

Ode to E Pluribus Unum for Sunday October 24 2021

## **A Fire Rainbow over West Virginia**



*Image Credit: Christa Harbig*

What's happening to this cloud?

Ice crystals in a distant cirrus cloud are acting like little floating prisms. Known informally as a fire rainbow for its flame-like appearance, a circumhorizon arc appears parallel to the horizon.

For a circumhorizontal arc to be visible, the Sun must be at least 58 degrees high in a sky where cirrus clouds present below -- in this case cirrus fibrates. The numerous, flat, hexagonal ice-crystals that compose the cirrus cloud must be aligned horizontally to properly refract sunlight in a collectively similar manner.

Therefore, circumhorizontal arcs are somewhat unusual to see. The featured fire rainbow was photographed earlier this month near North Fork Mountain in West Virginia, USA.

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## FUNNY OXYMORONS

FOUND MISSING  
OPEN SECRET  
SMALL CROWD  
ACT NATURALLY  
FULLY EMPTY  
PRETTY UGLY  
ORIGINAL COPY  
ONLY CHOICE  
LIQUID GAS

AND THE MOTHER OF THEM ALL

SOCIAL DISTANCING

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**The Newest UNESCO World Heritage Sites, In Photos**



*Kaeng Krachan Forest Complex, Thailand*

[https://www.cntraveler.com/gallery/the-newest-unesco-world-heritage-sites-in-photos?utm\\_source=join1440&utm\\_medium=email&utm\\_placement=newsletter](https://www.cntraveler.com/gallery/the-newest-unesco-world-heritage-sites-in-photos?utm_source=join1440&utm_medium=email&utm_placement=newsletter)

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## **Play 1980s TV**



<https://www.my80stv.com/#J6pccaLqzTg>

In case you happened to miss some of these stellar events.

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Even if you don't count 'em cheeps is still cheeps.

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Well, yeah. They're pretty much unlimited

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## **Rings and Seasons of Saturn**



*Image Credit & Copyright: Damian Peach/SEN*

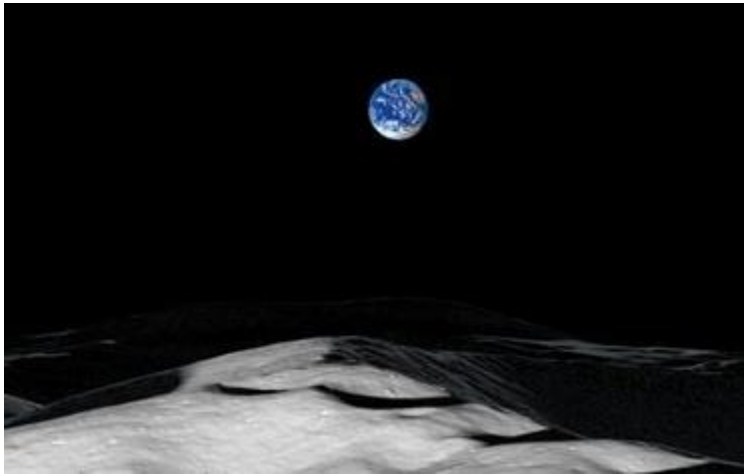
Saturn, the rings tell you the season. On Earth an equinox IS the time when the Earth's equator tilts directly toward the Sun.

Since Saturn's grand rings orbit along the planet's equator, these rings appear most prominent -- from the direction of the Sun -- when the spin axis of Saturn points toward the Sun. Conversely, when Saturn's spin axis points to the side, an equinox occurs and the edge-on rings are hard to see from not only the Sun -- but Earth.

In the featured montage, images of Saturn between the years of 2004 and 2015 have been superposed to show the giant planet passing from southern summer toward northern summer. Saturn was as close as it can get to planet Earth last month, and this month the ringed giant is still bright and visible throughout much of the night

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## Earth, Sun from Moon's South Pole



<https://youtu.be/aD1OQ9UBwuU>

This visualization shows the unusual motions of Earth and the Sun as viewed from the South Pole of the Moon. The animation compresses three months (a little over three lunar days) into two minutes. The virtual camera is on the rim of Shackleton Crater, partially visible in the bottom right, and is aimed at the Earth. The mountain on the horizon, about 85 miles away, is unofficially known as Mons Malapert.

Here, the Sun glides around the horizon, never more than 1.5 degrees above or below it, while the Earth bobs up and down, never veering far from 0° longitude. The Earth appears to be upside-down and rotating backwards. The perpetually low Sun angle produces extremely long shadows that rotate across the rugged lunar terrain.

In the second month of the visualization, Earth passes in front of the Sun, creating an eclipse. For observers on Earth, this is a lunar eclipse, in which the Moon passes through the shadow cast by Earth. Viewed from the Moon, however, this is an eclipse of the Sun.

*Video credit: NASA's Goddard Space Flight Center*

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## Elephant in the Room



*Adam Oswell Wildlife photographer of the year*

Australia Zoo visitors watch a young elephant performing underwater.

Oswell was disturbed by this scene, and organizations concerned with the welfare of captive elephants say performances like this encourage unnatural behaviour.

In Thailand, there are now more elephants in captivity than in the wild. With the Covid pandemic causing tourism to collapse, elephant sanctuaries are becoming overwhelmed with animals that can no longer be looked after by their owners.

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## **Rachmaninoff on Piano Played for Rom Sai**



<https://youtu.be/SFIT87yPNYk>

Rom Sai is a very strong bull was born in the 1980es. He worked in the jungle of Northern Thailand all his life. While he was working, a tree branch impaled his left eye, so now he can only see through his right eye. Rom Sai means Sacred tree. The

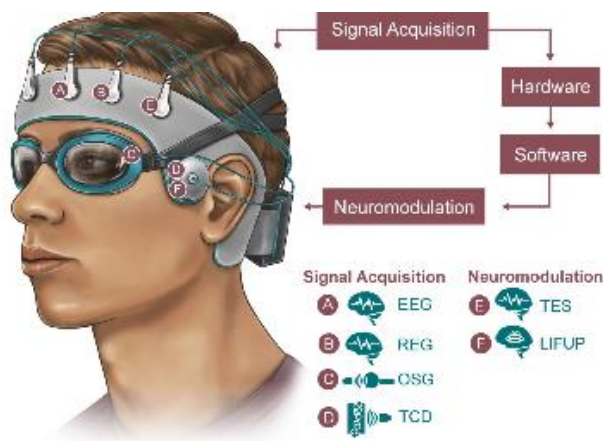


President of the Kasikorn-Bank, DechaNgamthanaphaisarn, set up a fundraising campaign to buy Rom Sai from his owners. He was donated to ElephantsWorld in June 2010.

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## Brain-Cleaning Sleeping Cap Gets US Army Funding

By Michael Irving



*A diagram illustrating what the new sleep-tracking skullcap could look like and how it would work*

*NeuroEngineering Initiative*

Everybody knows sleep is important, but there's still a lot we don't understand about what it actually does to the brain – and how its benefits could be boosted. To investigate, the US Army has awarded researchers at Rice University and other institutions a grant to develop a portable skullcap that can monitor and adjust the flow of fluid through the brain during sleep.

Most of us are familiar with the brain fog that comes with not getting enough sleep, but the exact processes going on in there remain mysterious. In 2012 scientists made a huge breakthrough in the field by discovering the glymphatic system, which cleans out toxic waste products from the brain during deep sleep by flushing it with cerebrospinal fluid. Disruptions to sleep – and therefore the glymphatic system – have been increasingly associated with neurological disorders such as Alzheimer's.

Studying the glymphatic system could provide new insights into sleep disorders and how to treat them, but currently it requires big bulky MRI machines. So the US Army is funding researchers at Rice University, Houston Methodist and Baylor College of Medicine to develop a wearable skullcap.

“Since an MRI can't be easily transported, the Department of Defense asked if we can design a small, portable cap that can measure and modulate the brain health of warfighters during sleep to enhance their performance,” says Paul Cherukuri, executive director of Rice's Institute of Biosciences and Bioengineering (IBB). “Developing this prototype will require us to start with off-the-shelf devices and learn from them in parallel with building our own sensor technology and algorithms at Rice.”



The system would consist of wearable hardware that acquires signals from the brain using a range of methods, which would be processed using the newly designed algorithms. Neuromodulation devices could then stimulate the flow of fluids in the brain.

Signals would be gathered with a mix of sensors on the skullcap.

Electroencephalography (EEG) measures electrical activity in the brain, while rheoencephalography (REG) measures blood flow. Other sensors measure fluid flow using ultrasound pulses – orbital sonography (OSG) sends these pulses through the eye socket, while transcranial doppler (TCD) ultrasound sends them through the skull. The fluid flow can then be controlled using transcranial electrical stimulation (TES) and low-intensity focused ultrasound pulses (LIFUP).

The team says that developing portable technology to measure and control fluid flow in the brain would help not just soldiers but patients as well, improving our understanding of what's going on during sleep and potentially leading to new treatments for sleep and neurological disorders.

"While humans spend almost one-third of their lives sleeping, a unifying theory about the role of sleep and its impact on human survival and function has not been identified yet," says Fidaa Shaib, a Baylor professor who will oversee sleep evaluation tests.

"Technologies that facilitate clearing wastes and preventing their deposition in the brain are relevant to patients with sleep disorders, especially those at risk for such neurodegenerative diseases as Alzheimer's."

The grant amounts to US\$2.8 million for the first year in what may become a multi-year project. The team hopes to present the first preliminary results in one year's time.

*Source: Rice University*

### *Great Choice. If anyone knows about brain laundering it's our education system*

New research from Boston University suggests that tonight while you sleep, something amazing will happen within your brain. Your neurons will go quiet. A few seconds later, blood will flow out of your head. Then, a watery liquid called cerebrospinal fluid (CSF) will flow in, washing through your brain in rhythmic, pulsing waves.

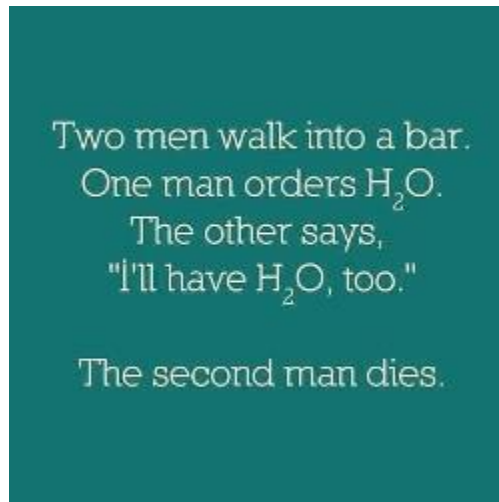
The study, published on October 31 in *Science*, is the first to illustrate that the brain's CSF pulses during sleep, and that these motions are closely tied with brain wave activity and blood flow.

"We've known for a while that there are these electrical waves of activity in the neurons," says study coauthor Laura Lewis, a BU College of Engineering assistant professor of biomedical engineering and a Center for Systems Neuroscience faculty member. "But before now, we didn't realize that there are actually waves in the CSF, too."

This research may also be the first-ever study to take images of CSF during sleep. And Lewis hopes that it will one day lead to insights about a variety of neurological and psychological disorders that are frequently associated with disrupted sleep patterns, including autism and Alzheimer's disease.

The coupling of brain waves with the flow of blood and CSF could provide insights about normal age-related impairments as well. Earlier studies have suggested that CSF flow and slow wave activity both help flush toxic, memory-impairing proteins from the brain. As people age, their brains often generate fewer slow waves. In turn, this could affect the blood flow in the brain and reduce the pulsing of CSF during sleep, leading to a buildup of toxic proteins and a decline in memory abilities. Although researchers have tended to evaluate these processes separately, it now appears that they are very closely linked.

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## **Sale of Last Conventional Supercarriers Deals Final Blow To Museum Hopes**

By: Heather Mongilio



*The former USS Kitty Hawk (CV-63) gets underway from its homeport at Yokosuka Naval Base, Japan in 2004.*

*US Navy Photo*

When James Melka first approached USS Kitty Hawk (CV-63), he had no idea the size of the aircraft carrier.

As the 17-year-old walked toward the pier in 1965, he could see the big gray ship, growing larger as he approached. It was “amazing” to walk onto the ship, then just four years into its service life, via its gangplank, Melka recalled.

At 1,047 feet, the former USS Kitty Hawk (CV-63) is almost the length of three football fields. More than 50 years after he left the ship, the size of it still sticks with Melka.

That’s also how it was for his father, who visited Kitty Hawk while Melka served in the Navy. For 70 years after, until his death, Melka’s father, who had served in the Navy during World War II, talked about the ship’s size.

The ship’s size might be what Melka remembers first about the Kitty Hawk, but what draws him to it all these years later is the sense of belonging. The ship was his home.

“And when you spend that much time and work that hard seven days a week near sea you learn to love the place,” Melka told USNI News recently. “And after even after leaving there, you know I still have a connection with that ship. I always will.”

Melka spent three and a half years – the majority of his Navy career – aboard Kitty Hawk as a boilerman in the boiler room.

He spent many more trying to turn the decommissioned ship into a museum. But the plans of USS Kitty Hawk Veterans Association, of which Melka is president, received the final blow last month when the Navy sold the ship to International Shipbreaking Limited in Brownsville, Texas for a penny on Sept. 29.

International Shipbreaking Limited will tow, remediate, dismantle and recycle Kitty Hawk, as well as the former USS John F. Kennedy (CV-67), Naval Sea Systems Command told USNI News. The future contract for John F. Kennedy is also for one cent.

It will be hard for Melka and others in the Kitty Hawk Veterans Association to see the ship, where they lived for years during service in the U.S. Navy, be turned into scrap metal.

"It's heartbreaking," Melka said.

The chances of the decommissioned aircraft carrier becoming a museum were already dashed in 2018, when Melka received a letter from the Navy saying that the ship was never destined to be a museum. It was always headed for the scrapyard.

That was a blow, Melka said. He thought the veterans association would at least have a chance to save their ship.

"Nobody's gonna know ... what a Kitty Hawk-class aircraft carrier was," Melka said.

"They'll just see pictures. They won't be able to see the actual ship and be able to walk on it."

The former Kitty Hawk commissioned on April 29, 1961 and served just over 48 years before its decommissioning on May 12, 2009, when it headed to the Navy's Inactive Ships Maintenance Facility in Bremerton, Wash.

Kitty Hawk supported Operation Iraqi Freedom from March 19 until April 18, 2003, as well as an 83-day deployment in support of Operation Enduring Freedom, according to the Navy's ship history.

In the ship's early days, it took part in the Vietnam War.

That was another reason Melka thought the ship should become a museum. If a Vietnam-era ship became a museum, it would give veterans a chance to talk about their experiences. His father hardly talked about World War II, but when they visited a World War II battleship, he told his grandchildren about the history of the war.

The former John F. Kennedy commissioned on Sept. 7, 1968 and was taken out of active duty in 2007 and then placed on donation hold – which allows nonprofits to try to turn a ship into a museum – in 2009. The ship was the last conventionally powered aircraft carrier the Navy purchased.

John F. Kennedy was also part of operations Enduring Freedom and Iraqi Freedom toward the end of its time in service, according to the naval history of the ship.

Efforts to turn John F. Kennedy into a museum failed and the ship was re-designated to be dismantled, the Navy told USNI News in an Oct. 5 statement.

USS John F. Kennedy (CV-67) towed to Philadelphia in 2008.

### **Last Chance for a Carrier**



John F. Kennedy and Kitty Hawk were likely the last supercarriers that could be turned into museums, said Ryan Szimanski, executive director of the Historic Naval Ships Association.

"I think it would be amazing if a supercarrier were saved as a museum," Szimanski said. "But now that the last two conventional ones are being sold for scrap, that probably will never happen."

The rest of the Navy's aircraft carriers – both those currently in the fleet and recently decommissioned – are nuclear-powered, he noted, which makes it difficult for conversion into a museum. USS Nautilus (SSN-571) was turned into a museum, but in doing so, the submarine had to get cut up pretty badly in order to remove the nuclear reactor, Szimanski said.

There are five aircraft carrier museums in the United States. The Intrepid (CV-11) Sea, Air and Space Museum is located in New York, New York. The former USS Yorktown (CV-10) is in Mt. Pleasant, S.C., while the former USS Lexington (CV-16) is a museum in Corpus Cristi, Texas. The former USS Midway (CV-41) Museum is in San Diego, Calif., and the former USS Hornet (CV-12) Sea, Air and Space Museum is in Alameda, Calif.

In order for a Navy ship to become a museum, there are steps a group must follow, he said.

First, it must form a nonprofit organization. Second, the group must reach out to Naval Sea Systems Command, which oversees ships in reserve. The group needs to request a ship be put on donation hold, which allows it to become part of the "mothball fleet," preventing it from getting dismantled.

NAVSEA will give the nonprofit multiple tasks, which include raising an amount of money to maintain the ship and museum and providing thorough documents describing how the museum will run and what artifacts have been collected.

Those maintenance costs depend on the ship, but for battleship USS New Jersey (BB-62), which Szimanski runs in Camden, N.J., it costs \$5 million a year to operate. The museum also needed to have a \$1 million insurance plan.

It would be reasonable that the decommissioned Kitty Hawk or John F. Kennedy would also need a \$1 million insurance plan and at least \$5 million per year to operate, or potentially more since the ships are bigger, he said.

If NAVSEA accepts the nonprofit's request to save a ship, the two organizations would then enter into a contract that gives ownership of the ship to the nonprofit, with restrictions and rules set by the Navy, Szimanski said.

Raising the funds needed can be a challenge, he said, which is what happened in the case of Kitty Hawk and John. F. Kennedy. Those are large ships, which meant they required more funds to maintain.

Success varies based on time and ship size, Szimanski noted. Nonprofits have had the most success with converting battleships into museums. Aircraft carriers have been saved as museums about half the time.

The highest amount of ships were turned into museums following World War II, with the first one opening in 1948.

"We had a tremendous number of ships. And a lot of those ships were up for disposal during the 'golden age' of turning ships into museums," he said.

Even up until the 1990s, organizations had success turning ships into museums, partially because cities wanted ship museums as tourist attractions, according to Szimanski.

Although ships are still getting converted into museums, it's now harder with less cities available that do not already have a ship museum. There needs to be a place to house the ship where it will not compete with another ship museum, Szimanski said.

The lack of places for a supercarrier could have been a challenge when it came to Kitty Hawk or John F. Kennedy, he said.



*The aircraft carrier USS Kitty Hawk (CV 63) transits the Pacific Ocean returning to the United States for decommissioning in 2008 after 47 years of service, 10 of which have been in Japan.  
US Navy Photo*

## **Experiencing Life At Sea**

Turning ships into museums allows people to experience life at sea, Szimanski said.

"But there are a ton of Civil War battlefields out there that you can go and visit. But how do you go and visit the Battle of the Philippine Sea battleground? You can't really go to the middle of the ocean and see where that was fought," Szimanski said. "But you can go on one of the aircraft carriers or battleships that fought there."

As one of the last conventional supercarriers, Kitty Hawk is history, said Rich Orth, one of the ship's plankowners.

Orth was a farmboy from Iowa who had never seen an ocean when he joined the Navy. His first permanent ship assignment was the newly commissioned Kitty Hawk.

Orth joined the Kitty Hawk Veterans Association in 2008, years after the group started planning the museum, so he could be a part of the ship's last cruise.

Had the ship become a museum, Orth would have been one of the first volunteers. He knows the association tried everything possible to save the ship, but he understood the challenge of raising enough funds to open and operate a museum.

Orth has made peace with the ship being sold for scraps, he said. The ship might not be saved, but it will not be forgotten. Instead, it'll live on in the memories of those who served on it.

"Maybe with it being scrapped, it'll come back, or part of that material anyway, will come back around and help build another ship or something," he said.

He started aboard Kitty Hawk in April 1961 and left the ship on Oct. 14, 1963. Orth was 17 when he enlisted and, like many men who served on the ship, grew up and learned discipline during his years aboard. There's a fellowship that is formed by working on a ship, Orth said.

It becomes part of a person's soul, he said.

Orth was on Kitty Hawk's first cruise, and he was on its last, when the ship sailed from San Diego to Bremerton in 2008 for its decommissioning.

Both Kitty Hawk and John F. Kennedy will be towed to International Shipbreaking Limited's facility in Texas, although a tow and dismantlement timeline have not yet been determined, according to the Navy statement.

When that final tow does happen, Melka plans to watch both when it leaves the pier at the Puget Sound Naval Shipyard and Intermediate Maintenance Facility and when it arrives at its final home in Texas.

"Watching the Kitty Hawk, there will be a lot of tears," he said.

Although the ship was not saved as a museum, parts of it will live on, Szimanski said. Pieces of ships like John F. Kennedy and Kitty Hawk have been used to repair ships that have already been turned into museums.

The ship will also live on in the memories of its crew. Orth will personally work to make sure the ship is not forgotten. Many of his clothes have Kitty Hawk insignia on them. He has a mural of the ship on his van and a Kitty Hawk license plate.

"As long as I'm alive I'll remember Kitty Hawk and all my stuff that I leave behind will be remembering Kitty Hawk also," Orth said. "So I mean, it's just part of me."

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## **Children Born Early at Risk from Too Much Screen Time**

Erin Digitale



Children born very prematurely are at risk for cognitive and behavioral problems linked to excess screen time, a Stanford Medicine-led study shows.

Research has linked excessive screen time to cognitive and behavioral problems in the general population of children, leading the American Academy of Pediatrics to recommend that parents limit their children's daily screen exposure to no more than two hours per day. But the connection between screen time and cognitive or behavioral challenges had not been previously studied in very premature kids.

In the study, which appeared recently in *JAMA Pediatrics*, more than two hours of daily screen time was correlated with lower IQ and a variety of behavioral issues in 6- and 7-year-old children who were born 12 to 16 weeks early, or around the fifth or sixth month of pregnancy. These children may be especially vulnerable to detrimental effects of excess screen time because of the neurological risks due to premature births, the research team said.

The finding is part of an effort to understand how to help high-risk preemies thrive years after they've left the hospital.

"It's clear that the environment of preemies' lives after they leave the neonatal intensive care unit is so critically important," said the study's senior author, neonatologist Susan Hintz, MD, who directs the Fetal and Pregnancy Health Program at Lucile Packard Children's Hospital Stanford. "We need to move our work into a different zone and ask how can we support these children and families as they transition home, and then help them in the years to come."

### **Following preemies as they grow up**

For more than a decade, Hintz and her colleagues closely followed a group of hundreds of children who were born at least 12 weeks early, meaning they are "extremely preterm," and considered to be the highest-risk category. (Any birth more than three weeks before the due date is considered premature.) The study began as a way to evaluate how best to support preemies' breathing from the time of delivery, but has expanded to many other areas of their growth and development.



The newest work focused on links between the children's screen time and various cognitive and behavior outcomes, including measures of intelligence such as IQ and verbal comprehension; the children's ability to regulate behaviors and problem-solve, also known as executive function; social communication; and signs of attention deficit/hyperactivity disorder, including inattention, impulsivity and hyperactivity.

At the school-age follow up visit, when children in the study were 6 or 7 years old, families answered questions about the amount of time the children spent using screens, including watching TV and playing video games. (The data was collected before the global pandemic, meaning the effects of online learning were not part of the study.)

The children also had a battery of standardized assessments and exams at the visit. The researchers compared 238 children who spent more than two hours per day using a screen with 176 children who had less than two hours of daily screen time.

After adjusting for possible confounding factors, researchers saw that children in the high screen time group had IQ scores that were about 4 points lower. They also had worse scores on assessments of executive function and tests of inhibition (impulse control) and inattention.

Children with a TV or computer in their bedroom also had worse inhibition scores, as well as hyperactivity and impulsivity scores.

### **What matters to families?**

While the findings suggest that parents of preemies may want to limit screen time as their kids grow up, the researchers said that there is more to learn about the relationship between the amount of time spent using a screen and how children fare. For one thing, the results can only point to an association between high screen time and some cognitive, executive function and behavioral challenges. They cannot say whether excess screen time causes these difficulties.

Because the data was collected before the pandemic, the study also could not evaluate the many new ways screens are now being used. For instance, said Hintz, video chats that help children engage with extended family, friends, and educational activities may have different associations with cognitive outcomes than watching TV.

"What we, as experts, need to focus on now is supporting these families in their goals for their children," Hintz said. "Families are not only focused on cognitive test scores; they care about everyday skills, such as children's relationships with family members and other kids. We tend to look narrowly through our little telescope of neurodevelopmental outcomes, and we need to start thinking more broadly with families about what they consider to be important."

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## **How Tech Is Changing Baby Names**



Parents appear to consider tech and video games when picking names. But how do the kids feel about it?

By Jacob Cohen

#### **Amazon Debuts Alexa**

<b>Year</b>	<b>Named</b>
2015	6062
2016	4771
2017	3892
2018	3062
2019	1995
2020	1272

According to Social Security Administration data, the name Alexa dropped ~79% in popularity since Amazon announced its virtual assistant in late 2014.

In the UK, Alexa was the 167th most popular baby name in 2016, and 920th in 2019. (Keep in mind, correlation ≠ causation.)

But it's not just Alexa:

Polling found 37% of parents are naming kids with website domains in mind.

In 2018, "Fortnite"-related names surged, including Ramirez (+57%), Leviathan (+46%), and Bunny (+30%).

One name that hasn't exploded? That of Elon Musk's son: X Æ A-Xii.

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## Shower Thoughts

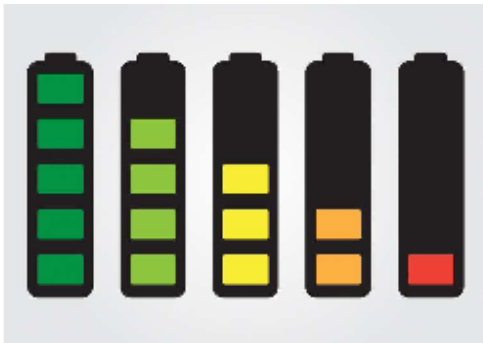
- "If you simply carry a mug with you, you'll look like you belong anywhere."
- "If a sloth clapped, it would always sound sarcastic."
- "With every company making their own streaming services and filling them with ads, people are probably going to start preferring to buy DVDs of shows again."
- "People stereotype cooking as 'women's work' but if you ask them to think of a head chef they'll picture a man."
- "You put a paper in a folder to prevent it from folding."

via Reddit

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## New Material Could Pave Way for Better, Safer Batteries

by Brown University



*Credit: CC0 Public Domain*

In pursuit of batteries that deliver more power and operate more safely, researchers are working to replace the liquids commonly used in today's lithium ion batteries with solid materials. Now, a research team from Brown University and the University of Maryland has developed a new material for use in solid-state batteries that's derived from an unlikely source: Trees.

In research published in the journal *Nature*, the team demonstrates a solid ion conductor that combines copper with cellulose nanofibrils—polymer tubes derived from wood. The paper-thin material has an ion conductivity that is 10 to 100 times better than other polymer ion conductors, the researchers say. It could be used as either a solid battery electrolyte or as an ion-conducting binder for the cathode of an all-solid-state battery.

"By incorporating copper with one-dimensional cellulose nanofibrils, we demonstrated that the normally ion-insulating cellulose offers a speedier lithium-ion transport within the polymer chains," said Liangbing Hu, a professor in the University of Maryland's Department of Materials Science and Engineering. "In fact, we found this ion conductor achieved a record high ionic conductivity among all solid polymer electrolytes."

The work was a collaboration between Hu's lab and the lab of Yue Qi, a professor at Brown's School of Engineering.

Today's lithium ion batteries, which are widely used in everything from cellphones to cars, have electrolytes made from lithium salt dissolved in a liquid organic solvent. The electrolyte's job is to conduct lithium ions between a battery's cathode and anode. Liquid electrolytes work pretty well, but they have some downsides. At high currents, tiny filaments of lithium metal, called dendrites, can form in the electrolyte leading to short circuits. In addition, liquid electrolytes are made with flammable and toxic chemicals, which can catch fire.

Solid electrolytes have the potential to prevent dendrite penetration and can be made from non-flammable materials. Most of the solid electrolytes investigated so far are ceramic materials, which are great at conducting ions but they're also thick, rigid and brittle. Stresses during manufacturing as well as charging and discharging can lead to cracks and breaks.

The material introduced in this study, however, is thin and flexible, almost like a sheet of paper. And its ion conductivity is on par with ceramics.

Qi and Qisheng Wu, a senior research associate at Brown, performed computer simulations of the microscopic structure of the copper-cellulose material to understand why it is able to conduct ions so well. The modeling study revealed that the copper increases the space between cellulose polymer chains, which normally exist in tightly packed bundles. The expanded spacing creates what amount to ion superhighways through which lithium ions can zip by relatively unimpeded.

"The lithium ions move in this organic solid electrolyte via mechanisms that we typically found in inorganic ceramics, enabling the record high ion conductivity," Qi said. "Using materials nature provides will reduce the overall impact of battery manufacture to our environment."

In addition to working as a solid electrolyte, the new material can also act as a cathode binder for a solid-state battery. In order to match the capacity of anodes, cathodes need to be substantially thicker. That thickness, however, can compromise ion conduction, reducing efficiency. In order for thicker cathodes to work, they need to be encased in an ion-conducting binder. Using their new material as a binder, the team demonstrated what they believe to be one of the thickest functional cathodes ever reported.

The researchers are hopeful that the new material could be a step toward making bringing solid state battery technology to the mass market.

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**Mr. Mister**





culture

Kyrie <https://youtu.be/9NDjt4FzFWY>

Broken Wings [https://www.youtube.com/watch?v=nKhN1t\\_7PEY](https://www.youtube.com/watch?v=nKhN1t_7PEY)

Mr. Mister was an American rock band from Phoenix, Arizona, active from 1982 until 1990. The band consisted of Richard Page on lead vocals and bass guitar, Steve George on keyboards/backing vocals, Pat Mastelotto on acoustic and electronic drums/percussion and Steve Farris on guitars/backing vocals. Mr. Mister was the successor to the band Pages, fronted by Page and George from 1978 to 1981.

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## **Tchaikovsky Overture Solennelle, "1812," Opus 49**



<https://youtu.be/egId3AJmfu0>

Col. Jason K. Fettig conducts Piotr Ilyich Tchaikovsky's Overture Solennelle, "1812," Opus 49 with "The President's Own" United States Marine Band on May 26, 2019, at the Wolf Trap National Park for the Performing Arts in Vienna, Va. This concert was part of Wolf Trap's "Summer Blast-Off!"

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## Head to Head



*Stefano Unterthiner*

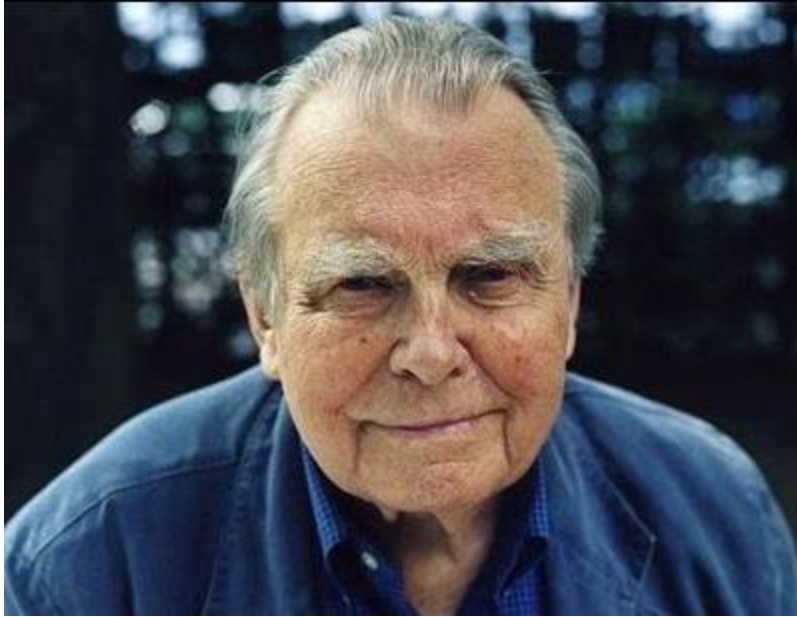
Two Svalbard reindeer fight for control of a harem. Watching the battle, photographer Unterthiner felt immersed in 'the smell, the noise, the fatigue and the pain'.

The reindeer clashed antlers until the dominant male, left, chased its rival away, securing the opportunity to breed.

Reindeer are widespread around the Arctic, but this subspecies occurs only in Svalbard. Populations are affected by the climate crisis, where increased rainfall can freeze on the ground, preventing access to plants.

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## Czeslaw Milosz



Czeslaw Milosz ranks among the most respected figures in 20th-century Polish literature, as well as one of the most respected contemporary poets in the world: he was awarded the Nobel Prize for Literature in 1980.

Born in Lithuania, where his parents moved temporarily to escape the political upheaval in their native Poland, he left Poland as an adult due to the oppressive Communist regime that came to power following World War II and lived in the United States from 1960 until his death in 2004.

Having lived under the two great totalitarian systems of modern history, national socialism and communism, Milosz wrote of the past in a tragic, ironic style that nonetheless affirmed the value of human life.

## **Awakened**

In advanced age, my health worsening,  
I woke up in the middle of the night  
and experienced a feeling of happiness  
so intense and perfect that in all my life  
I had only felt its premonition.  
And there was no reason for it.  
It didn't obliterate consciousness;  
the past, which I carried, was there,  
together with my grief.  
And it was suddenly included  
was a necessary part of the whole.  
As if a voice were repeating:  
"You can stop worrying now;  
everything happened just as it had to.  
You did what was assigned to you,

and you are not required anymore  
to think of what happened long ago.”  
The peace I felt was a closing of accounts  
and was connected with the thought of death.  
The happiness on this side was.  
like an announcement of the other side.  
I realized that this was an undeserved gift  
and I could not grasp by what grace  
it was bestowed on me.

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### **A Song On The End Of The World**

On the day the world ends  
A bee circles a clover,  
A fisherman mends a glimmering net.  
Happy porpoises jump in the sea,  
By the rainspout young sparrows are playing  
And the snake is gold-skinned as it should always be.

On the day the world ends  
Women walk through the fields under their umbrellas,  
A drunkard grows sleepy at the edge of a lawn,  
Vegetable peddlers shout in the street  
And a yellow-sailed boat comes nearer the island,  
The voice of a violin lasts in the air  
And leads into a starry night.

And those who expected lightning and thunder  
Are disappointed.  
And those who expected signs and archangels' trumps  
Do not believe it is happening now.  
As long as the sun and the moon are above,  
As long as the bumblebee visits a rose,  
As long as rosy infants are born  
No one believes it is happening now.

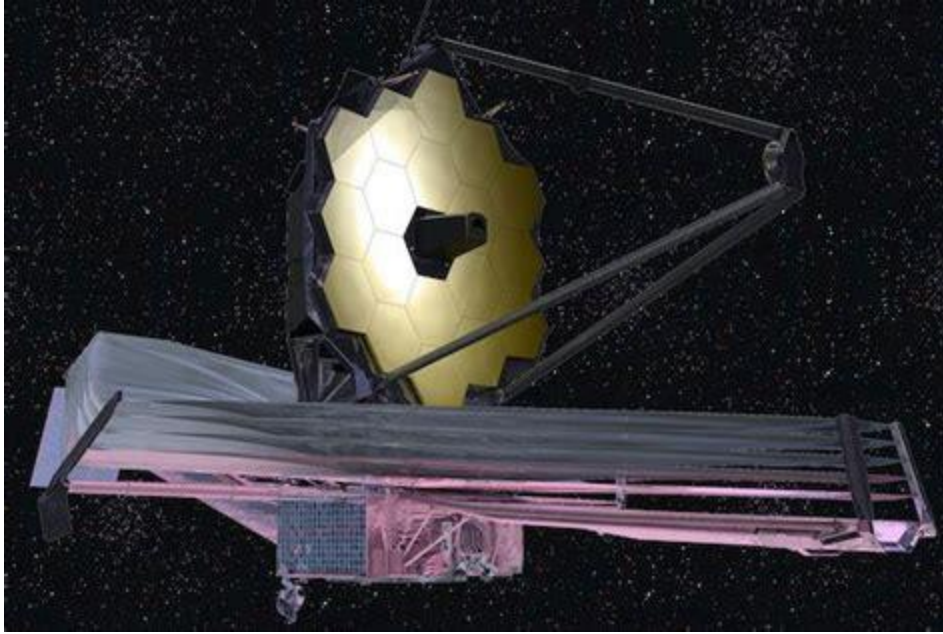
Only a white-haired old man, who would be a prophet  
Yet is not a prophet, for he's much too busy,  
Repeats while he binds his tomatoes:  
There will be no other end of the world,  
There will be no other end of the world.

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### **NASA's James Webb Space Telescope '29 Days on the Edge'**

By Elizabeth Howell





The observatory will have to make about 50 major deployments after liftoff.

<https://youtu.be/uUAvXYW5bmI>

NASA's newest space telescope will face 29 "harrowing" days after launch as it makes its way to a deep-space destination nearly 1 million miles (1.6 million km) from Earth, the agency says in a new YouTube video.

The video, called "29 Days on the Edge," was released Oct. 18. It focuses on the journey and 50 expected deployments the James Webb Space Telescope will undergo after its expected launch on Dec. 18.

The telescope has been much delayed over the years due to technology challenges, the coronavirus pandemic and other issues. And there will be significant hurdles to overcome after launch as well.

"We have 300 single-point failure items, and they all have to work right. When you're a million miles from the Earth, you can't send someone to fix it," Webb program director Greg Robinson says in the video.

After Webb gets through that gauntlet, it will begin making observations that could transform our understanding of the cosmos. Scientists will use the telescope to learn more about the universe's early days and investigate the atmospheres and nature of distant exoplanets, among other tasks, NASA officials have said.



*NASA's James Webb Space Telescope in a cleanroom at Europe's Spaceport in Kourou, French Guiana, in October 2021. The observatory is scheduled to launch on Dec. 18.  
(Image credit: NASA/Chris Gunn)*

The new nine-minute video focuses on the many technological obstacles that Webb must overcome. For example, its 21.3-foot (6.5-meter) mirror is built to "fold like origami," as the video notes, because the mirror must fit inside the payload fairing of its Arianespace Ariane 5 rocket during launch. The unfolding will need to happen in space, far from direct human assistance.

The Ariane 5 must do its job on Dec. 18, of course. And Webb's own thrusters must work properly as well — particularly about 12 hours after liftoff, when they're expected to fire up and send Webb toward its deep-space destination. As Webb makes that journey, it will be pushed around by the solar wind, or the constant stream of particles coming from the sun, so the telescope will unfold a "trim tab" for stability.

One of the biggest things Webb will have to unfold is a complex, tennis court-sized sunshield array, which has 140 release mechanisms, 70 hinge assemblies, 400 pulleys, 90 cables and 8 deployment motors, bearing springs and gears, NASA says in the video. All of these items will need to work correctly to get the sunshield unfolded so Webb can do its science work.

But NASA maintains that its years of training and project management will assist Webb with this complex set of operations. "Those two weeks after launch will be like our Super Bowl, World Cup — you pick the analogy," says Amy Lo, Webb deputy director for vehicle engineering, in the video. "Years of training comes down to these moments."

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**4,400-lb Sunfish Caught Off North Africa, Enrolls in Noom.**



*The massive ocean sunfish weighed more than 4,400 pounds, scientists estimate.  
(Image credit: Reuters / Seville University)*

Fishers recently hauled up a surprising catch off the coast of North Africa: a colossal ocean sunfish weighing an incredible 4,400 pounds (2,000 kilograms).

At least that's how heavy marine biologists estimated the mammoth fish to be, based on its girth and the dimensions of sunfish that had previously been captured and weighed. "We tried to put it on the 1,000-kilogram (2,200 pounds) scale, but it was too heavy," marine biologist Enrique Ostale told Reuters. "It would've broken it."

Fishers in Ceuta, a Spanish territory bordering Morocco, discovered the animal tangled in their nets in early October. They immediately called in Ostale, head of Seville University's Marine Biology Lab in Ceuta, to examine the massive sunfish. After first isolating the creature in an underwater pen attached to the boat, the team briefly hauled the fish into the air, using a crane.

Like other ocean sunfish, all of which belong to the genus *Mola*, the creature resembled an oblong pancake with huge, googly eyes stuck to its sides. Two massive, winglike fins extended from the top and bottom of the fish; in the ocean, sunfish wave these fins to and fro to propel their hefty bodies through the water.

Once the sunfish had been hoisted on deck, the team measured the animal and determined it to be 10.5 feet (3.2 meters) long and 9.5 feet (2.9 m) wide; for scale, a king-size bed is only 6.6 feet (2.03 m) long by 6.3 feet (1.9 m) wide. After measuring the sunfish and taking photos and DNA samples, the crew released the animal back into the sea, where it soon disappeared into the watery depths.

"When we arrived there, the feeling was astonishment," Ostale said in a video interview with Reuters. "We couldn't believe our luck because we'd read books and articles about

the dimensions that a sunfish can have, but we didn't know we'd [ever] be able to watch it and touch it ourselves."

Based on grooves marking the fish's sides and its stumpy clavus — a rudder-like structure on the back of the fish — Ostale and his colleagues identified the animal as a species called *Mola alexandrini*, also known as a bump-head sunfish because of the distinctive lump on its noggin.

Although adult sunfish rank as the largest bony fish on the planet, scientists recently found *M. alexandrini* babies that measured just a few millimeters in length, Live Science previously reported. The tiny larvae look nothing like their adult counterparts, but over time, they grow to be 600 times their original size and morph into that familiar winged-pancake shape.

The *M. alexandrini* captured in Ceuta set a record as the largest sunfish ever caught in the region, in terms of its dimensions, Reuters reported. But in general, the sunfish species can grow even larger and heavier. To date, the heaviest *M. alexandrini* specimen weighed a whopping 5,070 pounds (2,300 kg), making it the heftiest sunfish specimen ever weighed, Live Science previously reported.

*Originally published on Live Science.*

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**Take that you Duffers**



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**A Pig Kidney Successfully Transplanted into a Human**





*Healthline*

Joe Carrotta/AP

Scientists temporarily attached a pig's kidney to a human body and watched it begin to work, a small step in the decades-long quest to one day use animal organs for life-saving transplants.

Pigs have been the most recent research focus to address the organ shortage, but among the hurdles: A sugar in pig cells, foreign to the human body, causes immediate organ rejection. The kidney for this experiment came from a gene-edited animal, engineered to eliminate that sugar and avoid an immune system attack.

Surgeons attached the pig kidney to a pair of large blood vessels outside the body of a deceased recipient so they could observe it for two days. The kidney did what it was supposed to do — filter waste and produce urine — and didn't trigger rejection.

"It had absolutely normal function," said Dr. Robert Montgomery, who led the surgical team last month at NYU Langone Health. "It didn't have this immediate rejection that we have worried about."

This research is "a significant step," said Dr. Andrew Adams of the University of Minnesota Medical School, who was not part of the work. It will reassure patients, researchers and regulators "that we're moving in the right direction."

The dream of animal-to-human transplants — or xenotransplantation — goes back to the 17th century with stumbling attempts to use animal blood for transfusions. By the 20th century, surgeons were attempting transplants of organs from baboons into humans, notably Baby Fae, a dying infant, who lived 21 days with a baboon heart.



With no lasting success and much public uproar, scientists turned from primates to pigs, tinkering with their genes to bridge the species gap.

Pigs have advantages over monkeys and apes. They are produced for food, so using them for organs raises fewer ethical concerns. Pigs have large litters, short gestation periods and organs comparable to humans.

Pig heart valves also have been used successfully for decades in humans. The blood thinner heparin is derived from pig intestines. Pig skin grafts are used on burns and Chinese surgeons have used pig corneas to restore sight.

In the NYU case, researchers kept a deceased woman's body going on a ventilator after her family agreed to the experiment. The woman had wished to donate her organs, but they weren't suitable for traditional donation.

The family felt "there was a possibility that some good could come from this gift," Montgomery said.

Montgomery himself received a transplant three years ago, a human heart from a donor with hepatitis C because he was willing to take any organ. "I was one of those people lying in an ICU waiting and not knowing whether an organ was going to come in time," he said.

Several biotech companies are in the running to develop suitable pig organs for transplant to help ease the human organ shortage. More than 90,000 people in the U.S. are in line for a kidney transplant. Every day, 12 die while waiting.

The advance is a win for Revivicor, a subsidiary of United Therapeutics, the company that engineered the pig and its cousins, a herd of 100 raised in tightly controlled conditions at a facility in Iowa.

The pigs lack a gene that produces alpha-gal, the sugar that provokes an immediate attack from the human immune system.

In December, the Food and Drug Administration approved the gene alteration in the Revivicor pigs as safe for human food consumption and medicine.

But the FDA said developers would need to submit more paperwork before pig organs could be transplanted into living humans.

"This is an important step forward in realizing the promise of xenotransplantation, which will save thousands of lives each year in the not-too-distant future," said United Therapeutics CEO Martine Rothblatt in a statement.

Experts say tests on nonhuman primates and last month's experiment with a human body pave the way for the first experimental pig kidney or heart transplants in living people in the next several years.

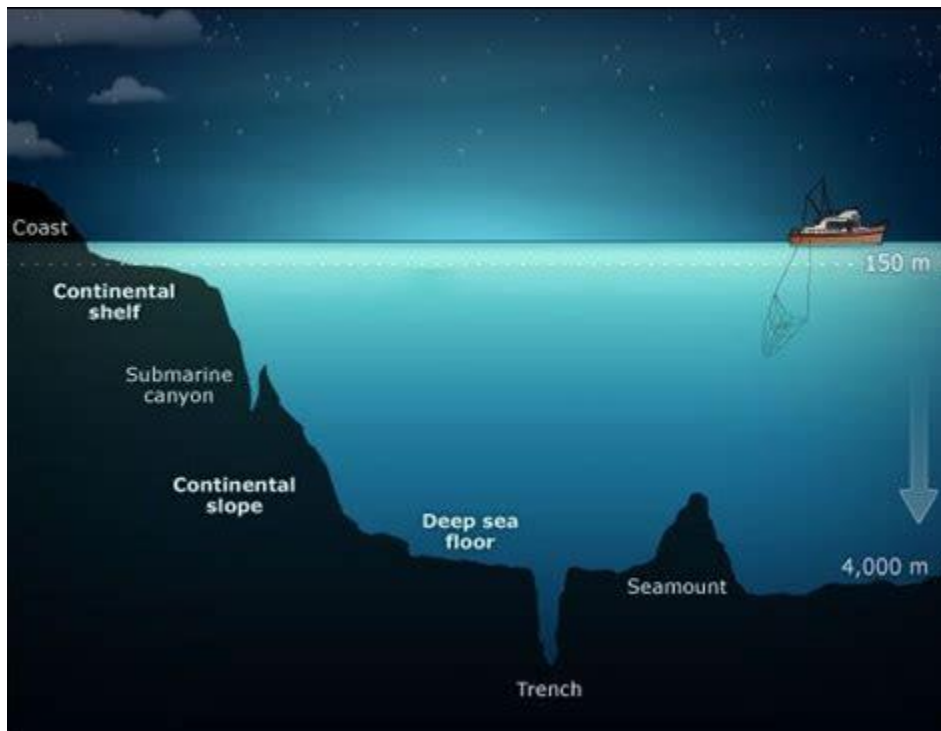
Raising pigs to be organ donors feels wrong to some people, but it may grow more acceptable if concerns about animal welfare can be addressed, said Karen Maschke, a research scholar at the Hastings Center, who will help develop ethics and policy

recommendations for the first clinical trials under a grant from the National Institutes of Health.

"The other issue is going to be: Should we be doing this just because we can?" Maschke said.

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## How Deep is my Pond, Lake, Sea, Ocean, or Trench?



<https://youtu.be/Q5C7sqVe2Vg>

The relationships might surprise you.

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## Going for the Juggler



<https://www.facebook.com/watch/?v=2481363805330277>

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**Blues Bring Out their Super Hornets**



<https://youtu.be/g1JJns9gspA?t=1>

When you get tired of watching them, you're in trouble. That said, I wish they leave out all that pre-show show-biz hogwash. Keep it Simple, Stupid.

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**Lucy Launches to Eight Asteroids**



*Lucy's launch was captured with reflection last week aboard a powerful Atlas V rocket from Cape Canaveral, Florida, USA. Image Credit & Copyright: John Kraus*

Why would this mission go out as far as Jupiter -- but then not visit Jupiter?

Lucy's plan is to follow different leads about the origin of our Solar System than can be found at Jupiter -- where Juno now orbits. Jupiter is such a massive planet that its gravity captures numerous asteroids that orbit the Sun ahead of it -- and behind.

These trojan asteroids formed all over our Solar System and some may have been trapped there for billions of years. Flying by these trojan asteroids enables studying them as fossils that likely hold unique clues about our early Solar System.

Lucy, named after a famous fossil skeleton which was named after a famous song, is scheduled to visit eight asteroids from 2025 to 2033.

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### **Not Yogi "Berraisms" But Not Bad....**

A little humor. Younger people may have a little trouble with these!



Don Meredith, Dallas Cowboys Quarterback once said: "Coach Tom Landry is such a perfectionist that if he was married to Raquel Welch, he would expect her to cook."

- Walt Garrison, Dallas Cowboys fullback when asked if Tom Landry ever smiles: "I don't know I only played there for nine years."
- Harry Neale, professional hockey coach: "Last year we couldn't win at home and we were losing on the road. My failure as a coach was that I couldn't think of anyplace else to play."
- Reggie Jackson commenting on Tom Seaver: "Blind people come to the ballpark just to listen to him pitch."
- Doug Sanders, professional golfer: "I'm working as hard as I can to get my life and my cash to run out at the same time. If I can just die after lunch Tuesday, everything will be perfect."
- Mickey Lolich, Detroit Tigers pitcher: "All the fat guys watch me and say to their wives, 'See, there's a fat guy doing okay. Bring me another beer.'"
- Max McGee, Green Bay Packers receiver: "When it's third and ten, you can have the milk drinkers; I'll take the whiskey drinkers every time."
- Tommy LaSorda , L A Dodgers manager: "I found out that it's not good to talk about my troubles. Eighty percent of the people who hear them don't care and the other twenty percent are glad I'm having them."
- E.J. Holub, Kansas City Chiefs linebacker regarding his 12 knee operations: "My knees look like they lost a knife fight with a midget."
- Vic Braden, tennis instructor: "My theory is that if you buy an ice-cream cone and make it hit your mouth, you can learn to play tennis. If you stick it on your forehead, your chances aren't as good."



- Tommy John, N.Y. Yankees, recalling his 1974 arm surgery: "When they operated, I told them to add in a Koufax fastball. They did, but unfortunately it was Mrs. Koufax's."
- John Breen, Houston Oilers: "We were tipping off our plays. Whenever we broke from the huddle, three backs were laughing and one was pale as a ghost."
- Bum Phillips, New Orleans Saints, after viewing a lopsided loss to the Atlanta Falcons: "The film looks suspiciously like the game itself."
- Al Hrabosky, major league relief pitcher: "When I'm on the road, my greatest ambition is to get a standing boo."
- Bill Veeck, Chicago White Sox owner: "I have discovered in 20 years of moving around the ball park that the knowledge of the game is usually in inverse proportion to the price of the seats."

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## My Walking Thoughts

October 24, 2021

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### I'm not a Golfer, but if I Were...

It appears the steroid shot has worked, so I'm back to hoofing it around Ojai, working to recover the muscle tone that fell to an all-time low in just a two-month hiatus. *Bah Geezerhood!*



One of my favorite walks takes me to the Soule Park Public Golf Course, a magnificent site tucked between the north and south ranges that define the valley.

As I suggest in the title, if there is one thing in the world I am most certainly not, it is a threat to anyone on the links, including Baby Snooks, so El Tigre can go into retirement confident that I will not challenge his place in the sport's Pantheon.

That said, I need to tell you of my one and only foray onto a golf course, a response to a challenge from the man who held the Marine Corps Air Station Cherry Point's Golf

Course record...no small accomplishment since in the 1950s and '60s its viper-filled bogs were visited regularly by various pro and amateur tours.

My competitor's name was Roger Something-or-other, and the challenge took place on a misty October Saturday when he suggested we venture out into the inclement weather for a pleasant round of golf.

"Hey, Rog, I've never played the game," I replied, but he dismissed my reluctance with the observation, "you're a fighter pilot, golf should be in your DNA." Actually, I don't think DNA had been invented at that time, but it whatever was in there was too dumb to decline. I decided to give it a try.

First stop was the Caddy Shack where I purchased a dozen well-used balls, and with help from the proprietor selected three clubs for the event...3 iron, 7 iron, and putter, no bag necessary. Then it was off to the battleground.

"Your honor," Rog said, causing me to look around for the judge, but he explained that I could go first, pointing downrange at a tiny flag flickering in the far distance.

After tossing some grass blades into the non-existent breeze to assess the environmental issues involved, I teed up the little dimpled thingy, gripped the 3-iron fiercely, took careful aim, and flailed away. By luck I managed to make contact with the ball, but the luck was not all to the good as, operating with a mind of its own, the ball squirted off into a pond 45 degrees to the right of the intended line.

"No problem," I assured Roger, "I've got 11 left...nine by the time I arrived at the green that on prior agreement counted as 'the hole' for my efforts. At this point I held what I considered to be an insurmountable lead—22 to 3.

By the time we reached the second green—one cunningly concealed behind a copse of trees and guarded by things called sand traps—I had increased my advantage to 41 to 7 (It would have been 41-6, but Roger blew a 46-foot putt) but I was now down to one ball.

"Maybe you should forget the irons and stick with the putter," Roger suggested, but I demurred using the 7-iron instead of the three, but good old Uncas fared no better, ending up near the edge of a swamp.

"Well, it's too late in the year for cottonmouths, so let's go find it," Rog suggested, leading the way into an area we both knew to be iffy, but as luck (good) would have it, the ball was sitting up on a tuft of grass. More luck (bad) decreed that the tuft was the resident turf of a copperhead who didn't abide by water moccasin rules and snagged Roger's forearm as he retrieved my ball.

After a short discussion we decided that a trip to the base hospital following a midcourse stop at the 19<sup>th</sup> Hole for a 'quick one' was in order.

Being all heart, I waited until Roger's injury had received treatment before reminding him that I was the winner, retiring at the top of my career having beaten the course champion head-to-head.

Maybe Tiger is luckier than he knows.

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## Root 66



### High Street Jamboree

High Street in the early part of the 20<sup>th</sup> Century had been the nuts and berries for the town's guiding lights, which Grandpa and Granny Hall most certainly had been, though I never met either.

Gramps, a philatelist and chief lawyer for the Southern Railway, was a sometimes coach riding companion of another stamp collector, FDR, during the latter's frequent trips to Warm Springs, GA.

Anyway, the High Street house was a rather splendid affair with a pair of large convex windows set in what looked like battlements that framed the broad doorway. High-ceilinged to provide relief from summer heat, the two-story house was impressive. Less impressive was an unkempt small park across the street, suggesting the neighborhood may have seen better days.

We had reached halfway up the steps when the door burst open, accompanied by shrieks of pleasure from two of the three children of the house...the girls, 8-year old Bruce Lynde (Brucie) and 11 year old March (Mooch) who bubbled over with enthusiasm. Behind them, in a more pensive mood stood John I. Jr. (Jay) with a bowl in his hand containing pollywogs, one of which had just that noontime sprouted proto-legs. Clearly, we had been eagerly expected and the welcome greetings on the porch for the neighbors to see took at least a quarter hour.

Aunt Jessie, of whom I will have much more to say in the future, was at the time engaged in the solemn duty befalling the head of household, scolding Jane for her pursuit of a life of crime. Jane was a cheerful black lady of indeterminate age who had been a member of the Hall family since the age of three when she had been left on doorstep—literally--by her mother on the way out of town.

The criminal activity that was a weekly topic of discussion was Jane's playing 'The Bug,' Macon's numbers racket to which she along with half the town was addicted despite the fact no one could remember having won so much as a dime in return for the pockets-and teacups full of coins that enriched the riff-raff who plied their illegal trade at the train station every afternoon.

Aunt Jessie, was from somewhere else, North Carolina I think, but it could have been Texas or the Caroline Islands where as a nurse she met John I, both putting in enormous hours welding Marines and Sailors back together.

Being something of a curmudgeon, and strange to boot—a family characteristic that pretty well proves my mother was my mother—John I returned to Macon after the war content to ply his trade amid the bones and viscera of civilian casualties as a lonely bachelor, but Jessie had other ideas, though I'm not sure Uncle John knew what very many of them were. I'll have more to say of this in the future.

Anyway, after Jessie had her weekly ration of several pounds of Jane's flesh—she was of heroic dimensions so I doubt she noticed their absence—Jessie welcomed us in the fondest manner possible, setting us to tasks relating to what was to be a grand dinner. Tom peeled potatoes and I sliced up onions, Brucie and Mooch involved themselves in a multitude of activities, Jay made certain the pollywog legs kept growing, Jane sulked for about 20 seconds before turning to the dinner table that could have served 14 with space left over. Jessie orchestrated the activities with a skill that would have done Toscanini proud.

John I breezed in at a quarter of seven, made obeisance to everyone in the house, Joined Jay in what was clearly now a frog watch, and announced it was time for a welcoming drink...only it wasn't quite.

Instead, Mr. Bell's infernal contraption summoned the good Doc back to the hospital to remove the handlebars from some biker's innards who had departed the Pig-n-Whistle without noticing the Mack Truck coming into the parking lot from a different direction.

"Oh, he'll be fine," John I announced on his return. "Pretty much the same thing happened to Jasper last month, except the handlebar lodged somewhere else."

"He'll find the money for another bike," Jessie prognosticated the first of two certainties, the other being he wouldn't even consider paying the medical bill."

By then it was dinnertime, attended by Jessie, John I, Jane, Jay, March, Bruce Lynde, Tom, Me, two girls from next door whose names I never got, and at least three cats. The piece de resistance was...you probably guessed it, southern fried chicken for the special occasion.

After dinner, John I left the cleanup to the little ones and led Tom, Jessie, and me to his study for a post-prandial drink. A great day for the happy travelers.

Next week: Meeting the Clan.

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