

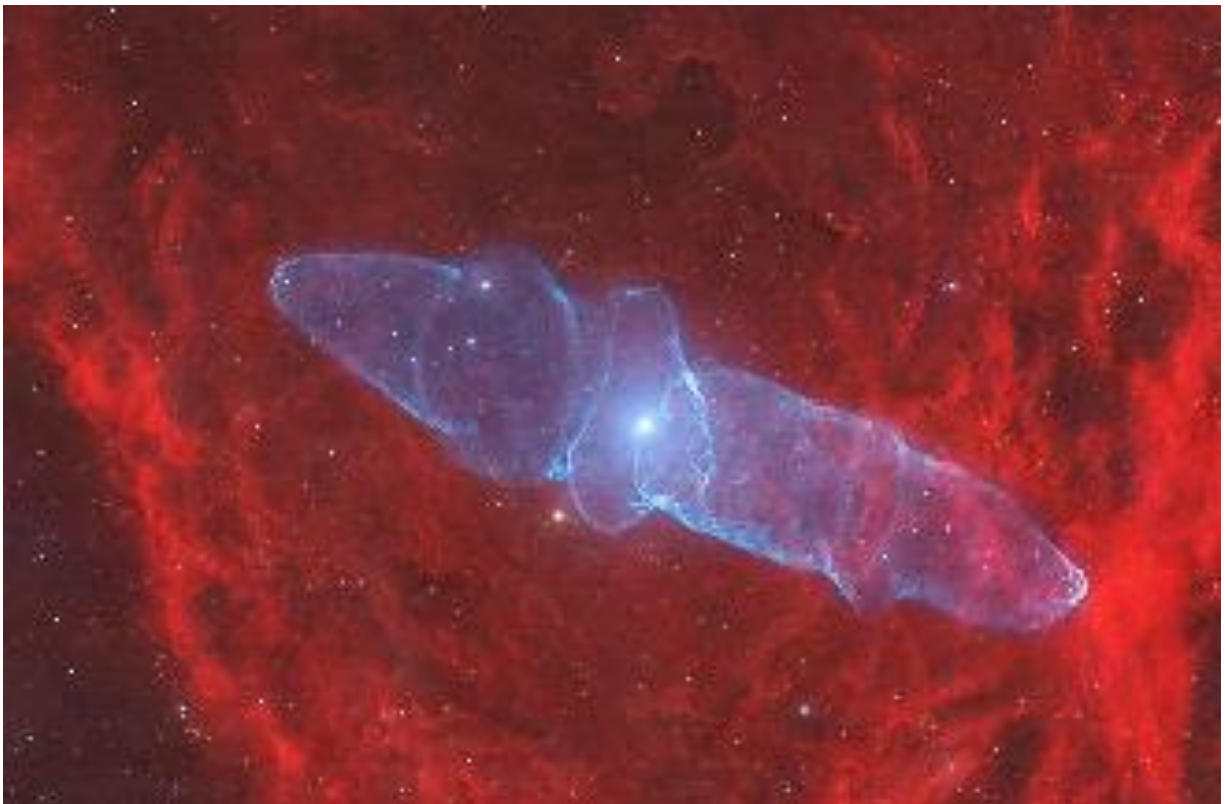
## Ode to E Pluribus Unum for Sunday July 28 2024

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### Ou4: The Giant Squid Nebula



*Image Credit & Copyright: Alex Linde*

Squids on Earth aren't this big. This mysterious squid-like cosmic cloud spans nearly three full moons on planet Earth's sky.

Discovered in 2011 by French astro-imager Nicolas Outters, the Squid Nebula's bipolar shape is distinguished here by the telltale blue emission from doubly ionized oxygen atoms. Though apparently surrounded by the reddish hydrogen emission region Sh2-129, the true distance and nature of the Squid Nebula have been difficult to determine. Still, one investigation suggests Ou4 really does lie within Sh2-129 some 2,300 light-years away.

Consistent with that scenario, the cosmic squid would represent a spectacular outflow of material driven by a triple system of hot, massive stars, cataloged as HR8119, seen near the center of the nebula. If so, this truly giant squid nebula would physically be over 50 light-years across.

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## Unconfusing Fusion

### Will Fusion Come to Life in Our Lifetimes?

Earlier in the decade we saw a net power return from a fusion reactor. While its arrival in commercial service may in the offing, myriad questions and challenges remain.

1. In this and future Odes we'll take a look at the fusion arena.
2. What is Fusion Energy <https://youtu.be/bPK-Xu9qwRc>
3. Power to Change the World <https://youtu.be/U67N1qCylws?t=38>
4. What is Plasma <https://youtu.be/mO4ODHHxoK8?t=7>
5. Future of Nuclear Power <https://youtu.be/vPS-epGPJmg?t=15>
6. The Race to Nuclear Fusion Power <https://youtu.be/eoZ9wGtruEU?t=1>
7. Decentralized Fusion Power [https://youtu.be/8P7KatR\\_Po](https://youtu.be/8P7KatR_Po)

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### Grass: America's Thirstiest Addiction



*pxfuel.com*

Step into the world of manicured lawns and desert golf courses to discover the surprising reality behind turf grass: America's most resource-intensive plant, yet one of its least productive crops. Shane Campbell-Staton, host of Human Footprint, visits Palm Springs and examines the environmental impact of our fixation on lawns, which historically symbolized as power and status.

<https://youtu.be/YDs9cWP4YAc>

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## Poetry Corner

**Percy Bysshe Shelley [1792-1822]**



*biography.com*

The life and works of Percy Bysshe Shelley exemplify English Romanticism in both its extremes of joyous ecstasy and brooding despair. Romanticism's major themes—restlessness and brooding, rebellion against authority, interchange with nature, the power of the visionary imagination and of poetry, the pursuit of ideal love, and the untamed spirit ever in search of freedom—all of these Shelley exemplified in the way he lived his life and in the body of work that he left the world after his death by drowning at age 29.

During the 1818-1819 period Shelley wrote what many consider to be his masterpiece, Prometheus Unbound (1820), subtitled A Lyrical Drama, perhaps to suggest a hybrid genre. In the same volume as Prometheus Unbound, Ollier published some of Shelley's finest extended lyrics, including "Ode to the West Wind," "The Cloud," "To a Skylark," and "Ode to Liberty." Written in the autumn of 1819 when the Shelleys were in Florence, "Ode to the West Wind" employs natural imagery and symbolism to foretell not only a change in the physical but in the political climate.

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### **Ozymandias**

I met a traveller from an antique land,  
Who said—"Two vast and trunkless legs of stone  
Stand in the desert. . . . Near them, on the sand,  
Half sunk a shattered visage lies, whose frown,  
And wrinkled lip, and sneer of cold command,  
Tell that its sculptor well those passions read  
Which yet survive, stamped on these lifeless things,  
The hand that mocked them, and the heart that fed;  
And on the pedestal, these words appear:  
My name is Ozymandias, King of Kings;  
Look on my Works, ye Mighty, and despair!  
Nothing beside remains. Round the decay  
Of that colossal Wreck, boundless and bare  
The lone and level sands stretch far away."

\*\*\*

### **Archy's Song from Charles I (A Widow Bird Sate Mourning**

Heigho! the lark and the owl!  
One flies the morning, and one lulls the night:  
Only the nightingale, poor fond soul,  
Sings like the fool through darkness and light.

"A widow bird sate mourning for her love

Upon a wintry bough;  
The frozen wind crept on above,  
The freezing stream below.

"There was no leaf upon the forest bare,  
No flower upon the ground,  
And little motion in the air  
Except the mill-wheel's sound."

\*\*\*

## **Ode West Wind**

I

O wild West Wind, thou breath of Autumn's being,  
Thou, from whose unseen presence the leaves dead  
Are driven, like ghosts from an enchanter fleeing,

Yellow, and black, and pale, and hectic red,  
Pestilence-stricken multitudes: O thou,  
Who chariotest to their dark wintry bed

The winged seeds, where they lie cold and low,  
Each like a corpse within its grave, until  
Thine azure sister of the Spring shall blow

Her clarion o'er the dreaming earth, and fill  
(Driving sweet buds like flocks to feed in air)  
With living hues and odours plain and hill:

Wild Spirit, which art moving everywhere;  
Destroyer and preserver; hear, oh hear!

II

Thou on whose stream, mid the steep sky's commotion,  
Loose clouds like earth's decaying leaves are shed,  
Shook from the tangled boughs of Heaven and Ocean,

Angels of rain and lightning: there are spread  
On the blue surface of thine aëry surge,  
Like the bright hair uplifted from the head

Of some fierce Maenad, even from the dim verge  
Of the horizon to the zenith's height,

The locks of the approaching storm. Thou dirge

Of the dying year, to which this closing night  
Will be the dome of a vast sepulchre,  
Vaulted with all thy congregated might

Of vapours, from whose solid atmosphere  
Black rain, and fire, and hail will burst: oh hear!

### III

Thou who didst waken from his summer dreams  
The blue Mediterranean, where he lay,  
Lull'd by the coil of his crystalline streams,

Beside a pumice isle in Baiae's bay,  
And saw in sleep old palaces and towers  
Quivering within the wave's intenser day,

All overgrown with azure moss and flowers  
So sweet, the sense faints picturing them! Thou  
For whose path the Atlantic's level powers

Cleave themselves into chasms, while far below  
The sea-blooms and the oozy woods which wear  
The sapless foliage of the ocean, know

Thy voice, and suddenly grow gray with fear,  
And tremble and despoil themselves: oh hear!

### IV

If I were a dead leaf thou mightest bear;  
If I were a swift cloud to fly with thee;  
A wave to pant beneath thy power, and share

The impulse of thy strength, only less free  
Than thou, O uncontrollable! If even  
I were as in my boyhood, and could be

The comrade of thy wanderings over Heaven,  
As then, when to outstrip thy skiey speed  
Scarce seem'd a vision; I would ne'er have striven

As thus with thee in prayer in my sore need.  
Oh, lift me as a wave, a leaf, a cloud!  
I fall upon the thorns of life! I bleed!

A heavy weight of hours has chain'd and bow'd  
One too like thee: tameless, and swift, and proud.

V  
Make me thy lyre, even as the forest is:  
What if my leaves are falling like its own!  
The tumult of thy mighty harmonies

Will take from both a deep, autumnal tone,  
Sweet though in sadness. Be thou, Spirit fierce,  
My spirit! Be thou me, impetuous one!

Drive my dead thoughts over the universe  
Like wither'd leaves to quicken a new birth!  
And, by the incantation of this verse,

Scatter, as from an unextinguish'd hearth  
Ashes and sparks, my words among mankind!  
Be through my lips to unawaken'd earth

The trumpet of a prophecy! O Wind,  
If Winter comes, can Spring be far behind?

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## How the Brain Thinks About Numbers



*Quanta Magazine*

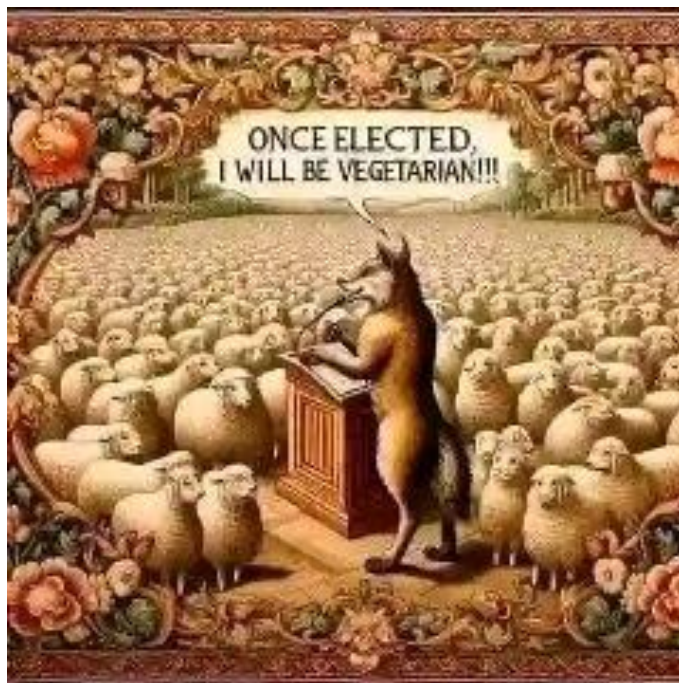


We can count “one, two, buckle my shoe” and “three, four, knock at the door.” We can quickly calculate how much to tip after a meal out, or how long a train downtown might take. We can see the injustice in someone getting three pieces of chocolate when we only get one.

At the heart of these everyday calculations is an intuitive understanding of numbers, known as “number sense.” Our brains can understand, connect and relate numbers.

<https://www.scientificamerican.com/article/our-brains-have-a-map-for-numbers/>

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**Rotating Moon from LRO**





*planetary.org*

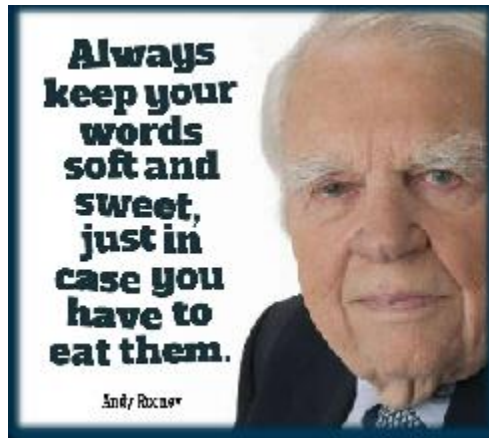
No one, presently, sees the Moon rotate like this. That's because the Earth's moon is tidally locked to the Earth, showing us only one side. Given modern digital technology, however, combined with many detailed images returned by the Lunar Reconnaissance Orbiter (LRO), a high-resolution virtual Moon rotation movie has been composed.

<https://youtu.be/sNUNB6CMnE8>

The featured time-lapse video starts with the standard Earth view of the Moon. Quickly, though, Mare Orientale, a large crater with a dark center that is difficult to see from the Earth, rotates into view just below the equator. From an entire lunar month condensed into 24 seconds, the video clearly shows that the Earth side of the Moon contains an abundance of dark lunar maria, while the lunar far side is dominated by bright lunar highlands.

Currently, over 32 new missions to the Moon are under active development from multiple countries and companies, including NASA's Artemis program which aims to land people on the Moon again within the next few years.

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## **Africa is Made Up of 54 Countries. Can You Name Them?**



*mossandfog*

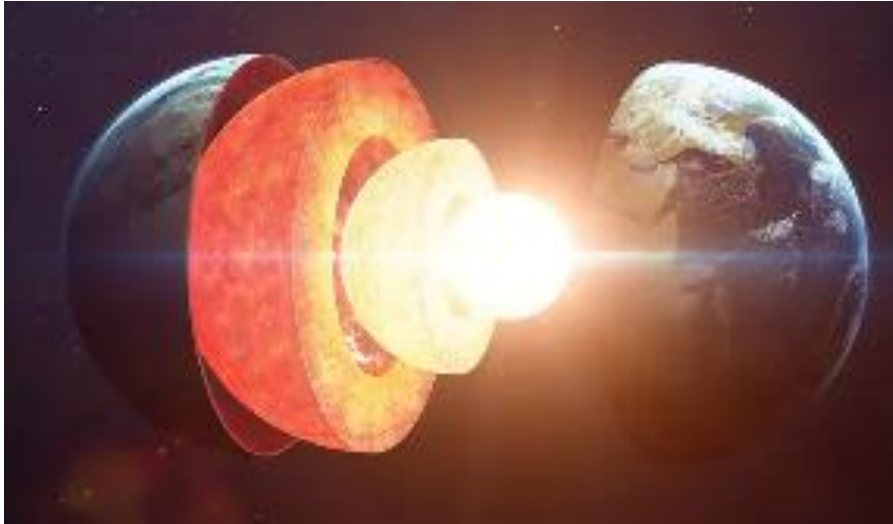
Spanning over 30 million square kilometers and home to more than 1.2 billion people, Africa's 54 countries offer a stunning variety of cultures, languages, landscapes, and wildlife.

<https://bit.ly/45q0mGB>

*Once upon a time I learned them but then they multiplied and now I don't care.*

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## **Earth's Rotating Inner Core Is Starting to Slow Down**



*Decades of "repeating earthquake" data shows that Earth's inner core has been rotating more slowly over the last 14 years.*

*(Image credit: Shutterstock)*

A new study confirms that Earth's inner core has been rotating more slowly than usual since 2010. This mysterious "backtracking" could also end up slightly altering the planet's overall rotation, lengthening our days.

<https://bit.ly/3VuZZG6>

*No need to get rid of your old Timex quite yet.*

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Thanks for the iPad, grandma!

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## Americans Face a Higher Risk of Dengue This Year, CDC Warns



*A rise in global cases of the mosquito-spread dengue fever in 2024 puts Americans at risk, the CDC warns.*

*(Image credit: frank600 via Getty Images)*

The CDC has issued a new health alert as global cases of dengue fever soar.

In a new [health alert](#) issued on Tuesday (June 25), CDC representatives said that people should be extra vigilant about this potentially deadly viral infection, which is spread to people via the bite of an infected mosquito.

<https://bit.ly/3XKs2nx>

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### Some Inspirational Quotes for E Pluribus Unum

The willingness with which our young people are likely to serve in any war, no matter how justified, shall be directly proportional to how they perceive the Veterans of earlier wars were treated and appreciated by their nation.

President George Washington

\*\*\*\*\*

It is God's job to forgive Osama Bin Laden. It is our job to arrange a face to face meeting.

General Norman Schwarzkopf

\*\*\*\*\*

### 14 Presidential Quotes

Firearms are second only to the Constitution in importance; they are the peoples' liberty's teeth.

George Washington

\*\*\*\*\*

I believe there are more instances of the abridgment of the freedom of the people by gradual and silent encroachment of those in power than by violent and sudden usurpations.

James Madison

\*\*\*\*\*

I do not think much of a man who is not wiser today than he was yesterday.

Abraham Lincoln

\*\*\*\*\*

The goal to strive for is a poor government but a rich people.

Andrew Johnson

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## A Rosetta Stone for Mathematics



*Kristina Armitage/Quanta Magazine*

In 1940, from a jailhouse in Rouen, France, André Weil wrote one of the most consequential letters of 20th-century mathematics. He was serving time for refusing to join the French army, and he filled his days in part by writing letters to his sister, Simone, an accomplished philosopher living in London.

In a previous letter, Simone had asked André to tell her about his work. With war all around, André began his reply cautiously, warning his sister that past a certain point “you will understand nothing of what follows.” Over the next 14 pages, he sketched his idea for a “Rosetta stone” for mathematics. His letter presaged the Langlands program, a major initiative in contemporary mathematical research.

<https://bit.ly/3VW1Vrn>

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## American 7-Elevens Looking at Japanese Stores’ Practices



*tupungato/ iStock Editorial / Getty Images Plus*



If you're in the U.S. and fancy a Slurpee or hot dog, 7-Eleven is the place to go. In Japan, however, the chain's customers can choose from a far wider range of food options, including higher quality prepared dishes curated for each establishment's location and clientele. Now, American stores are starting to follow suit.

The shift represents a new business strategy for the brand, as fewer people are smoking and more are driving electric vehicles. "We believe that we need to change our business model from one that relies on gasoline and cigarettes to one in which customers choose us based on our products," Ryuichi Isaka, president and CEO of 7-Eleven's Japanese parent company, explained to Bloomberg Television. "The key to this change is fresh food."

By introducing new, fresher fare, the world's largest convenience store chain is hoping to make one-third of its total sales from store-brand goods, like food, next year, The Wall Street Journal reports.

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*This is a joke, isn't it*

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## **All Aboard the Inflatable Space Station**



*the hustle*

[Sierra Space](#) is building an inflatable space station 250 miles from Earth to replace the International Space Station when it's retired at the end of 2030, per Robb Report.

And while it might look a little like a bounce house, the "Large Integrated Flexible Environment" packs a punch:

*LIFE* launches to space inside of a rocket and inflates to its full size once in orbit.

It's the height of a three-story building with a 27-foot diameter and can fit four to six people. The space station would one day allow people to live and work for weeks at a time in low-Earth orbit.

*LIFE* is encased in nine layers of textile, including [Vectran](#) — a chemically woven material that's 5x stronger than steel — to protect astronauts from space radiation, internal pressure, and micrometeoroids.

The station will house research labs, exercise equipment, and a vegetable garden.

But they won't just be eating salads up there: Microgravity lets scientists develop tech that they couldn't on Earth, like groundbreaking immunotherapy drugs and 3D-printed food.

## **Taking off**

Before the *LIFE* space station can open its doors, Sierra must get people to space.

That's where [Dream Chaser](#) — the first-ever winged commercial space plane — comes in: Through Sierra's \$3B contract with NASA, the space plane will make its first unpiloted cargo delivery to the ISS in September, after which it will start transporting people to the LIFE station.

And Sierra's plans for the future are even wilder: Its *LIFE 5000* prototype inflates to 5k cubic meters in orbit (that's bigger than the whole ISS).

Plus, the company is working with Jeff Bezos' Blue Origin to build Orbital Reef, the world's first commercial space station and a "mixed use business park."

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## How To Tell if a Watermelon Is Ripe



*Veronica Bravo*

Unlike other fruits, you can't tell a good watermelon, cantaloupe or honeydew just by looking at it. The last thing you want is to show up at a barbecue with an overripe or mushy melon.

Luckily, there are some fail-safe hacks for the next time you're in the grocery aisle.

<https://bit.ly/460Pi2R>

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## Newly-Approved Vaccine Offers Stronger Pneumonia Protection



*d3sign / Getty Images*

the Center for Disease Control and Prevention's Advisory Committee for Immunization Practices (ACIP) unanimously greenlit a new vaccine from Merck that protects against

21 strains of *Streptococcus pneumoniae* (*S. pneumoniae*), bacteria that can cause invasive pneumococcal diseases and pneumococcal pneumonia. The move follows approval from the Food and Drug Administration earlier this month.

The vaccine, called Capvaxive (PSV21), is now recommended for the following groups:

- Adults 65 and older who have not previously received a pneumonia vaccine or whose previous vaccination history is unknown.
- Adults 19-64 years of age with certain underlying medical conditions or risk factors who have not previously received a pneumonia vaccine (or are uncertain if they've ever had one).
- Adults 19 years and older who received a previous dose of pneumonia vaccine Prevnar 13 but have not received all recommended doses of Pneumovax 23.
- The committee also recommended that individuals 65 and older who completed their vaccine series with both Prevnar 13 and Pneumovax 23 ask their providers if a dose of Capvaxive would be appropriate for them.

<https://bit.ly/3W0ix11>

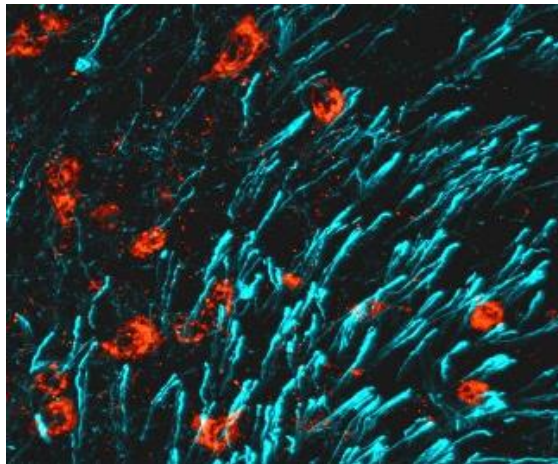
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Washington crossing the street

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## Brittle Bone Breakthrough



*During lactation, CCN3 (red) appears in the female brain in neurons adjacent to other cells, called tanycytes (cyan).*

*Image by Ingraham Lab*

Scientists have solved a long-standing mystery about how new mothers retain bone strength during breastfeeding, according to a new study. The results may lead to treatments to help injuries heal more quickly and prevent bone diseases in the general population.

The high nutritional demands of milk can deplete bones of essential calcium-based minerals during lactation. Because estrogen, which typically helps promote healthy bones ([see overview](#)), drops in the postpartum period, it was unclear how new mothers maintain near-healthy bone density. The study found that a hormone produced exclusively during breastfeeding—known as CCN3—jumps in to take the place of estrogen, triggering bone formation throughout the body.

Although CCN3 is only produced by new mothers, introducing it to any mouse—young or old, male or female—strengthened and promoted bone growth. Researchers hope the findings may one day help treat [osteoporosis](#), which affects more than 200 million people globally.

<https://bit.ly/4cY7Ym4>

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## Could Time Be a Mirage Created by Quantum Physics?



*An artist's illustration of a quantum vortex surrounded by roman numerals.*

*(Image credit: Getty Images)*



Physicists have struggled to understand the nature of time since the field began. But a new theoretical study suggests time could be an illusion woven at the quantum level.

Time is a thorny problem for physicists; its inconsistent behavior between our best theories of the universe contributes to a deadlock preventing researchers from finding a "theory of everything," or a framework to explain all of the physics in the universe. But in the new study, researchers suggest they may have found a clue to solving that problem: by making time a consequence of quantum entanglement, the weird connection between two far-apart particles. The team published their findings May 10 in the journal Physical Review A.

<https://bit.ly/3Lmo8Kb>

*Time...time...time. And here I thought it was a runic rhyme.*

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## Duffers Unite. Replace Caddies with Robots



*youtube.com*

10

Golfer: "Think I'm going to drown myself in the lake."

Caddy: "Think you can keep your head down that long?"

9

Golfer: "I'd move heaven and earth to break 100 on this course."

Caddy: "Try heaven, you've already moved most of the earth."

8

Golfer: "Do you think my game is improving?"

Caddy: "Yes sir, you miss the ball much closer now."

7

Golfer: "Do you think I can get there with a 5 iron?"



Caddy: "Eventually."

6

Golfer: "You've got to be the worst caddy in the world."

Caddy: "I don't think so sir. That would be too much of a coincidence."

5

Golfer: "Please stop checking your watch all the time. It's too much of a distraction."

Caddy: "It's not a watch - it's a compass."

4

Golfer: "How do you like my game?"

Caddy: "Very good sir, but personally, I prefer golf."

3

Golfer: "Do you think it's a sin to play on Sunday?"

Caddy: "The way you play, sir, it's a sin on any day."

2

Golfer: "This is the worst course I've ever played on."

Caddy: "This isn't the golf course. We left that an hour ago."

1

Golfer: "That can't be my ball, it's too old."

Caddy: "It's been a long time since we teed off, sir."

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## Hydrogen-Fueled Ferry Set to Run in San Francisco (and It's Free)



*Switch Image*

San Francisco has a range of public transit options, from BART to the iconic cable cars. And starting this week, the nation's first hydrogen-fueled commercial passenger ferry will also be in the mix.

Beginning July 19, the 70-foot catamaran, called the MV Sea Change, will be taking up to 75 passengers at a time along the waterfront between Pier 41 and the San Francisco Ferry Building. Not only is the vessel innovative and eco-friendly, but it's also free for the first six months as part of a pilot program.

<https://bit.ly/3xRppGh>

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## Winners from the 2024 Big Picture Competition



*Tadpole Migration*  
*Shane Gross*

Taking a look at some of the amazing winners from the 2024 Big Picture Competition, presented by the California Academy of Sciences.

<https://bit.ly/4bNDCBX>

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## Why Are Some Things OK, Others Not?



*media.com*

Ever wonder why OK is as universal as Coke?

<https://youtu.be/1UnIDL-eHOs>

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## Law in Japanese Prefecture Nudges Residents to Laugh Every Day



Satoshi-K/ iStock

There's a common saying: Laughter is the best medicine — and it seems it's being taken to heart in one part of Japan. The local government in the Yamagata prefecture has passed a law nudging residents to laugh at least once a day.

We know what you may be thinking, but no, this is not a joke. According to Firstpost, the first-of-its-kind ordinance is inspired by research from Yamagata University indicating that laughing can potentially reduce the risk of cardiovascular disease and boost longevity.

Aside from encouraging daily chuckling, the rule proposes that residents “deepen their understanding of the beneficial health effects of laughter.” Additionally, businesses are urged to create more cheerful atmospheres (i.e. an “environment filled with laughter”), and every eighth of the month is officially designated as “a day of laughter.”

All that said, no one will be locked behind bars for having an off day: The rule doesn't force laughter but rather aims to steer residents in a more lighthearted direction. [Here are some ways](#) we can all find more humor in our daily lives.

*Should be mandatory with custard pies in the face for malingerers.*

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## Things You Might Not Know About the Ancient Olympic Games



*From the real reason behind the Games' collapse to a breakdown of who was eligible to compete, here's what you need to know about the ancient Olympics.*

*Illustration by Meilan Solly / Images via Wikimedia Commons*

With an intensive athletes' boot camp and the threat of execution for unwelcome spectators, the Greek sporting event was a serious affair

In 776 B.C.E., spectators gathered in Olympia, Greece, to watch a simple footrace. Thus began the ancient Olympics, the classical sporting competition that continued for more than a millennium, attracting athletes and spectators from across the Mediterranean.

<https://bit.ly/3Y6z6uW>

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## Chords & Riffs

### Andre Previn [1929-2019]



*newyorktheater.me*

André Previn was the one of the most talented all-round musicians of the 20th Century - an Oscar-winning film composer, a jazz virtuoso and a legendary conductor.

He became a household name who was rarely off our television sets in the 1970s, and whose fame was heightened by his marriages to a string of beautiful and talented women.

He was born Andreas Ludwig Priwin into a Polish-Russian-French family in Berlin. His father Jack was a successful barrister and a keen piano player who encouraged his son's precocious talent for music. Identified as a prodigy at the age of five, young André studied at Berlin's prestigious Hochschule für Musik. But, in 1938, his Jewish family was forced to flee Germany and Nazi persecution.

They wound up in Los Angeles, where an uncle was head of music at Universal Studios. At his high school graduation ceremony, he played a duet with songwriter Richard M Sherman and found himself offered work as a musical composer and orchestrator in Hollywood, starting out writing the music for Lassie but soon became Hollywood's musical orchestrator of choice, earning three Oscar nominations before the age of 25.

In 1968, he became music director and principal conductor of the London Symphony Orchestra. It was a post he would hold for more than a decade.

At the end of the 1970s, Previn quit both his marriage with Mia Farrow and his job at the London Symphony Orchestra. He began performing jazz again, recording an album with Ella Fitzgerald.

None other than Dizzy Gillespie praised Previn's jazz technique in glowing terms. "He has the flow, you know," said the great singer and trumpeter.



In the 1980s, he joined the Los Angeles Philharmonic but left after four years amid reports of tension between him and the orchestra's management.

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Oscar Peterson & Andre Previn Interview (Final Part) <https://youtu.be/51fUTDWhXys>

Leonard Bernstein, Candid Overture [https://youtu.be/2\\_RD8HspJCI](https://youtu.be/2_RD8HspJCI)

Prokofiev's "Lieutenant Kijé" Suite <https://youtu.be/fr6eFP07uU0>

André Previn Jazz Trio - Just In Time <https://youtu.be/J2bCQMj3D9w>

It Never Was You, Kiri Te Kanawa <https://youtu.be/uN3uk4dq2x0>

Misty <https://youtu.be/v0C5TZdiy3I?t=1>

*All that and five over the top wives...and he lived to 90.*

Morecambe and Wise Greek Concerto sketch <https://youtu.be/R7GeKLE0x3s>

*This last is a true classic in TV history*

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## **The U.S. Postal Service Is Founded July 26, 1775**



*Universal History Archive/Universal Images Group via Getty Images*

Technically, the U.S. Postal Service predates the U.S. itself. One year before the Declaration of Independence was signed, and three months after the battles of

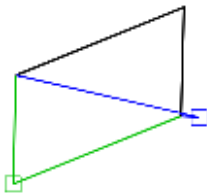


Lexington and Concord, the Continental Congress appointed Benjamin Franklin the country's first postmaster general. "The conveyance of letters and intelligence was essential to the cause of liberty," per the USPS, and in its early days, the system mainly conveyed letters between Congress and the armies. Things have changed a lot since then, of course. Check out some ["unusual" postal-related photos](#) from over the years, including one of a mail-carrying canine in 1885 and a talking mailbox in 1956.

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## The Eyeballing Game

Adjust to make a parallelogram



Accurate to 203.6 units

Next

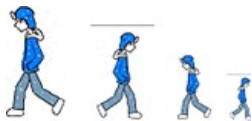
Test your geometry senses with this addicting "eyeballing" game.

<https://bit.ly/4bVhqWx>

*Give it a shot.*

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## My Walking Thoughts



**For Sunday July 28 2024**

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## Basic Instruments Training in the T-28

Ugh! I thought as I left the ground school classroom heading for the hangar where Navy Lieutenant Winans was waiting to stuff me in the back seat under a hood and see

how I reacted to a world without sunlight...a world without a horizon...a world made up in a bunch of silly gauges and dials. Yuch!



*rcgroups.com*

I mean real fighter pilots like John Wayne, Robert Mitchum, even James Bond didn't fight with their eyeballs in the cockpit. They flew with them focused on the tips of their thousand mile stares while looking for enemies to slaughter.

Well, if your eyeballs are filled with such scenes of Hollywood hogwash as these, they're as full of hooey as mine were...and as I was about to have driven home to me with Lt. Winans' incessant scolding chant, "scan...scan...keep your eyes moving...scan."

Unlike tales found in the creative press, I found very quickly that I can't multitask and instead was forced to create an iterative discipline called *scan* where you jump from one gauge to another chasing like a bouncing ball this notional condition of controlled flight.

In the beginning you learn to rely primarily on a wobbling gauge in the middle right of the panel called the attitude gyro that displays to you your aircraft's nose and wing positions relative to an artificial horizon. It's a truly nifty dude that all by itself can pretty much keep you somewhere in the middle of the air. Then if you add the heading indicator, altimeter, rate of climb indicator, airspeed indicator, and needle/ball turn-and-bank gauge, you're ready to boogie in the deepest, darkest clouds that only madmen of yore would have dared intrude.

Ahhh...but about the time you begin to get cocky about your instrument capabilities, some rotten scoundrel like Lt. Winans secretly pulls the circuit breaker on your magic window to the un-tented world and giggles as things begin to go bonkers.

My diabolical instructor lived to insert his skullduggery while I was in the middle of some other maneuver--maybe a climbing turn to a new altitude and heading; perhaps a

transition from cruise to the landing configuration--some sort of transition that served to camouflage the loss of my primary reference instrument. Then it was holy moly time with me playing catch up with all the whirling, swirling mayhem that had suddenly enveloped me. I might find, for instance:

- An airspeed indicator that moments before was settled at a sedate 140 knots passing through 200 knots despite my not having done anything with the throttle.
- An altimeter not content to remain at the assigned 9,500 feet, busy unwinding itself through 9,000...no...8300...uhh...6900 feet.
- The rate of climb indicator pinned to the 'heading for the basement' peg.
- The usually placid heading indicator spinning like a top.
- And not to be forgotten, the Turn and Bank indicator—that gauge right in the center of the dash--two-blocked one direction or the other...or perhaps flopping back and forth indicating a spin.

Meanwhile in the midst of all this madness the stately attitude gyro sits there showing wings level, nose at the horizon, taunting me with this fat dumb and happy stillness...and while all this is going on, I get to listen to Lt. Winans screaming on the intercom, "Do something! Do something! Get this bird under control.

So, I set out to work the problem, sorting things out one upset mode at a time.

- Stop the rotation by reference to the turn and bank indicator
- Arrest the climb or descent by reference to the altimeter, rate of climb, and airspeed indicators.

And once some sanity has returned to the situation

- Stabilize things by bringing the altimeter to a halt, then once in control of breathing and bladder, figure out what to do next.
- Later in the solitude of my room, I promise myself—not to become complacent or fixated on one instrument...ever...ever again.

Right.

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In all my flying I have lost the attitude gyro only twice...both times in the A-4B Skyhawk, both times because of generator icing in moist high-altitude air. In these situations, both birds lost all electrical power, meaning that along with gyro instruments I was proceeding sans radio, navigation gear or cockpit lights. The first time I was flight lead in a two-plane sortie at night over North Carolina. Dipping my wing, I passed the lead to my wingman and he led me home...end of story

The other time I was tail end Charlie in a four-plane gaggle enroute to Puerto Rico from MCAS Cherry Point, NC. We were in thick clouds at 40,000 feet when I found myself

with the throttle pushed all the way to the stop yet still losing ground to Number Three on whom I was trying to fly wing.

'Trying' was the operative word as he finally drew out of sight. Turning away I went onto the instruments only to find the altimeter spinning down madly with the airspeed indicator showing mach 0.93, a near impossibility for the A-4 configured as it was with wing tanks and centerline bomb rack.

At 28,000 feet I popped out of the clouds into a hole that allowed me to see all the way to the ocean below. The radio and nav gear were both dead as I spiraled down finally breaking into the clear at 1500 feet above the water. "Ok with that," I grumbled aloud, "but where in hell am I?"

I had no clue other than the feeling I was closer to the destination than where we started, so it seemed reasonable to head pretty much to southeast and hope to come upon something that wasn't water.

Presently I came up on a freighter pointed about 20 degrees further to the east, so figuring he had to be going somewhere—hopefully San Juan rather than Casablanca--I took up his heading and soldiered on estimating I had another 40 minutes of fuel. After 15 minutes of nervous droning, I spied a land mass...followed soon by a harbor...and yep, a runway--San Juan International I hoped, not Havana.

With no radio to contact the tower for clearance I made an overhead entry and turned downwind looking for signal lights. Seeing none I slugged the gear handle down then sighed in relief as I felt the three gear—deployed by gravity and wind-- thud home. Then, as if to show me it had all been one of Lt. Winans' tricks, the generator came back online allowing me to lower my wing flaps.

As I taxied up to the tower—yes it was San Juan International--I saw the three other aircraft from my flight already parked, their crews waving to me as I pulled up and shut down. They all had experienced the same generator icing and gone through pretty much the same cluster flummox as I.

Those are my only attitude gyro failure stories and I'm happy to leave things at that. Did my basic instrument training pay off? You betcha.

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*Join me next week when I add to my 'under the hood' challenges those that arise under the banner of radio instruments...navigation and even more insidious, communicating with the world of airline pilots and air traffic controllers.*

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