centuries, farmers and ranchers have tried to protect farm animals from predators like the coyote. In the 1960s, wildlife management officials began using a device called the M44 against coyotes.

An M44 is a metal stake and a holder with a capsule inside. The capsule contains a small amount of sodium cyanide, a toxic chemical. Users drive the stake into the ground and smear bait onto the holder’s cover. Coyotes smell the bait. They chew and pull on the device. This bite-tug action bursts the capsule, releasing poison into the animal’s mouth.

There are strict rules for using M44s. No one may place an M44 within 600 feet of a home or 300 feet of a public road or path. Users must also post warning signs near the poison bombs.

The Agriculture Department’s wildlife-trapping program trains people to use these Environmental Protection Agency-approved devices. Last year, federal wildlife trappers and hunters killed 6,579 animals with M44s. Sadly, they also killed more than 200 other animals unintentionally.

Several conservation groups tried to ban M44s. Some oppose any device that kills animals for any reason. Others point to the cases where people or pets were accidentally hurt or killed.

In 2017, an M44 injured a 14-year-old boy walking near his home and killed his dog. Other instances include accidental poisonings of people simply rock hunting or dog walking.

“You’re out hiking with your dogs and your children, and you come across these,” says Collette Adkins of the Center for Biological Diversity. “You have to be lucky enough to see one of [the] signs.”

Supporters of the M44 say the device requires both chewing and tug-ging—so they say accidents should be few. Mostly, livestock and agricultural groups believe the device is necessary. In 2015, coyotes killed about 17,000 cattle. Plus, coyotes carry several diseases, including rabies.

According to animal specialist Jan Loven, coyotes are “the most adaptable predator ever.” Most experts agree that saving livestock requires serious measures.
Officials in Louisiana say California’s ban on alligators—at least products made from the big-jawed beasts—is harming business. They insist anti-gator laws will hurt an important state industry. They also claim the laws will result in damage to the state’s wetlands.

American alligators can grow up to 15 feet long. Some weigh nearly 1,000 pounds. These behemoths dwell in swamps and marshy areas from North Carolina to Texas. Ferocious predators, they can move and lunge quickly, often killing and eating smaller prey with a single bite.

God made gators with beady eyes, broad jaws, and really big, sharp teeth! That makes them seem scary. But God also gave alligators an important role. The scaly brutes actually benefit southern wetlands. They dig holes in swampy ground. These “alligator holes” provide homes for creatures such as fish, snakes, and turtles. The biodiversity keeps swampy habitats in balance.

Since the early 1800s, people have made fancy boots, shoes, and saddles from durable alligator skins. They also used alligator oil to grease early engines. Because of unchecked hunting, the gator population dropped. Some people worried about what would happen to the swamps and marshes without alligators.

In the 1960s, efforts to save alligators began. Hunting limits went into place, and alligator numbers increased. Today, the population is large enough for reasonable harvesting. Folks in the Bayou State now harvest about 300,000 gators per year. This keeps the population under control while providing income for residents. Gator skins are sold for clothing and furnishings, and restaurants serve gator as a lean, white meat option alongside chicken and fish.

Some conservationists, especially in California, object to the controlled hunting. According to The Times-Picayune/New Orleans Advocate, California banned alligator skins and meats in the 1970s. But the state kept granting exceptions, and sales continued. This year, however, California says it will no longer allow the sale of any alligator products in the state.

Louisiana is filing a lawsuit over the ban. The suit claims that Louisiana’s gator sales have revived the alligator population—not harmed it. Furthermore, they say alligator businesses pay private landowners to help protect the state’s wetlands.

The suit says loss of income from California could force landowners “to greatly reduce or cease their erosion control efforts.”

California’s huge economy often means that its product standards impact other states. Louisiana claims the ban harms its business. Already, the price of alligator hides is dropping. That’s forcing gator farmers to stop spending. If other states follow California’s lead, gators and wetlands could really suffer.
Would you like to buy a vowel? For some folks, the answer is “Yes.” But owning a letter may not be a-o-kay with the U.S. Patent and Trademark Office. To settle the matter, two organizations are in a Scrabble-y squabble over use of a capital O.

At first, it may seem silly to fuss about letters and appearances. But remember that little things are often important to God. Proverbs 22:1 and Matthew 5:18 show that reputations and even letters sometimes matter.

Overtime Sports Inc. is an online network. Its programming appears on social media channels. Coverage features mostly high school basketball and football athletes.

This summer, Ohio State University asked the sports network to stop using the Overtime logo. It is a white capital O with rounded corners. The university says Overtime’s O is too close to its own trademarked red “block O.”

Ohio State University has used the block O since at least 1898, according to attorney Samantha Quimby. “Ohio State recognizes there are many legitimate, non-confusing uses of the letter ‘O,’” says Quimby. But “there can be no doubt that when the vast majority of people see a Block ‘O’ they associate it with Ohio State.”

University spokesman Chris Davey says, “Like . . . many other universities, Ohio State works to protect the university’s brand and trademarks because these assets hold significant value.” Davey isn’t kidding. Last year alone, Ohio State made $15.5 million on T-shirts, mugs, and other branded products.

Overtime Sports officials didn’t back down. Instead, they filed a federal lawsuit. They want OSU to leave them alone about the Overtime logo.

Intellectual property attorney Ross Kimbarovsky says arguments like these usually come down to whether average people will mistake one company for the other. Kimbarovsky spoke to National Public Radio about another trademark confusion: the two very similar curly Ws of the Washington Nationals and Walgreens drugstore chain. “The Nationals play baseball. Walgreens does not. They’re totally different markets,” he says.

Overtime officials see no danger of confusing their network with an institute of higher learning. Further, they point out that their logo has rounded edges and a rectangle in the center. Ohio State’s logo is squared off. They are even different colors.

Plus, says Overtime attorney Laura Popp-Rosenberg, lots of companies use the letter O in their logos. She insists consumers aren’t confused.

Letters aren’t the only language fragment Ohio State wants to own. Last fall, the school tried to trademark the word The as in, “The Ohio State University.” Really.

The patent office ruled against the school.

Ohio State cheerleaders yell to fans during an NCAA football game.
Technology unleashed baseball’s Analytics Era, which was a blessing for statistics-hungry fans. But now, some say tech is holding the sport prisoner. At least, it’s revealing human nature in action.

In 2017, A.J. Hinch, Alex Cora, and Carlos Beltrán were participants in a triple play of hubris. Hinch and Cora were coaches with the Houston Astros and Beltrán was a player when they developed a system to steal opponents’ signs. It turns out, what they did isn’t fair play in baseball. It’s cheating.

Video replay can be a valuable tool in sports. Using it honestly is the catch. Should a hitter get to view his last at bat in between innings? He might detect a problem with his stance or swing. Any good coach would encourage that, right?

But what if, while reviewing the batter’s performance, that coach gets a glimpse of the other team’s catcher signalling which pitch he wants from the mound? He rewinds and takes notes. That’s what the Astros did, and someone cried foul.

It’s legal in baseball to steal signs—as long as it’s done with the bare eye. But using tech tools for surveillance is completely out of bounds. As the Astros picked up on those signs, they developed a means of communicating with the batter at the plate. Banging trash can lids by the dugout might mean a fastball was coming. Spitting in the clay along the first-base line could warn of an upcoming slider.

With the system exposed, Astros team managers came under fire last fall. Hinch and the General Manager, Jeff Luhnow, were quickly relieved of their positions. Beltrán, retired from playing, had a pending coaching position with the New York Mets. He lost that job.

Cora had moved to management with the Boston Red Sox. New charges piled on the heat. Reports say he used video replay to communicate illegally with Sox baserunners in 2018. He too was relieved of his duties. It seems that all who hoped to be first by any means have found themselves last. (Matthew 20:16)

Suspicions that already existed now affect everyone in the game. Video cameras keep an eye out in the dugout. Bench and bullpen telephones are monitored for improper communication. Television feeds inside team clubhouses operate on a minimum eight-second delay. That prevents prying eyes from decoding signals in real time.

Former Major League Baseball Commissioner Fay Vincent supports the stricter regulations. He called the cheating “a serious problem for baseball” that “had to be stepped on very firmly” to crush it. Letting it play out would ruin the game.
Kids ride scooters on an elevated loop at Camp toy store.

Toys "R" Us is back in business after filing bankruptcy in 2017. This time, the former toy giant is peddling playtime over playthings.

In New Jersey, eight-year-old Jaelyn Farrell climbs a tree fort, plays in fake sand, and pushes a toy car. She isn't at a playground. She's at the mall—inside a new Toys “R” Us.

The store “has cool stuff,” says Jaelyn. “Little kids, or big kids like my age, can play in here.”

The Bible’s advice in 1 Thessalonians 5:21 probably isn’t referring to toys or playtime. Still, it makes for a good life principle: “Test everything; hold fast what is good.” And it’s the base idea for a new generation of toy stores competing for the multi-million-dollar U.S. toy market.

This past holiday season, the Toys “R” Us chain started over. The revamped brand wants to get kids playing—in hopes that parents will start buying again.

Today, Toys “R” Us has only two stores, one in New Jersey and another in Houston. It plans eight more in 2020.

The old Toys “R” Us had some fun events to attract kids, but toy stock was king. Boxes of dolls, trucks, blocks were stacked floor-to-ceiling. New stores are much smaller than the old ones. Employees unwrap toys for children to examine, and they emphasize hands-on experiences. For example, in the New Jersey store, kids shoot Nerf blasters. They sit in a circle for story time.

Toys “R” Us isn’t alone in highlighting playtime. Another toy brand, FAO Schwarz, has brought back its famous floor piano.

Kids skip and jump on giant keys to play tunes. It also added a toy grocery store. There, kids shop for artificial produce using small carts. There’s even a Barbie doll fashion parlor. Dolls get styled for $75 per session.

A new toy chain called Camp boasts a scooter racetrack and a room devoted to crafts and music.

Michael Goldstein, former CEO of Toys “R” Us, serves on the Camp board of directors. He knows toy buying has changed. He says, “We want people to come to our stores and have a [rewarding] experience.”

Elizabeth Sorio’s three-year-old twins played with robots while she shopped at the New Jersey Toys “R” Us. She enjoyed how the store let her kids try the toys.

Richard Barry heads Tru Kids Brands, the Toys “R” Us parent company. He sees experiences like the Sorianos’ as key. “We sell toys,” he says, “but what the kids really want is play.”

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In the world of cheese, some say this salty, rubbery goat- and sheep’s milk product is the cream of the crop. The heat-resistant cheese is officially called “halloumi.” But dairy farmers on the European island nation of Cyprus refer to it as “white gold.” For the nation, halloumi is the leading export. For many farmers, it’s their bread and butter.

That’s why Cypriot authorities want the European Union to recognize halloumi as a traditional product exclusive to Cyprus. The Mediterranean island country has tried for years to win the EU’s top quality mark: a brand known as a “Protected Designation of Origin,” or PDO.

With a PDO, only halloumi made in Cyprus could be marketed abroad under that name. That means that makers of inferior cheese in other countries couldn’t claim a slice of Cyprus’ $222 million market.

Now’s the time to milk that market too. Goat and sheep’s milk cheeses have the attention of health-conscious consumers. Cypriot producers project halloumi demand from overseas to stretch to new highs in the near future. Not only are cheese-lovers buying less cheese made purely from cows’ milk, some are choosing the dense halloumi as a meat alternative. A slab of halloumi can even hold up to grilling without turning into a mushy, greasy mess.

But Cyprus’ ethnically divided politics threaten to complicate the bid to protect the halloumi name. The country split in 1974 when the northern third aligned itself with Turkey. The southern region supported union with Greece. Only the Greek Cypriot portion operates under EU rules and regulations. Nevertheless, the self-declared Turkish Cypriot state still claims a right to making the desirable cheese—and it wants to export it too.

Stymied by the split nation’s rivalry, EU’s executive commission let the PDO application for halloumi age and grow moldy, asserts a European Parliament member from Cyprus. Halloumi was on track for the exclusive designation in 2015. At that time, Greek and Turkish Cypriot leaders hoped to reunify the island. But the deal soured, and peace talks crumbled.

Today, the southern Cypriot government claims an informal compromise allows both producers to export their halloumi to European markets—as long as those products ship through EU-recognized ports in the south. That claim grates against the Turkish Cypriots. They say they should be able to export from their own ports. Trading across the dividing line only allows the southern authorities to dip into the north’s profits, they claim.

Until tensions melt, it seems unlikely that either region will receive the coveted brand very soon.
“You just need fresh air!”
For years, this was common doctors’ advice. Sick folks flocked to mountain retreats to lounge outside, breathing in and out. In the 1880s, one such place became a medical haven—until antibiotics caused “taking the air” to fall from fashion.

Saranac Lake, New York, lies 250 miles north of New York City in the Adirondack Mountains. Dr. Edward Livingston Trudeau visited the quiet village in 1876. He believed rest and mountain air could help control his tuberculosis.

Tuberculosis, or “TB,” is a lung infection caused by a bacterium. There is currently no vaccine to prevent it. It spreads mostly in poor, crowded areas without water purification systems. Symptoms include cough, fever, fatigue, and shortness of breath.

Any lung disease is serious. No breath means no life! Thankfully, all breath is in God’s gracious hands. (Daniel 5:23)

At Saranac Lake, Trudeau’s health improved. He moved there permanently and opened Adirondack Cottage Sanitarium (a place for treating prolonged illnesses) in 1884.

News of Trudeau’s clinic spread. Trains—as many as a dozen a day—chugged to Saranac Lake. Patients who couldn’t get sanitarium housing stayed in family-run “cure cottages” that sprang up around town.

“It was a bustling place,” says Howard Riley. As a child, he delivered food to patients in the village. “Very, very upbeat. And that might sound funny to somebody else, because the whole place was built on a disease.”

Many TB patients were young. Sadly, some were bedridden. Others were “up patients,” who sometimes took walks for exercise. Patients reclined on porches, bundled in fur coats when the weather turned cold.

“You couldn’t go near them. You could walk up onto the cure porch. They all knew your names and you knew theirs because it was like a big family,” remembers Natalie Leduc, now 89.

At its height, an estimated 2,000 or more patients at a time stayed in Saranac Lake. Famous patients included author Robert Louis Stevenson and Baseball Hall of Fame pitcher Christy Mathewson. Adirondack Cottage discharged its last patient in 1954. But Saranac Lake residents still honor their village’s unusual past.

Hundreds of old cure cottages remain, their porches now enclosed. Last year, a local history group purchased Trudeau’s house and medical office. Developers bought the sanitarium, where Trudeau died in 1915 after battling TB for decades. They hope to restore buildings on the old grounds as stores, homes, or inns.

Ironically, Saranac Lake’s boom ended with the rise of antibiotics. Historian Amy Catania calls that “a terrible thing for our local economy.” But, she says, it was “a wonderful thing for humanity.”
All her life, Elham Balatone wanted to play soccer—like her brothers, like boys on her street. But where she grew up, women could be flogged for wearing pants, never mind shorts. Now with the fall of President Omar al-Bashir, Sudan is fielding a women’s soccer team.

Balatone knew the “reasons” she should give up soccer: Muslim Sudan considers the uniform inappropriate; the sport is for men. She played anyway, wearing pants or layering leggings beneath shorts.

“There’s nothing in this world that I love more than soccer. Please let me play,” she begged her family. For years, she and other women played largely in the shadows on makeshift pitches.

Sudan is struggling with changing after three decades of dictatorship. Sudan’s government promoted a strict interpretation of Islamic law—one that harmed women.

Authorities have taken steps to roll back al-Bashir’s terrible legacy. The country overturned a “public order” law. The law allowed police to arrest women for dancing, wearing certain clothing, interacting with men who weren’t family members, or trading on the streets. Human rights defenders call the repeal a step in the right direction. However, many laws that oppress women remain in place.

Last fall, the world watched Sudanese women players at Khartoum Stadium. All were celebrating Sudan’s new women’s soccer league. Elham Balatone played with her family’s blessing.

Some Muslim hardliners pushed back. Preacher AbdulHay Yousif and others call soccer part of the battle for Sudan’s character.

“What religion . . . would allow a Muslim woman to appear before men with her arms, legs, and some of her thighs exposed?” Yousif asked shortly after the league started. He warned that those responsible for women’s sports came “to destroy religion and morals.”

Critics oppose the hardline traditional views. They claim those who side with Yousif are using strict morality claims to target political enemies, control women, and hinder change. Willow Berridge is a historian of the modern Islamic world. She believes Yousif hopes to provoke “moral panic” about gender roles. In other words, he isn’t really concerned about men’s sin. He wants to generate fear that even small changes will let women rise up over men in life and leadership.

On the field, most players wear leggings under their shorts. Many don’t cover their hair. They insist there’s no conflict between their faith and their sport.

But some Sudanese Muslims aren’t convinced. One woman says modesty keeps her from allowing her daughters to play sports in public.

In the midst of all the wrangling, some women say they just want to play soccer.
An ancient church unearthed in Ethiopia suggests that Christianity spread to that country earlier in history than originally thought.

For Christians, that news shouldn’t be surprising. The New Testament recorded an early interaction between Philip, one of Jesus’ disciples, and an important Ethiopian traveler. Acts 8:26-39 tells how Philip met an official employed by the Queen of Ethiopia. The official was reading scripture. Philip explained to him how the prophecies described Jesus as the Messiah and Savior. The Ethiopian, it says, believed and was baptized.

An international group of archaeologists worked at a site called Beta Samati from 2011 to 2016. It lies near Aksum in northern Ethiopia. Aksum was the capital of the Aksumite Empire, which arose in the first century A.D. The scientists report discovering a 60-foot-by-40-foot rectangular building modeled after a Roman basilica (public building). Inscriptions and artifacts from the building prove it was a place of Christian worship. After dating some artifacts found inside the ruins, the researchers say the building was constructed in the early fourth century. That makes it the oldest known Christian church in the region.

The construction aligns with the time when Constantine was emperor of Rome. He legalized Christianity in A.D. 313. One of his successors, Theodosius, made Christianity Rome’s official religion some years later in A.D. 380. The discovery at Beta Samati convinced researchers that Christianity was already thriving in sub-Saharan Africa by that time.

Not much is known about the Aksumites. Archaeologists and historians agree that they were traders. Aksum stood on a major trade route connecting Africa to the busy cities and ports along the Mediterranean Sea. From there, merchants also traveled the Silk Road east to China and the rest of Asia. These trade routes tied together the ancient world, passing along not only fabrics, tools, and spices, but also ideas.

The discovery of a Christian church some 3,000 miles from Rome so soon after the events of the New Testament suggests that Christ was working through His followers. Before He ascended, He told them to tell the world about Him. “Go therefore and make disciples of all nations, baptizing them in the name of the Father and of the Son and of the Holy Spirit, teaching them to observe all that I have commanded you.” (Matthew 28:19-20)

The Aksumite Empire began to fade in the eighth and ninth centuries. But Christianity in Ethiopia did not. Even as Islam spread to the region, Christians kept the faith. Today, almost half of all Ethiopians still consider themselves Orthodox Christians.
Spacious, wood-lined chambers lie beneath the ground. People dug these hand-built cellars 10 to 12 feet deep into the permafrost under far-north villages in Alaska. Permafrost is the layer of underground soil that has been completely frozen for at least two years. The cellars act as natural refrigerators. Villagers rely on ice cellars to preserve and age whale and walrus meat to perfection. But lately, cellars face a thaw threat.

Food preservation has been a challenge for a very long time. To survive, people used God-given scientific principles to figure out how to store food safely. In tropical climates, people made food last by drying it. Rubbing salt into meat slows its decay in most zones. In cold climates, freezing food worked for safekeeping. Over time, people learned to can vegetables, freeze-dry fruit, and dehydrate meat to preserve it. Even cultures without electricity could make their harvest last for an entire year. Leviticus 26:10 says, “You shall eat old store long kept, and you shall clear out the old to make way for the new.”

But many old underground cellars are growing unreliable because conditions are changing. Pooling water and threatening mold could spoil aging meat. “I’m worried,” says Gordon Brower. The whaling captain lives in Utqiagvik, Alaska (pronounced oot—kay-agh—vik). His family has two ice cellars. One passed its centennial not too long ago. Recently, Brower discovered water sitting in both cellars. That told him that something is affecting their inside temperatures. Brower was able to save his meat—for now. He is storing it outside under a tarp. The weather is cold enough to keep it from spoiling while he makes changes to his cellars.

This isn’t the first time ice cellars have failed. According to a cellar study published in 2017, an early 1900s account described a cellar developing mold. Others collapsed or flooded. Different factors affect the reliability of ice cellars. The air temperature, land development, and modern life adaptations have impacts underground. For example, some Utqiagvik residents build sheds on top of their cellar entrances. This keeps them free from snow. But it also inadvertently warms the soil beneath the cellars—causing risk of spoilage inside.

The village of Kaktovik built a community ice cellar in 2013. It used traditional designs and contemporary technology. The cellar uses tube-like refrigeration devices that cool the ground by transferring heat outside. It doesn’t hold meat yet, but it will soon. Residents hope the new chamber will mimic the old process of aging meat. “There’s nothing that tastes better than ice cellar food,” says another whaling captain, George Kaleak, Sr.
DOWN CLOTHING DESIGNERS

Every morning, 11-year-old Jayden Niblett struggles to get dressed. Jayden has Down syndrome. His unique body type and movement limitations make finding clothes and dressing himself tough. Now researchers are working with Jayden and others like him to find solutions.

People with Down syndrome tend to be gentle, friendly, and happy. Because of a chromosome abnormality, many have shorter limbs and thicker bodies compared to peers. Some are sensitive to tags and textured fabrics. It’s often difficult for them to find everyday clothes, like jeans, that fit well and feel good. Jayden often wore women’s capri pants to get the right length. But as his body grows more muscular, capris aren’t working.

“It’s really frustrating for him,” says Janet Littleton, Jayden’s grandmother. “It absolutely affects his mood and how his whole day is going to go.”

Scientists at the University of Delaware’s Innovation, Health, and Design Lab want to help. Jayden is part of a research study there. Lab scientists hope to make the country’s first size guide for people with Down syndrome.

There’s really no such thing as “normal” or “regular” when it comes to human sizes and shapes. God made every person unique and in His image. Size charts are merely averages. They don’t represent every body. The lab’s mission is to provide the Down community with access to clothing that gives comfort, independence, and confidence. At the end of the study, Jayden and nearly 1,000 other participating children will each receive a free custom-made pair of jeans.

Martha Hall is a fashion designer turned biomechanical engineer. She runs the lab. “People think of fashion as a sort of fluffy science,” she says. But Hall’s work is far from fluff. She seeks to improve the quality of life for the physically challenged—through clothing.

Hall knows that some brands have tried to make sensory-sensitive clothing. But she says most aren’t using accurate size guides. “It’s great that there are designers interested in serving the population. But you have to talk to the community and understand what the actual issue is ... in order to design something that actually suits them.”

Hall’s lab uses a 3-D scanner. It scans participants’ bodies and creates 3-D avatars with exact measurements of each person’s size and shape. Human Solutions, the company that built the scanner, will use the collected data to create a size guide. Companies will be able to purchase the guide to design clothing based on accurate measurements for the Down population.

“He wants to be self-reliant,” Littleton says of Jayden. “He’s excited to look good in what he’s wearing.” Hall’s team is working to help him do just that.

A CHANCE TO SHINE

In Bucharest, youngsters hold a fashion show. Others dance with a ballet ensemble. The performances feature kids with Down syndrome. The fact that these events happen at all illustrates how much Romania has changed since the fall of communism.

In pre-1989 Romania, being born with either a mental or physical disability was almost like a prison sentence. People shunned such children.

Therefore, many parents surrendered disabled children to state care immediately after birth. That usually meant a lifetime inside institutions.

Some parents kept their children at home—but without formal schooling or social interactions.

Back then, most facilities for disabled persons were outside cities. Some housed more than 350 people. Children and adults often lodged together. Experts say these institutions did not meet even basic living standards.

But in 1992, the new government in Romania passed a law. It recognized rights for all citizens. The law opened opportunities in education and employment for Romanians with disabilities.

Georgeta Bucur leads the Down Plus Association. Sadly, she says that bias against children with Down syndrome still exists in Romania. Her group promotes including people with the genetic disorder in society.
“They teach us a new lesson every single day,” Bucur says. “Spending even a little time together with them will make anyone change their [sic] views.”

Down Plus organizes events like the ballet and fashion show in Bucharest. Bucur emphasizes the positive effect such events have on the children. But the impact is two-way. She also stresses what the children give to those around them.

“People with Down offer everyone sincere and unconditional love,” Bucur says. “Living alongside them makes one overcome the focus on materialism, enjoy the small things in life, and care for one another.”

If those traits sound familiar, it’s because the Bible has the same focus. When people value non-earthly things and love one another, they’re living like Jesus commands. (Colossians 3:2, John 13:34)

During the fashion show, dubbed “heART Couture,” some Down Plus children showed their drawings. Some wore fabric prints of the images attached to skirts or tunics. For other outfits, a professional designer created pictures using the children’s suggestions of what to draw. Most were portraits of wide-eyed characters and included notes written in English—messages focused on love and family.

The two-hour dance show featured ethnic and classical dances. Children and adults wore traditional Romanian folk costumes. They performed alongside members of Bucharest’s Arabesque Children’s Ballet Ensemble.

“The two shows were their chance to shine,” says Bucur, “to feel important and talented, to feel they bring a contribution to the world we live in.”
Ever wonder what it’s like to chase a whale . . . and poke it with a stick? A group of spunky researchers found out. Doing so helped them gain extraordinary knowledge about whales and their diets.

All whales are big, but the blue whale is the biggest animal God made—even larger than the most ginormous known dinosaur. (For more about blue whales, see “Whale Bones Resurface” at teen.wng.org/node/5803.) Blue whales grow to about 100 feet long and weigh more than 200,000 pounds! They have no teeth. Instead, God gave them sieve-like filters called baleen plates.

Sperm whales are the biggest whale species with teeth. Each tooth is four to eight inches long. These whales stretch about 60 feet long and weigh about 100,000 pounds.

Scientists wondered why some whale species get larger than others. Researchers from the American Cetacean (marine mammal) Society chased down 300 whales. They used long poles and suction cups to attach sensors to the creatures.

It wasn’t easy. “You try to go out and put a tiny tag on the back of the biggest animal in the world,” says Terrie Williams of the University of California, Santa Cruz. The sensors allowed researchers to record the animals’ eating habits like never before.

The study included 90 “filter-feeding” blue whales. A blue whale opens its jaws and engulfs an immense volume of water as it swims along. Then it closes its mouth and pushes the water out through its baleen. It makes a meal of the myriad tiny sea creatures left behind in its maw. The method requires little energy, but it “nets” a lot of food.

The study also included toothed sperm whales. These giants hunt and capture prey, one at a time. They seek squid, octopus, and other victims using a sonar-like detection system. The hunt often requires diving deep for a meal. Searching and attacking uses much more
energy than the filter method.

Researchers believe the different feeding methods account for size variations. Even if a toothed whale consumes larger prey, it simply burns too many calories to grow as large as a filter feeder.

So why don’t blue whales get even bigger? Scientists guess that could be because large volumes of nutritious food in the form of tiny plankton aren’t available year-round. To grow bigger, a blue whale would require more of the minute ocean prey—and, says Nicholas Pyenson of the Smithsonian’s National Museum of Natural History, “that is just not seen anywhere in the world.”

There’s another reason for the differences: God in His wisdom chose their size and designed their distinct feeding methods, just as He did for all creatures.

Where were you when I laid the foundation of the Earth? Tell me, if you have understanding. Who determined its measurements—surely you know! —Job 38:4-5
A U.S. district court judge ruled that people born in the territory of American Samoa should be U.S. citizens. This territory is a tiny group of islands in the South Pacific Ocean. It’s also currently the only place in the United States where people don’t become citizens at birth. Instead, they bear the label “U.S. nationals.” This means that they pay taxes. But they are not allowed to vote, run for office, or hold certain government jobs.

American Samoa is one of several U.S. island territories that have not become states. Others include Puerto Rico, Guam, and the U.S. Virgin Islands. The United States acquired these territories in a period of colonial expansion.

American Samoa is unique though. Unlike every other U.S. territory and state, people born there are not granted citizenship. Their passports say, “This bearer is a United States national and not a United States citizen.” As U.S. nationals, American Samoans don’t have the privileges of citizens. People born in other U.S. territories can move to states and vote in elections there. But U.S. nationals cannot.

American Samoans can become U.S. citizens—if they’re willing to pay. Application for citizenship costs $725, plus legal fees. The price tag discourages many from taking this route.

It’s not yet clear what effect the judge’s ruling will have on American Samoa. Some American Samoans oppose automatic U.S. citizenship. They believe it could go against local practices and traditions on the islands. Would becoming American citizens make them less Samoan?

The situation in this territory raises some questions about the U.S. when 13 colonies of the British Empire demanded independence. One of their main complaints was “taxation without representation.” The British government ruled—and taxed—the colonies without giving them a voice into leadership or policies. Now the United States rules—and taxes—territories that have no voice in their government.

Should the territories become states? Should the people of American Samoa receive citizenship as a birthright? These are questions earthly nations must ask.

Christians enjoy a different kind of citizenship. Ephesians 2:19 says of all believers, “you are no longer strangers and aliens, but you are fellow citizens with the saints and members of the household of God.” No one earns this citizenship—by work or by birth. It is the gift of God for those who are born again through the Holy Spirit into faith in Jesus. That citizenship remains when all earthly citizenship passes away.
What if you could detect electrical problems before outages or wildfires occur? B. Don Russell wasn’t thinking about fires when he developed a power line detection tool. But fire prevention may be his creation’s biggest plus. Today, companies around the world use his device to save lives.

When the lights flicker, many people think a high-tech system should be able to locate the problem. However, the U.S. power grid wasn’t built in the computer era. Electric companies often don’t know they have a problem... until there is a problem.

Enter B. Don Russell. He’s an electrical engineer at Texas A&M University. Fifteen years ago, he and his research team developed a diagnostic tool. “Distribution Fault Anticipation” (DFA) detects changes in electric currents caused by poor conditions or faulty equipment. The team’s focus was on keeping power systems safe and lights on for Texas residents.

For years, Russell and his partners didn’t realize their device had fire prevention possibilities. Russell merely hoped to prevent someone from being electrocuted by a downed wire. But after several devastating fires in 2011, Russell’s team realized DFA could detect differences in how power lines and transformers behave when a problem was occurring—or about to occur. A Texas A&M website compares this know-how to “an auto mechanic who can hear a problem in an old engine and know exactly what is causing it.”

So now, when lightning causes damage or a branch weakens a line, DFA lets utilities know. DFA technology can’t yet pinpoint exact problem locations. But it can help dispatch crews get closer to the source of damaged equipment. That saves time patrolling miles of power lines.

DFA isn’t cheap. The technology could cost a utility $22 million, not including installation, operation, and maintenance. But that’s only a fraction of what a wildfire sparked by a utility could cost, Russell says.

Pacific Gas and Electric and SoCal Edison in California are testing DFA. One faces $20 billion in losses from wildfires in 2017 and 2018. The other will pay $360 million for deadly blazes sparked by its equipment during the last two years.

“The assumption the utility has to make today is, ‘It’s healthy until we get a call that says somebody’s lights (are) out,’” Russell says. “By then the fire’s started or the outage has happened.” DFA may just change that for the better.
Does the calorie count in foods matter to you? Do you pay attention to a serving size, counting out your Teddy Grahams before enjoying? Most people don’t realize how the calories they consume actually translate to energy used. So some health experts are pushing for more literal food labeling. For instance, what if the label on your bag of chips said that it would take 16 minutes of constant running to burn off the 160 calories inside? Would you reach for an apple instead? (You can burn off a medium-sized apple by running just seven minutes, or climbing about 25 flights of stairs, by the way.)

In the United States, a recent regulation requires calorie counts on packages to be printed bigger. Red, yellow, and green labels signal the healthfulness of some foods in the United Kingdom. (Green means “healthy”; red means “unhealthy.”) But with obesity rates still high, researchers are considering more dramatic communication.

One attention-grabbing idea is labeling foods with exercise examples. Say a chocolate bar has 230 calories. Alongside that number, the label would show icons indicating that 230 calories translates to 42 minutes of walking or 22 minutes of running.

Experts worry that numbers alone don’t say enough. And the “traffic light” system doesn’t explain why a food gets its labeling. Is it “red” because of too much fat? Sugar? Something else?

Amanda Daley is a professor of behavioral medicine at Loughborough University in the United Kingdom. She favors trying the new icons to communicate how much activity each food will fuel. But others disagree.

Obesity expert Yoni Freedhoff says the labeling idea will reinforce negative attitudes about exercise. He fears responses like, “Ugh! I have to swim 35 minutes to earn just one serving of Oreos!”

God made our bodies to work like wonderful machines. Food is fuel for activity and growth. Work and exercise are good things, not punishment. And food—even though it can be misused—is meant for enjoyment even while it serves to sustain us. God obviously expects us to care for our bodies well. He even uses that concern as an example for how Christ loves and cares for His people. Ephesians 5:29 says, “No one ever hated his own flesh, but nourishes and cherishes it, just as Christ does the church.”

Making healthy and well-balanced choices that become long-term habits is still a challenge. Information that’s easy to put into action may help. Do you think the activity labels would be a positive or a negative for you?
Remember when Teacher said you’d use math for everything? Teacher wasn’t wrong. Even knots involve math. Scouts, sailors, and rock climbers know firsthand that some knots are stronger than others. Now mathematics experts at the Massachusetts Institute of Technology have figured out why.

Jörn Dunkel is an associate professor of mathematics at MIT. He and engineering associate professor Mathias Kolle helped develop a knot model. Their model predicts how strong different knots will be. Kolle says usage has long shown people which knots are best. It’s just that now the model shows why.

Back in 2018, Kolle helped develop fibers that change color when stretched or pulled, especially at the greatest stress or pressure points. Kolle’s color-changing fibers got Dunkel wondering, Why not knots?

Maybe not exactly, but he did begin thinking that perhaps those strands could be helpful in the study of knot stability, or strength. You see, knots are serious business with math people. There’s even a branch of geometry known as ‘knot theory.’ (Not knot kidding.)

Knot theory is the study of abstract knots with no ends. These ‘imaginary’ knots form a continuous looping pattern. Mathematicians try to describe abstract knots in all the ways they can be twisted while keeping their knot shapes. (Not knot easy.)

The MIT knot model analyzes several knot features, like number of over/under crossings and how a rope twists when a knot gets tight. By comparing diagrams, researchers hit upon the basic strength features: crossings and twists. The reason has to do with rope-against-rope friction. The more crossings and twists, the more friction, and the more knot strength.

Dunkel and Kolle and their doctoral students hoped to identify what makes a knot strong. They tied Kolle’s color-changing fibers into various knots and took pictures. They analyzed where, when, and how the fibers changed color—and how that reflected their strength.

Kolle hopes his team’s knot model will help create the right knots for use in medicine, manufacturing, sailing, climbing, and construction. It’s wonderful. (Not knot bad.)

MARCH/APRIL 2020

Joseph Sandt

The MIT knot model analyzes several knot features, like number of over/under crossings and how a rope twists when a knot gets tight. "These subtle differences..." Dunkel says, "determine whether a knot is strong." Dunkel and Kolle and their doctoral students were able to say which is the better one.

MARCH/APRIL 2020
**FOCUSFIT:** The brainiacs at BrainCo want your head in the game—literally. Their FocusFit headband converts brainwaves into numbers. The numbers translate into code that can turn on lights or race toy cars. Athletes already use the bands to test focus levels. Studies show that mind training can improve performance, even without any other training. And students, beware! BrainCo sells the headbands to schools, so your math teacher may actually be able to read your mind.

**BALLIE:** Samsung wants to reinvent the ball with a simple rolling robot friend. But Ballie’s technology is anything but simple. The artificial intelligence companion has a camera that can record and send video. The bright yellow orb can also communicate with other smart devices. Ballie might follow you around the house, answer your questions, wake you up, turn on the coffee pot, and give you the latest headlines. Its embedded camera allows this high-tech tennis ball to guard your house too, setting alarms and patrolling rooms. What’s more, Ballie can entertain your pets—because who’s got time for that?

**HYDROFOIL BIKE:** For some people, bike riding beside a lake just won’t cut it. Enter the Manta5 Hydrofoil Bike. Aquaphiles (people who like water) can ride into and over bodies of water. The Manta5’s bike-like body features hydrofoils (literally “water-blades”) instead of wheels. Wave-riders can start on land, off a dock, or in deep water. Electric pedal assist helps riders get up to speed enough to glide over the water for up to an hour. This aquatic e-bike won CES 2020’s Best of Show in the Rideables category. Ride on in, the water’s fine!

**HAPTIC JACKET:** Tech company Actronika focuses on how humans and machines work together. It creates software and hardware that allow users to feel what’s shown on a screen. Today’s virtual reality headsets already let gamers see and hear imagined worlds. But Actronika’s new haptic (feeling) jacket allows users to touch and feel those experiences too. Jacket wearers can sense movements and environmental conditions such as heat, wind, heartbeat, and so on. Get kicked in a computer soccer game? With the haptic jacket, you’ll take the hit. Ouch.
**TP ROBOT:** Charmin wants to solve the dreadful problem of being stranded on the toilet without paper. Its solution: a two-wheeled robot that fetches a fresh roll. The six-inch RollBot has the face of a bear—like the cartoon one in Charmin’s commercials. The bot wheels right up with TP on top. But RollBot won’t trundle to the rescue anytime soon. Procter & Gamble, the company that owns Charmin, says the bitty bot won’t be for sale. “Car companies have concept cars, but P&G has concept bathrooms,” says Marc Pritchard, head of Procter & Gamble’s brands. Too bad. This is one product most folks would love to see rolled out.

**SEGWAY S-POD:** The oddly popular, self-balancing, upright wheeled transport called Segway is getting an update. A so-called “first class” chair, the S-Pod looks an awful lot like the floating loungers in Pixar’s Wall-E. With the S-Pod, Segway may have stumbled upon a great truth: Most people like to sit—even when they’re in a hurry. The giant, egg-shaped, two-wheeled rolling chair uses a joystick and requires riders to lean forward and back to control speed. Like its forerunner, the S-pod is for short drives or tooling around spaces like airports or malls. The bright side of this device is the happy potential for disabled persons. And at speeds of up to 24 miles per hour (twice that of an ordinary Segway), the S-Pod will let users kick back while simultaneously zip into the future.

**SHOEBLAST:** Here’s news for your nose. A portable device promises that stinky athletic shoes, hiking boots, everyday flats, and even dress heels can smell like new. Shoeblast is the invention of South Korean startup Smartreum-Bang-E. Kick off your kicks and place a flashlight-sized device in each shoe. Shoeblast detects moisture and uses hot fans and infrared and UV light to dry out the insides. The device even kills bacteria. “Shoeblast is a dehumidifier as well as a sterilizer for shoes,” explains marketing manager Young Kang. Just relax and smell the fresh Nike Airs.

**KITCHEN GADGETS:** Today’s kitchens are getting smarter. Appliance companies are debuting high-tech gadgets in every nook and cranny. New refrigerators will track inventory, plan recipes, and create shopping lists for what you’re running low on. (I’m looking at you, milk jug!) Some even calculate how long an item has been in the fridge. (Still you, 2%.) And if a smart fridge isn’t your style, how about a robotic veggie-chopping arm, an oven camera to mind your cookies, and another to send pix of your best culinary efforts to Instagram?

**TINY TRUCK:** A “tiny” electric fire truck can fit into tight spaces such as parking garages or shopping centers. At just 6 feet, 5 inches tall, the mini fire engine carries the same equipment as a traditional truck (between 9 and 12.5 feet). Electronics companies Panasonic and Tropos collaborated on the pint-sized vehicle. Designers say the tiny truck “is ready to serve in spaces large or small, indoors or out”—and would be perfect for “tight metropolitan areas.”
**Astronomy Device Recreated**

Before there were telescopes, stargazers had to depend on their naked eyes to study the heavens. In the late 16th century, Danish astronomer Tycho Brahe constructed a metal device of interlocking rings. With it, he and other astronomers could pinpoint and track the locations of stars and planets. The device is called an armillary sphere today. Brahe’s assistant, Johannes Kepler, used the device to prove that Mars orbited the Sun in an ellipse, not a circle. A newly forged steel replica of Brahe’s device stands in the hills of northern New Mexico. St. John’s College near Santa Fe commissioned the movable structure. Its rings align with the North Star and the equator. A sliding viewfinder measures angles between any celestial object, the horizon, and the equator. Modern scientists like William Donahue, a retired St. John’s faculty member, say it’s helpful to learn “how science was done in another age.”

**Chinese Paddlefish Extinct**

“It’s farewell at first sight,” said China’s *Youth Daily*. The publication noted that many Chinese were unfamiliar with the hefty Chinese paddlefish until scientists declared the watery beast’s demise. The fish was formally classified as extinct in a research paper published in December. The paddlefish wasn’t going to win any beauty contests with its sharp, protruding snout. But its extinction is further evidence of a growing problem for the Yangtze River. Pollution, overfishing, and habitat destruction from damming the river contribute to shrinking biodiversity. As any aquatic life—plant, animal, or microbial—is disrupted, other species that once thrived also suffer. Paddlefish populations began to dwindle in the 1970s, following construction of the Gezhouba Dam on the Yangtze. The Three Gorges dam opened in 2003. That was the last year a live Chinese paddlefish was sighted.

**Robots Get Canned**

January was a bad month for robots in the San Francisco Bay area. Two companies that used robots in food service laid off their mechanical helpers as part of corporate downsizing and redirection. Zume Pizza is not only dropping robots from its staff. It’s also eliminating about 250 human positions. The company says it will shift focus from pizza making to food packaging and delivery. Human former employees are invited to apply for openings in the packaging business. Meanwhile, CAFEX closed three of its San Fran coffee shops. Those shops featured robots serving as baristas and food preparers. Founder Henry Hu says the downtown cafés were helpful in developing machines that can make 100 drinks per hour. Those robots will still be hard at work in San Francisco’s airport, serving many people very quickly. In that scenario, robotic staff makes good business sense.
Malaria Vaccine Testing

In an effort to save lives, one baby after another in Malawi is getting the first and only vaccine against malaria. Malaria is one of history’s deadliest and most treatment-resistant diseases. The southern African nation is rolling out the shots along with Kenya and Ghana. The vaccine called Mosquirix is only about 40% effective, but experts say it is still worth a try. Children under age five are most vulnerable to the worst effects of malaria, which spreads through mosquito bites. The vaccine uses a protein from the malaria parasite. By introducing just a tiny portion of that protein, the body's immune system goes on alert. Later, if a malaria-carrying mosquito bites the vaccinated person, the body responds with appropriate antibodies. Enough of those antibodies can keep the disease from lodging in the patient’s liver, where it grows and then spreads through the bloodstream.

Hope for White Rhinos

In 2018, the world’s last male northern white rhinoceros died. Only two females in the rhino subspecies survive, making it “functionally extinct.” But is that the end of the road for the northern white rhino? Not absolutely. Researchers say there is still hope. Working with stored genetic material from deceased rhinos, they have created three embryos that could survive. A closely related female rhino from the southern subspecies will serve as mom to the first embryo. If the experiment works, wildlife scientists say they hope to produce at least five animals this way. Then they will release the small herd into a natural habitat in Africa. The entire process could take decades, however. And sadly, failure is a real likelihood. Many years of poaching wiped out the northern white rhino population. Kenya’s wildlife minister, Najib Balala, hopes that scientists “will be able to reverse the tragic loss.”

The Show Must Go On!

With concerns about animal cruelty, circuses have fallen on hard times. But in Monaco, tumblers, trainers, and performers doing daring feats still draw a crowd—even without elephants, lions, and other exotic animals. Each year since 1974, Monaco supports circus performers by hosting the International Circus Festival of Monte-Carlo. Contortionists, tightrope walkers, trapeze artists, fire-breathers, domestic animal trainers, and more put their skills on display before a paying audience—and a panel of judges. Those voted best in show receive awards. The most coveted prize is the Golden Clown. A junior category opened at the January 2020 festival, encouraging the next generation to bring their talents into the ring. Monaco’s Princess Stéphanie presides over the events, which are a source of national pride for the small but wealthy nation. This year, a new postage stamp commemorated Monte-Carlo’s elegant circus horses.

Bytes

A child in Malawi receives the malaria vaccine.
1. What eventually caused the closing of Saranac Lake’s sanitarium and “cure cottages”?
   a) People ran out of money to spend on cures that didn’t work.
   b) Antibiotics to treat tuberculosis made fresh-air treatments unnecessary.

2. What does standing water inside an ice cellar indicate?
   a) The cellar may not be staying cold enough to preserve meat safely.
   b) There is a leak somewhere inside the cellar.

3. Sudan is struggling with changing after three decades of dictatorship.
   What new “freedom” has been granted to women during the change in leadership?
   a) Sudanese women were allowed to form and play in a new soccer league.
   b) Sudanese women were granted the legal right to wear pants in public.

4. What did archeologists discover in Ethiopia that proves the early existence of the Christian faith there?
   a) Hand-written copies of the four gospel accounts, with paper and ink dating from the late second century
   b) A 60 x 40-foot rectangular basilica with Christian inscriptions and artifacts dating from the late fourth century

5. In which of these countries was the Aksumite Empire located?

6. hinder
   a) hold back
   b) fall behind
   c) bring about

MIND STIR

1. Do you think women in majority Islamic countries should be allowed to participate publicly in sports? Why or why not?
2. How do you think trade routes in the ancient world affected the spread of gospel Christianity?

Quiz answers page 29
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