

Ode to E Pluribus Unum for Sunday November 7 2021

## Closeup Photographs of the Year



*Overall and Insect Winner, Insect Diversity*  
Pål Hermansen

[https://www.cupoty.com/winners-03?utm\\_source=join1440&utm\\_medium=email&utm\\_placement=newsletter](https://www.cupoty.com/winners-03?utm_source=join1440&utm_medium=email&utm_placement=newsletter)

These closeup photos reveal a world beyond our imaginings.

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**It's Time for More Highway Poetry**



Don't stick your elbow  
Out so far  
It may go home  
In another car.  
*Burma shave*

Trains don't wander  
All over the map  
'Cause nobody sits  
In the engineer's lap.  
*Burma shave*

She kissed the hairbrush  
By mistake  
She thought it was  
Her husband Jake.  
*Burma shave*

Don't lose your head  
To gain a minute  
You need your head  
Your brains are in it.  
*Burma shave*

Drove too long  
Driver snoozing  
What happened next  
Is not amusing.  
*Burma shave*

Brother speeder  
Let's rehearse

All together  
Good morning, nurse  
*Burma shave*

Cautious rider  
To her reckless dear  
Let's have less bull  
And a little more steer.  
*Burma shave*

Speed was high  
Weather was not  
Tires were thin  
X marks the spot.  
*Burma shave*

The midnight ride  
Of Paul for beer  
Led to a warmer  
Hemisphere.  
*Burma shave*

Around the curve  
Lickety-split  
Beautiful car  
Wasn't it?  
*Burma shave*

No matter the price  
No matter how new  
The best safety device  
In the car is you.  
*Burma shave*

A guy who drives  
A car wide open  
Is not thinkin'  
He's just hoping  
*Burma shave*

At intersections  
Look each way  
A harp sounds nice  
But it's hard to play.

*Burma shave*

Both hands on the wheel  
Eyes on the road  
That's the skillful  
Driver's code.

*Burma shave*

The one who drives  
When he's been drinking  
Depends on you  
To do his thinking.

*Burma shave*

Car in ditch  
Driver in tree  
The moon was full  
And so was he.

*Burma shave*

Passing school zone  
Take it slow  
Let our little  
Shavers grow.

*Burma shave*

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## Earth Tipped on its Side (and Back Again) . 84 Million Years Ago

By Harry Baker

The planet would've looked a little weird.



*A new study has confirmed a longstanding theory that the Earth's crust was tilted on its side around 84 million years ago.*

*(Image credit: Shutterstock)*

Earth has not always been upright. Turns out, the planet's crust tipped on its side and back again around 84 million years ago, in a phenomenon that researchers have dubbed a "cosmic yo-yo."

The actual name for the tipping is true polar wander (TPW), which occurs when the outer layers of a planet or moon move around its core, tilting the crust relative to the object's axis. Some researchers had previously predicted that TPW occurred on Earth late in the Cretaceous period, between 145 million and 66 million years ago, but that was hotly debated, according to a statement by the researchers.

However, the new study strongly suggests TPW did occur on Earth. Researchers mapped the ancient movement of Earth's crust by looking at magnetic-field data trapped inside ancient fossilized bacteria. They found that the planet tilted 12 degrees relative to its axis around 84 million years ago, before fully returning to its original position over the next 5 million years.

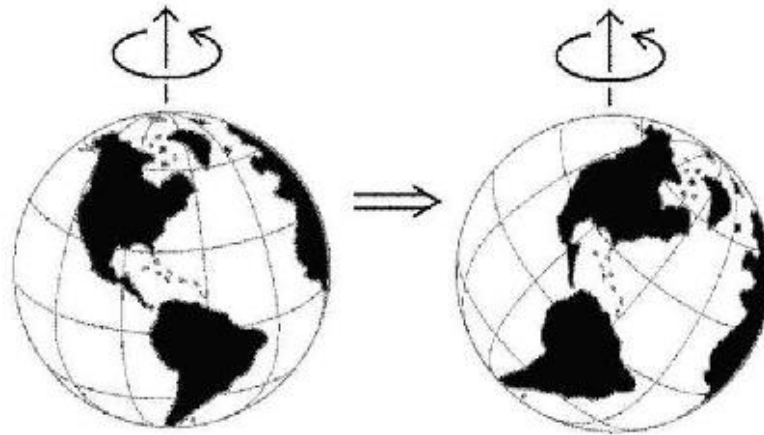
"This observation represents the most recent large-scale TPW documented and challenges the notion that the [Earth's] spin axis has been largely stable over the past 100 million years," the researchers wrote in their paper, published online June 15 in the journal *Nature Communications*.

### **Cosmic yo-yo**

Earth is made out of four main layers: the solid inner core, the liquid outer core, the mantle and the crust. During TPW, the entire planet would appear turned over on its side, but in reality only the outermost layers have moved.

"Imagine looking at Earth from space, TPW would look like the Earth tipping on its side," co-author Joe Kirschvink, a geobiologist at the Tokyo Institute of Technology in

Japan and a professor at the California Institute of Technology, said in the statement. "What's actually happening is that the whole rocky shell of the planet [the mantle and crust] is rotating around the liquid outer core."



*During TPW the Earth's crust rotates around the outer core, but the planet's axis and magnetic field remains the same.*

*(Image credit: Victor C. Tsai/Wikimedia Commons)*

Individual pieces of Earth's outermost layers are constantly moving and changing as tectonic plates collide together and subduct underneath one another; but during TPW, the outer layers move together as a single unit.

As a result, the tilt in Earth's crust would not have resulted in any major tectonic activity or drastic changes to major ecosystems. Instead, it would have been a gradual process that would not have impacted the dinosaurs and other living things walking around on the surface.

Earth's electromagnetic field would have been static during the TPW because it is created by the liquid inner core, which would have stayed in place. So rather than the magnetic poles moving, it is the geographic poles that start to wander.

### **Fossilized magnets**

To test if Earth did undergo TPW during the Cretaceous, the researchers turned to magnetic minerals within limestone deposits in Italy.

"These Italian sedimentary rocks turn out to be special and very reliable because the magnetic minerals are actually fossils of bacteria that formed chains of the mineral magnetite," co-author Sarah Slotznick, a geobiologist at Dartmouth College in New Hampshire, said in the statement.

Magnetite is a highly magnetic form of iron-oxide. Some types of bacteria can create chains of tiny magnetite crystals, which naturally orient with Earth's magnetic field at the time of their creation. When these particular bacteria died and were fossilized during the period of TPW, these magnetite chains got locked in place.

Because Earth's crust moved during TPW, and not its magnetic field, these magnetic fossils (which remained in surface layers of the planet) revealed how much the crust

moved relative to Earth's magnetic field over time. The team found that Earth's crust moved a total of almost 25 degrees over a period of 5 million years.

The researchers believe that their findings now settle the question of whether Earth had a TPW during the Cretaceous.

"It is so refreshing to see this study with its abundant and beautiful paleomagnetic data," Richard Gordon, a geophysicist at Rice University in Houston who was not involved in the study, said in the statement.

*Originally published on Live Science.*

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## **246th Birthday Message from General David Berger, CMC**



On 10 November 1970, Commandant Chapman challenged all Marines, active and inactive, young and old, deployed or recently returned from combat, "not to look back, but instead, to look to the future." He insisted that we celebrate our anniversary, "not as an end of almost two centuries of dedicated service, but as preparation for new service, new dedication, and new achievement." Those sage words resonate across time and are as applicable today as they were 51 years ago.

Our Corps holds to traditions that link us to the elite warriors who wore the uniform before us, but the traditions we hand down through the generations go far beyond tangible displays, symbols, or customs. The most important traditions that link us to our past and must be carried into the future are the intangible ones—traditions of courage, trust, discipline, loyalty, respect, perseverance, adaptability, and leadership. Today, 246 years since our warfighting legacy began, we celebrate those traits that have been forged in all Marines—past and present.

The character of Marines, our unwavering commitment and relentless pursuit of excellence, remains unchanged from that of past generations, even as the character of warfare is ever-changing. These changes will require us to do what Marines do best—adapt and innovate to win any battle or respond to any crisis. Just as Marines who

fought in Iraq and Afghanistan over these past 20 years adapted to the demands of protracted counterinsurgency operations—which would have been all too familiar to the Marines of 1970—we will adapt to the demands of the present and future, while learning the hard lessons from our recent past.

We can't know for certain where future battlefields will be, or how our methods of warfighting will be redefined as threats to our Nation evolve, but we can ensure that the Marines who fight those battles will be forged of the same courage, spirit, and warfighting excellence as all Marines before them.

We who serve today represent an unbroken chain that stretches back 246 years. As we mark our anniversary, we remember those who went before us, and as we look over the horizon to "new service, new dedication, and new achievement," solemnly swear to uphold their example of honor, courage, and commitment.

Happy 246th Birthday, Marines!  
Semper Fidelis,

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### **Allow Me to Present the First Among Firsts**



**Lt. General Victor 'Brute' Kulak, USMC**

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**Wonder About the Guy Who Swallowed His Cell Phone?  
Well, he's not alone.**





Old squadron mate, Bart Halliday, reminded me of this stellar achievement.

"Don't think I'll ever forget the flight student at Ellyson who managed to swallow his wings.

"The x ray commemorating his accomplishment was framed behind the bar in the O-Club there.

"Rumor was he passed them after a few day but it was a true memorial to his graduation."

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It seems the tradition was you put your wings in an "overboost", which was basically a shot of every type of hard liquor at the NAS Ellyson O Club placed in a large glass, not of pitcher capacity. Someone would announce "Overboost going down". You would then chug the overboost and catch your wings in your teeth. Timing was critical and if you erred, your wings wound up in your stomach. My technique was flawless but there was an X Ray on the wall of a Marine whose timing was less than perfect. I was told his name was "Wings" Weis.

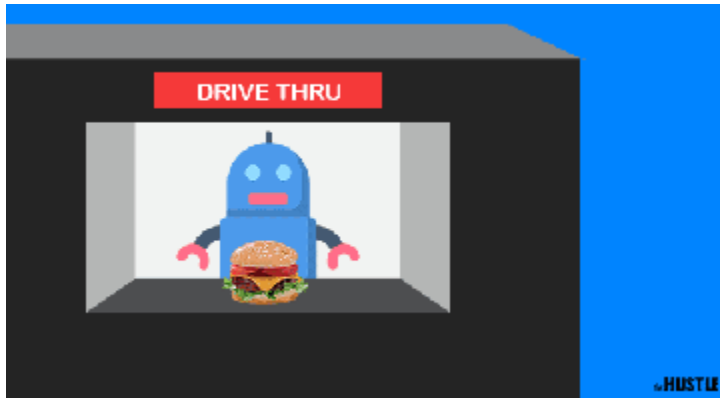
This ritual was conducted on Friday nights, the night of the winging ceremony; all newly winged unrestricted naval aviators put up 20 bucks and the drinks were free until the money ran out. Back then that was a lot of money and you could drink for quite awhile. Of course the VTers would come over to the HT8 compound and grace us with their presence, until the booze ran out.

Overboosts were not covered by the 20 dollar donation. They were 3 bucks and my TH 57 instructor bought mine. An excellent aviator who flew combat SAR for Big Mother and had more medals than God. I guess VietNam was a cake walk compared to teaching me how to hover and do touchdown autos.

*I'm tempted to ask how the rest of his career in naval aviation went, but after considerable thought, resisted it.*

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## Is AI the future of Drive-Thrus?



In the near future, you could order your Big Mac from a bot. Or maybe you already have...

Restaurants have been experimenting more and more with AI and robots, especially as companies struggle to find entry-level workers.

McDonald's has been working on tech-savvy drive-thrus for a while

In 2019, it acquired the startup Apprente, which specializes in voice ordering, and created McD Tech Labs. In June, it tested the tech in 10 Chicago drive-thrus, allowing customers to tell a computer their order. The bots were ~85% accurate.

At that time, CEO Chris Kempczinski told CNBC that McDonald's acquisition strategy was to bring companies in house for a short period, then find a partner to scale it.

And that's exactly what McDonald's did

Last week, McDonald's announced the sale of its Automated Order Taking (AOT) tech to IBM, which will also acquire McD Tech Labs.

IBM already has Watson, its own suite of AI tools (not to be confused with its supercomputer of the same name that, in 2011, beat Ken Jennings at "Jeopardy").

McDonalds has a long way to go before it can roll out AI to all 14k of its US restaurants. But as it stands, 20% of orders in McD's 6 top markets are already made digitally through apps, kiosks, or for delivery, accounting for \$13B in sales, per Restaurant Dive.

Check this out: Amid the pandemic, a Moscow KFC was almost entirely run by bots, reducing employee-customer contact. In 2017, for National Fried Chicken Day, KFC built a robot Colonel Sanders.

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## Adriana Ruhman: Mark the Name Down



<https://www.facebook.com/100005532362246/videos/1004593020453481/>

Ms. Ruhman collaborated often and most successfully with my granddaughter, Chelsea Trotti, in a variety of stage and video projects. Here one of Mia's works was brought to life by the Youth Orchestra of Los Angeles under the baton of Los Angeles Symphony Orchestra conductor, Gustavo Dudamel. While sadly the video fails to catch his words, watch how he works with the group in translating her piece from paper to performance. Will you hear from her again? You betcha...soon and often.

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## BU Entrepreneurs Are Moving Two New Medical Devices Closer to Market



*Graduate researchers have won investor funding for an improved ileostomy system and a wearable ultrasound device*

Jessica Colarossi

Could a wearable that emits ultrasound help transplant patients stave off organ rejection? Is there a better designed ileostomy bag that could improve the fit and overall experience for wearers? Boston University graduate researchers with a penchant for innovation and entrepreneurship recently developed designs for these two medical devices—and their pitches have attracted interest and funding.

They did so with the help of MInT (short for Medical Innovation and Technology program), which was launched in spring 2021 by innovation-minded BU graduate students collaborating from the School of Medicine, College of Engineering, School of Public Health, and Questrom School of Business to empower early-career clinical scientists with hands-on medical device design experience.

“From the beginning I thought having [a pre-accelerator program] was a fantastic idea and very necessary to institute at BU to bridge the gap of entrepreneurial opportunities for advanced degree students here,” says Elissa Everton, a fifth-year student at the BU School of Medicine and MInT’s program director.

MInT participants—14 in total—gathered virtually throughout spring 2021 to brainstorm and polish their projects with the goal of eventually going from the pitch presentation (think Shark Tank) to securing funding to eventually getting their devices in the hands of doctors and medical professionals.

“Teams first came to us with only general ideas of the projects they wanted to pursue,” Everton says. “By the end of [the MInT] program, they pitched solid, persuasive business plans with clear paths to commercialization.”

Over the summer, the teams of graduate researchers participated in a Pitch Day, presenting their medical device ideas to industry leaders and experts. Four teams of BU medical students pitched designs that won funding awards totaling about \$12,000 thanks to MInT's many sponsors, including Innovate@BU/The BUild Lab and the Technology Development Office.

Since its launch, MInT has merged with a national entrepreneurship nonprofit called Nucleate. Everton has become Nucleate's vice president of operations.

"The merger is very exciting," says MInT founder Shen Ning, a BU MD/PhD candidate studying neuroscience. She is now leading efforts to expand Nucleate in Europe.

Ning participated on one of the four Pitch Day teams with collaborators Dragana Savic and Pablo Elvira—altogether making up team INIA Biosciences—to create a noninvasive device that uses ultrasound to lessen the likelihood of a transplant recipient's body rejecting a newly transplanted organ, such as a kidney.

Organ rejection happens because the body's immune system sees the new organ as a foreign invader and attacks the new organ's tissues. Team INIA's ultrasound device is designed to work by suppressing this immune response by modulating certain nerve signals.

"[Organ transplant] patients are put on a cocktail of immunosuppressant drugs on a trial and error basis that could last for the rest of the patient's life," Ning says. She explains that this could not only have harmful side effects, but is also very expensive, costing more than \$30,000 every year for each patient.

And according to the INIA team, those efforts don't always pay off: about 30 percent of kidney transplants are rejected even despite the use of immunosuppressive drugs.

"We see our device as an opportunity to reduce these costs by dampening the immune system in a way that can also prevent a lot of the side effects associated with these drugs," she says.

The team says their INIA device could also track the progress of organ acceptance into the body, sending an alert if rejection begins early on—potentially saving that organ from breaking down completely and allowing it to be re-transplanted into a patient that could be a better match.

The team's medical device design was recently recognized as a "Deep Tech Pioneer" by technology start-up Hello Tomorrow, and accepted into a number of innovator challenges, including MassChallenge.

They are now focusing on the next steps in the lengthy process of bringing their device to market—submitting grant proposals for more research and development funding and looking to recruit more engineers to join the product development team.

Another MInT team, this one inspired by more personal medical experience, is also making strides on bringing their device design to market.



When BU biomedical scientist Guillermo Arroyo needed surgery to treat Crohn's disease, a chronic inflammatory bowel disease, he was temporarily left with an ileostomy.

When surgery involves removing part of the large intestine, a surgeon creates an ileostomy—an opening through the belly's wall so that waste can leave the body without traveling all the way through the lower intestinal tract. Ileostomies, which bypass the large intestine, are quite common procedures for people battling certain types of bowel cancers or chronic illnesses. Typically, the stoma is connected to a waste collection bag or pouch by an adhesive sticker—something Arroyo says he quickly realized can lead to unpleasant leaks.

"The design hasn't changed in any big way for decades," Arroyo says. That's what inspired him to think of "IleoPak," a medical device that can attach to a stoma more effectively, replacing the adhesive sticker with a small tube that gets securely inserted into the stoma opening and attached to a waste collection pouch.

He also reimagined a better pouch design, creating one that is sturdier than current bags, and can also be more easily replaced without the patient needing to remove the stoma tube, reducing the possibility of accidental leakage or other difficulties in emptying waste from the pouch.

"The reason I came to Boston from Spain is for these kinds of opportunities that allow you to advance science in many ways," Arroyo says.

He and his teammates—BU graduate student researchers Ronald Muscarella, Shriya Reddy, and Cristina Tous—came in first place in MInT's Pitch Day competition. Now, Arroyo is creating IleoPak's official company and business strategy, meeting with CEOs, lawyers, and medical technology experts to build expertise before spending their award money. They are also looking to expand their team and to create a scientific board, a step they say is critical for IleoPak to gain credibility with potential investors.

They eventually plan to get input from patients and work with a technical illustrator to keep improving their device design based on feedback from patients, physicians, and biomedical engineers.

"This project will be attacking the issue of inflammatory bowel disease, which is a chronic disease, in an impactful way," Arroyo says. "That's what motivates me."

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**Dufferdom Unter Linx**

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## **Foo Fighters**



The American rock band formed in Seattle, Washington, in 1994. The band was founded by former Nirvana drummer Dave Grohl as a one-man project following the dissolution of Nirvana.

The group took its name from "foo fighter", a nickname coined by Allied aircraft pilots for UFOs and other aerial phenomena. Over the course of their career, Foo Fighters have won 12 Grammy Awards, including Best Rock Album four times.

**Making A Fire** <https://youtu.be/gfbJCzaEdps>

**Walk** <https://www.youtube.com/watch?v=4PkcfQtibmU>

**Foo Fighters Learn to Fly** [https://www.youtube.com/watch?v=1VQ\\_3sBZEm0](https://www.youtube.com/watch?v=1VQ_3sBZEm0)

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## **Sun Outburst Goes 'Cannibal'**

By Meghan Bartels about 4 hours ago



*An image shows a solar flare associated with the coronal mass ejections of Nov. 1 and Nov. 2, 2021.*

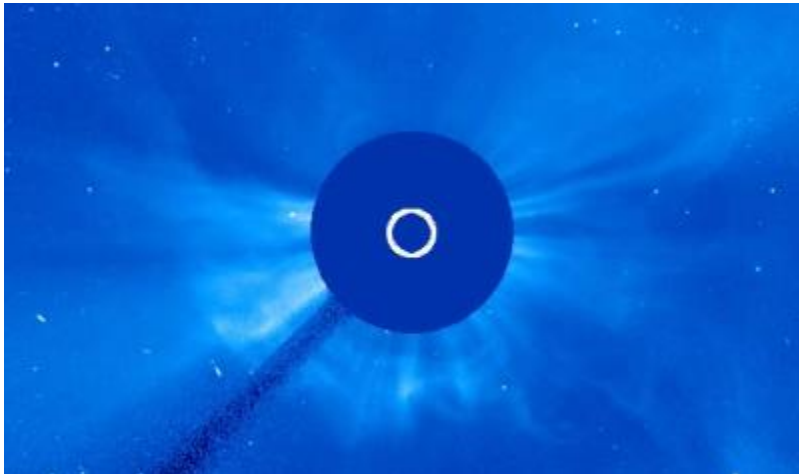
*(Image credit: NASA/SDO & AIA/EVE/HMI science team)*

Space weather incoming! <https://youtu.be/gtxazWAgRUE>

It's been a busy few days for our sun, which has produced three of the outbursts that scientists call coronal mass ejections (CMEs) since Monday (Nov. 1).

CMEs shoot globs of gas and magnetic fields out into space, often from sunspots, which are knots in the sun's magnetic field. On Nov. 1 and Nov. 2, a sunspot designated AR2887 unleashed two of these outbursts. Then, later in the day on Tuesday (Nov. 2), a second sunspot called AR2891 produced a CME as well.

That third outburst, it turns out, is moving more quickly than its two predecessors, so it swept through all of one previous CME and part of the other, according to monitors at SpaceWeather.com — hence the moniker "cannibal" CME.



*An image shows a coronal mass ejection bursting off the sun on Nov. 2, 2021.*

*(Image credit: SOHO (ESA & NASA))*

All three CMEs have been headed more or less toward Earth, and scientists predict that the resulting large CME will arrive at Earth this evening (Nov. 3) and produce geomagnetic storms beginning on Thursday (Nov. 4).

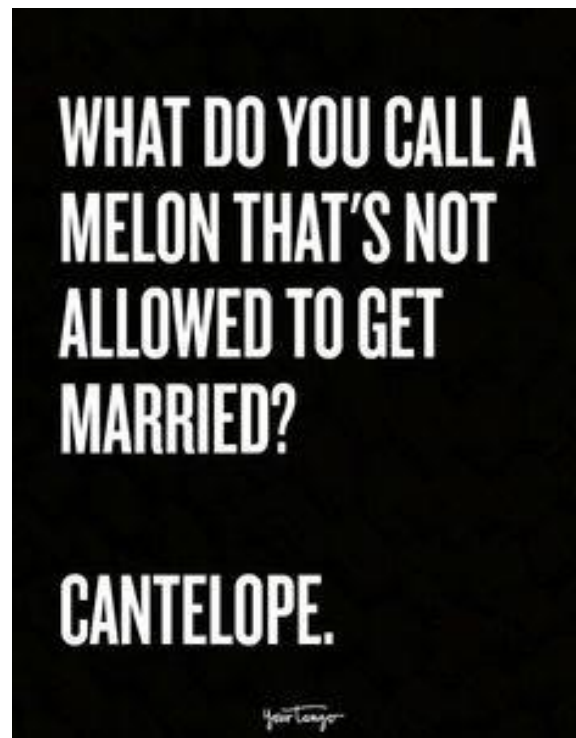
The Space Weather Prediction Center (SWPC) of the National Oceanic and Atmospheric Administration (NOAA), which tracks CMEs and similar events, has declared a minor geomagnetic storm watch for Wednesday and a moderate watch for Thursday.

As a result of these storms, SWPC has warned of potential power grid fluctuations and irregularities in satellite orientation. The storms may also trigger stunning aurora displays of the northern lights as far south as New York, Wisconsin and Washington, the prediction noted.

The sun's activity is governed by an 11-year cycle; currently, the sun is in what scientists have labeled "solar cycle 25." This cycle is expected to peak in 2025, and early predictions suggested it would be a fairly moderate cycle, much like its predecessor.

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### **Get Ready for Groaners**



What did  
the cow say  
to the calf?

It's pasture bedtime.



YOU'RE RIDING A  
HORSE FULL SPEED,  
THERE'S A GIRAFFE  
NEXT TO YOU, AND A  
LION CHASING YOU.  
WHAT DO YOU DO?

GET YOUR DRUNK ASS  
OFF THE CAROUSEL.



During a recent password audit, it was found that a blonde was using the following password:

"MickeyMinniePlutoHueyLouieDeweyDonaldGoofySacramento"

When asked why she had such a long password, she said she was told that it had to be at least 8 characters long and include at least one capital.

**Why did the cows return to the marijuana field?**



**It was the pot calling the cattle back.**



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**Tusitala," Teller of Tales' Robert Louis Stevenson**



In 1882 Stevenson and Fanny moved to Hyeres in the South of France. There, Stevenson suffered a hemorrhage which confined him to bed, prevented him from speaking, and rendered him incapable of writing prose.

Simple verse was within his capabilities, so while he recovered he wrote most of *A Child's Garden of Verses* (1885). Stevenson had followed up *Treasure Island* with another boy's adventure story called *The Black Arrow*, which was published serially in *Young Folks* in 1883 and as a book in 1888.

Although more popular with the juvenile readers of *Young Folks* than *Treasure Island* had been, *The Black Arrow* is far from being a classic. His next serial was a distinct improvement. A map of an imaginary island gave Stevenson the idea for the first story, and a nightmare supplied the premise of the second. In addition to memorable origins, these tales also share Stevenson's key theme: the impossibility of identifying and separating good and evil.

Treasure Island's Long John Silver is simultaneously a courageous friend and a treacherous cutthroat, and Dr. Jekyll, who is not wholly good but a mixture of good and evil, is eventually ruled by Hyde because of his own moral weakness.

With Silver, Jekyll, and others, Stevenson set standards for complex characterization that were adopted by later writers. His method of rendering ambiguous, enigmatic personalities was one of Stevenson's greatest literary contributions.

## **Poems**

### **At the Sea-Side**

When I was down beside the sea  
A wooden spade they gave to me  
To dig the sandy shore.  
My holes were empty like a cup.  
In every hole the sea came up  
Till it could come no more.

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### **My Shadow**

I have a little shadow that goes in and out with me,  
And what can be the use of him is more than I can see.  
He is very, very like me from the heels up to the head;  
And I see him jump before me, when I jump into my bed.

The funniest thing about him is the way he likes to grow—  
Not at all like proper children, which is always very slow;  
For he sometimes shoots up taller like an india-rubber ball,  
And he sometimes gets so little that there's none of him at all.

He hasn't got a notion of how children ought to play,  
And can only make a fool of me in every sort of way.  
He stays so close beside me, he's a coward you can see;  
I'd think shame to stick to nursie as that shadow sticks to me!

One morning, very early, before the sun was up,  
I rose and found the shining dew on every buttercup;  
But my lazy little shadow, like an arrant sleepy-head,  
Had stayed at home behind me and was fast asleep in bed.

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### **The Land of Nod**

From breakfast on through all the day  
At home among my friends I stay,  
But every night I go abroad

Afar into the land of Nod.

All by myself I have to go,  
With none to tell me what to do —  
All alone beside the streams  
And up the mountain-sides of dreams.

The strangest things are there for me,  
Both things to eat and things to see,  
And many frightening sights abroad  
Till morning in the land of Nod.

Try as I like to find the way,  
I never can get back by day,  
Nor can remember plain and clear  
The curious music that I hear.

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### **Romance**

I will make you brooches and toys for your delight  
Of bird-song at morning and star-shine at night.  
I will make a palace fit for you and me  
Of green days in forests and blue days at sea.

I will make my kitchen, and you shall keep your room,  
Where white flows the river and bright blows the broom,  
And you shall wash your linen and keep your body white  
In rainfall at morning and dewfall at night.

And this shall be for music when no one else is near,  
The fine song for singing, the rare song to hear!  
That only I remember, that only you admire,  
Of the broad road that stretches and the roadside fire.

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### **Fifteen men on the Dead Man's Chest**

Fifteen men on the Dead Man's Chest —  
Yo-ho-ho, and a bottle of rum!  
Drink and the devil had done for the rest —  
Yo-ho-ho, and a bottle of rum!

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After living temporarily at Saranac Lake, New York in 1887, Stevenson, Fanny, Lloyd, and Stevenson's widowed mother began touring the South Pacific the following year. Eventually, the clan settled on the island of Upolu in Samoa in 1890. At the foot of Mount Vaea, Stevenson had a house built which was called Vailima.

Continuing to write, he also became an advocate for the Samoans who named him "Tusitala," teller of tales. On December 3, 1894, at age 44, Stevenson died of a cerebral hemorrhage. He left unfinished Weir of Hermiston, which promised to be his single greatest work. A path was cleared by nearly 60 Samoan men to the summit of Mount Vaea, where Stevenson was buried.

Immediately after his death, biographers and commentators praised Stevenson lavishly, but this idealized portrait was attacked in the 1920s and 1930s by critics who labeled his prose as imitative and pretentious and who made much of Stevenson's college-day follies.

In the 1950s and 1960s, however, his work was reconsidered and finally taken seriously by the academic community. Outside of academia, Treasure Island and Dr. Jekyll and Mr. Hyde continue to be widely read over a century after they were first published, and show promise of remaining popular for centuries to come.

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## **H2 Motronics to Race a Hydrogen Fuel Cell Motorcycle**

By Alicia Moore



H2 Motronics has announced its intentions to have a hydrogen fuel cell motorcycle called the H2 Kompact ready by Spring 2022.

The announcement has arrived as media attention has been focusing primarily on electric vehicle development.

As electric vehicles become commonplace among scooters, H2 Motronics has announced its intentions to focus on a hydrogen fuel cell motorcycle. H2 is considered to be a viable alternative source of fuel to power motorcycles. This could become one of many important directions to take in personal transportation vehicles as countries work to meet the targets of the Paris Agreement and other climate goals. The International Council on Clean Transportation determined that both electric vehicles and H2-powered vehicles will play a role in this regard.

Companies such as H2 Motronics are working to continue developing this technology so that it can be rolled out for mainstream use and reduce carbon emissions from the roads around the world. Earlier this year, Mob-ion drew attention to its TGT electric-H2 scooter, which achieved a range of 248 miles.

H2 Motronics, from France, is working with the Tecmas Racing Team for the development of the H2 Koncept (H2K) racing motorcycle. The goal of this model is to demonstrate the true potential that H2 has to offer this type of vehicle. The collaboration between the two companies began in 2019 when Emmanuel Esnault took his position as CEO at Texys Group, the H2 Motronics parent company. Esnault made the move from Renault Sports Technologies, where he worked for eight years after a two-year stint at McLaren Applied Technologies and five McLaren's Formula 1 racing team seasons. This has equipped him with a unique understanding of performance.

“Like many, we were focused on all-electric, especially for motorcycles,” said Philippe Leuweres, the Texys Group president when discussing the hydrogen fuel cell motorcycle. “From there, the company met officials from the Vehicle of the Future Pole (PVF). We discussed a lot and arrived at the yields of hydrogen.”

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## **Smallest Luxury Apartment in Tokyo**



<https://laughingsquid.com/smallest-luxury-apartment-in-tokyo/>

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## **Stanford Researchers Find Whales Are More Important Ecosystems Engineers than Previously Thought**



*Researchers from Stanford University, UC Santa Cruz and Duke University investigate a humpback whale by boat and drone in the surface waters near the Western Antarctic Peninsula. (Image credit: Duke University Marine Robotics and Remote Sensing under NOAA permit 14809-03 and ACA permits 2015-011 and 2020-016)*

Research on whale feeding highlights how the precipitous decline of large marine mammals has negatively impacted the health and productivity of ocean ecosystems.

By Taylor Kubota

From 1910 to 1970, humans killed an estimated 1.5 million baleen whales in the frigid water encircling Antarctica. They were hunted for their blubber, baleen – the filtering fringe they have in place of teeth – and meat. One might assume that from the perspective of krill – the tiny shrimp-like creatures the whales feast on – this would be a boon. But new research published Nov. 3 in *Nature* from a collaboration led by Stanford University’s Goldbogen Lab suggests the opposite: that the decline of baleen whales in the Southern Ocean has led to a decline of krill.

This paradoxical result is a sign of just how much the precipitous decline of the large marine mammals has negatively impacted the health and productivity of ocean ecosystems, the researchers say.

“Fifty years after we stopped hunting whales, we’re still learning what impact that had. The system is not the same,” said Matthew Savoca, a postdoctoral scholar in the Goldbogen lab at Stanford’s Hopkins Marine Station and lead author of the paper. “We’re looking into ways of using this information to restore ocean ecosystems and bring whales back. And hopefully, that will have benefits for everything from biodiversity conservation to fisheries yield to carbon storage.”

The researchers came to their troubling conclusion after asking a very fundamental question: How much do whales eat?

### **Modernizing whale research**

Large whales are inherently difficult to study because they can't be studied in captivity. So, previous estimates of how much whales consume were generally limited to either studies of dead whales or metabolic extrapolations based on much smaller animals.

For this study, the researchers looked at blue, fin, humpback and minke whales – all whales that feed by gulping a large amount of water and filtering it through their mouths' fringed baleen plates until only their prey remains. They employed several high-tech tagging devices that attach to whales typically for about five to 20 hours, recording their movements, acceleration, sound and, if light allows, video. Drones, operated by the Duke Marine Robotics and Remote Sensing Laboratory, measured the length of individual, tagged whales, which helps the researchers estimate the size of their gulp. In collaboration with the Environmental Research Division at NOAA and the University of California, Santa Cruz, the researchers also ran an underwater device called an echo sounder – which Savoca likens to "a fancy fish finder" – which uses sound waves at several different frequencies to measure how much prey is around.

"All of that put together really gives us this amazing view," said Shirel Kahane-Rapport, a graduate student in the Goldbogen lab and co-author of the paper. "From each one, you can learn a lot about whales, but the combination takes the research to another level."

Analysis of the data they captured revealed that whales in the Southern Ocean eat about twice as much krill as previous estimates suggested, and that krill-feeding blue and humpback whales off the coast of California eat two to three times as much as previously thought. Fish feeding humpback whales, however, might eat the previously estimated amount or even less. This range seems to reflect the energy density of the food – whales need to eat more krill to get the same energy as they would from a smaller amount of fish.

"As large baleen whales get bigger, the anatomical machinery that allows them to eat also gets relatively bigger," said Jeremy Goldbogen, co-director of Hopkins Marine Station and associate professor of biology in the School of Humanities and Sciences, who is senior author of the paper. "They have evolved these systems that allow them to be eating machines. That disproportionately bigger gulp size allows them to take advantage of abundant food, like krill."

The researchers made their estimates of consumption based on their data about prey density, gulp size and lunge frequency, as recorded by the tags. Going from hours of data to general estimations – and applying those to whales around the world – required careful calculations.

"We came up with a very involved process and we try to do our best to retain as much uncertainty as possible along the way," said Max Czapanskiy, a graduate student in the Goldbogen lab and co-author of the paper. "No one else has data like this. It's a huge



step forward, but at the same time, it's a hard system to study and there's still a lot of uncertainty."

With these new consumption estimates, the researchers calculated that the early 20th-century abundance of krill in the Southern Ocean had to be about five times what it is now in order to feed the pre-whaling whale population. This implies a complex role for whales in their ecosystems where the decline or recovery of their populations is strongly tied to overall ecosystem productivity and functioning.

"Hopefully work like this can really get people to consider the ecosystem-wide repercussions of human activities because we are still continually affecting their environment," said Kahane-Rapport.

### **Mobile processing plants**

The Southern Ocean is among the most productive ecosystems on Earth, largely due to the abundance of microscopic algae, called phytoplankton. Phytoplankton are a vital food source for krill, small fish and crustaceans – which are, in turn, consumed by larger animals, including whales, birds and other fish. But whales also help sustain phytoplankton. Through eating krill and then defecating, whales release iron locked within krill back into the water, making that iron available to phytoplankton, which need it to survive.

"Without phytoplankton, you're never going to get all the animals and everything that we care so much about," Czapanskiy said. "When whales were very numerous, they had this incredible role in bolstering the ecosystem."

"Think of these large whales as mobile krill processing plants," Savoca added. "Each fin whale or blue whale is the size of a commercial airliner. So, in the first half of the 20th century, before whaling, there were an additional one million of these 737-sized krill processing plants moving around the Southern Ocean eating, pooping and fertilizing."

The many twists and turns of these findings demonstrate the potential impact of asking simple questions. By trying to pin down how much whales eat, this work has cast doubt upon what people thought whales needed to survive, and how the activities of whales and humans affect ocean ecosystems.

"Just this idea that if you remove large whales, there's actually less productivity and potentially less krill and fish is amazing," said Goldbogen. "It's a reminder that these ecosystems are complex, highly intricate, and we need to do more to fully understand them."

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## **My Walking Thoughts**

**November 7, 2021**

**Perhaps it's Time for You to Elect Me King**

For years I've framed what I'd do about unsavory situations by saying, "*If I were King...*" but in recent times I've begun to wonder, given what's going on in the world, if it isn't time to toss my crown into the ring.



Now before you get all excited that I've overstepped my self-imposed limits and about to engage in the fruitless Tweedle-Dick vs. Tweedle-Dum realm of nonsense—forget that--I've got my sights on the big one...*Politics* with a big capital **P**.

With each passing year, doesn't it seem to you that the gulf between *ourselves*—the source of our government's largesse, and the *thems* who gather at the trough eager to dispense what's there (and quite a bit more to keep the entitled popular front at bay) and become wealthier by the minute—becomes wider.

It doesn't seem so to you? Well don't write me in for king on your next ballot. Otherwise, consider my platform:

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- All current Congresspeople and their staffs can draw their one last paycheck and find a real job.
- All department appointees are out of a job, replaced by genuine workerbees not the golden children in the *policy* line of succession.
- Members of the House of Representatives will be comprised of names supplied by random number generation, of people who meet the same requirements as for serving on a jury—US citizenship, over 21 years of age, able to read and write English, not convicted or under indictment for a felony.
- The term of such service to be *One Year* with food and lodging, along with a decent (as opposed to indecent) wage commensurate with their service.
- Monthly transportation to and from one's constituent area will be provided along with reasonable compensation for expenses incurred in such activities.
- At the completion of one year's service not only will these people not have to serve again, but they will be *prohibited* from doing so.
- The 17<sup>th</sup> Amendment to the Constitution will be rendered null and void, and henceforth the states will each assign two US Senators, returning the Senate's role to that envisioned by the nation's Founders, i.e. the check against Federal aggrandizement.

- I haven't figured out what to do about the Supreme Court in order to remove it from the political limelight (but I will by the time I'm elected).
- The Federal Bureaucracy will in each and every one of its branches and facilities undergo ten increments of decimation, at the end of which those who have been axed may apply to replace ones spared termination. (*This will leave roughly one-third of the staffs intact.*)
- All military servicemembers who have spent more than 50% of their time in staff billets are immediately terminated or retired. Those in staff billets not thus terminated will be ordered to operational billets within one year.
- Excepting only the US Constitution and Amendments, at 0800 EDT of Congress' first session, all Federal laws as well Presidential Orders will be declared null and void. Congress will then have the opportunity to create new laws up to the total number of *five hundred* in their place.
- Each of these laws must be expressed in a single unambiguous declarative sentence with no coattail riders.
- If Congress wishes to add a new law beyond the authorized 500, it must remove one from those previously enacted.
- Before a law can go into effect, the plan and means for its enforcement must be in place.
- Members of Congress and all other Federal authorities and employees are subject to the same laws as those affecting the public at large.
- Oh yes, the Federal Reserve will pass into history with control of the currency returned to Congress along with determination of such fiscal matters as foreign aid and emergency relief actions.
- Any member of Congress authoring a bill that costs taxpayer money, has to count out the proceeds in United States currency. If the service year ends prior to the completion of the transaction, that's it. The recipient may take it or leave it...or try again.
- If the President or Congress decide to plunge the nation into an unprovoked war, those who voted for it will get to observe their handiwork from the frontlines.

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I will take up my scepter at 0800 immediately upon my investiture, then set my policies in motion by appointing a council of regents to oversee the affairs of state from then until May 22<sup>nd</sup>, at which time the new Congress and Senate will go into session, ready to form the executive branch and carry out its governance activities.

At 1600 EDT on May 22<sup>nd</sup>, the regency will be dissolved, and I will abdicate my throne forever with no successorship.

There may be a few more things to be done, but rest assured they will be to the detriment of the 'deep state,' not the rights and prerogatives of citizens.

Sometime between now and November 2024 I will need to find someone to help me fill in all the forms. Please note that it will be a gratuitous effort since my budget will be \$0.02, the two cents will go to help my defeated foes to start a new career.

*Sine die.*

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## **Root 66**



### **Doctor John I's Best Choice**

That would be my Aunt Jessie, who in her 100 years here on earth made it a better place. Not just a little better, a lot better in ways that everyone who knew her recognized but I had only second-hand when Tom and I invaded her turf...and the turf was hers, make no mistake about that.

A couple of weeks ago I told of walking into the house with her tuning up for a regular—well more precisely, perpetual—love-based scourging of Jane for her donation to 'The Bug,' Macon's hood-infested scam. From there, she turned on us and said something to the effect of, "Don't just stand there, you can help with dinner," pointing us to baskets of potatoes and onions.

Those done with as little wastage as possible, she asked, "Either of you know how to make mayonnaise?" Noting our dumbfounded expressions, she gestured for us to follow her to another part of the kitchen, where she undertook to remove the some of the chemical mysteries through the magic of Aunt Jessie's Food Prep 1 Course. (So you'll know without guessing, we got to FP-301 before we headed off for Atlanta two weeks later.)

As for mayonnaise, she explained, the keys lie in three areas: temperature of the ingredients, the proper amount of mustard to create the correct chemical balance, and the oil dribbling time for the conglomeration to set before adding the bulk of the vegetable oil.

Somehow it worked out and she shooed us from scullery.

The next day, while Tom went with my cousin Ken Hall to investigate what was to be our home on 'Breezy Hill' for the rest of the stay, I went with Jessie to her weekly reading to the blind at what I think was the Hepsibah Home...I could be wrong on the venue.

I had rendezvoused with Jessie at her well-used Studebaker sedan—who knew the year of such vehicles?—only to be sent to change into my best clothes.

"Didn't you say they were blind," I asked huffing and puffing from the dash up and down the interminable flights of stairs, wondering what difference it could possibly make what I wore.

"They'd know," she replied with a certainty that left no room for doubt. So Off we went The Home—rather grand in a post-Tara manner--was set on a hill overlooking Forsythe Road and the forested land to the south.

Inside, two dozen ladies and gentlemen, dressed impeccably for the occasion sat in a semi-circle facing a comfortable chair in front of an elaborate fireplace whose mantle was festooned with beautifully arranged flower bouquets. The minute we walked in I could feel the anticipation rise to a near-living presence. This was a special time for them, one I sensed brought a heightened level of joy to their lives.

Jessie began her reading without preamble. I had imagined something along the lines of *Little Women* or perhaps *Return of the Native*, but no, I was off by at least a century and ten country miles. I don't know the name of the book, but it would have made *Hustler Magazine's* Top Twenty, focusing on Little Christina's submergence into self-doubt, debauchery, and the sacrifice of her chastity on the altar of lust. The audience was...well, transfixed.

An hour later it was tea-time, in this case a fruit-based wine. As I prepared to sample the amber liquid, I noticed Aunt Jessie's frown and slight shake her head that said, "None for you, dear nephew."

It had begun to rain while we had been inside, something beyond my wildest Southern Californian imagination—who ever heard of rain in June?—and I had left my window partway down. "Oh well," I thought, "the seat of my trousers could probably use a little bathing," as we headed down the steep driveway toward home.

To satisfy my curiosity, I asked why she had signaled me to forgo the pleasure of a small teacup of wine, thinking that it may have been a supply/demand situation.

"Because you're not 21 yet," she said, putting me in my place. Indeed, it would be a month and a couple of days until I reached that august age, but I could tell by the set of her jaw this was not a debatable subject.

I was sullenly mulling over the situation when suddenly Jessie slammed on the brakes, nearly throwing me through the windshield. (Granny Studebaker like most others of her ilk had never heard of seatbelts in passenger cars back in 1957.)

"Quick, head for that bush over there," Jessie ordered over her shoulder, having bailed out of the car before it had come to a full stop.

"What the..." I gasped, sprinting to where she had said, when I caught sight of the object of this sudden activity, a raccoon, who, apparently aware he was trapped, lay down flat to await his fate.

"Grab him, Jessie shouted, racing back to the thankfully stopped car. "Gently. Don't frighten him."

Of course, I frightened him, how could I not, but I tried not to hurt him, hoping he would accord me the same favor. Miraculously he curbed his instincts to sink needle-sharp incisors and threatening claws into my exposed and by then waterlogged parts. In short order, Jessie arrived with a cage presumably made for just such a possibility, explaining, "Jay has wanted to study raccoons forever," as we loaded 'Ricky' into contraption.

*'At least a coon's age,'* I thought irreverently.

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**Next week: The Thrill of Breezy Hill.**

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