Ode to E Pluribus Unum for Sunday March 9 2025

==========

==========

Blue Ghost on the Moon

Image Credit: Firefly Aerospace

There's a new lander on the Moon. Yesterday Firefly Aerospace's Blue Ghost executed the first-ever successful commercial lunar landing.

During its planned 60-day mission, Blue Ghost will deploy several NASA-commissioned scientific instruments, including PlanetVac which captures lunar dust after creating a small whirlwind of gas. Blue Ghost will also host the telescope LEXI that captures X-ray images of the Earth's magnetosphere. LEXI data should enable a better understanding of how Earth's magnetic field protects the Earth from the Sun's wind and flares.

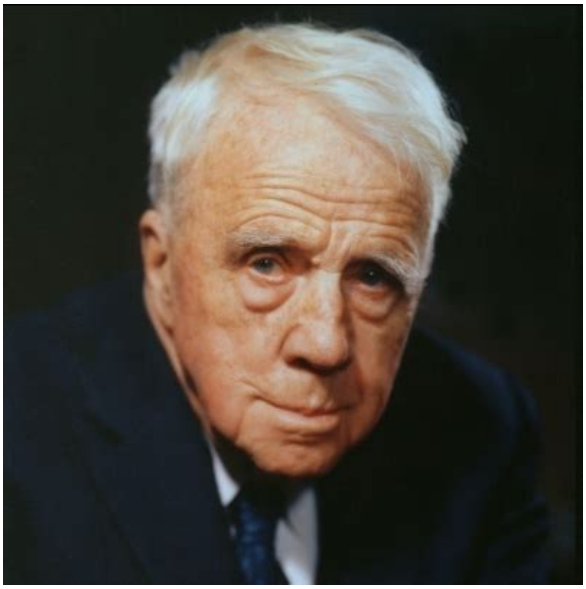
Pictured, the shadow of the Blue Ghost lander is visible on the cratered lunar surface, while the glowing orb of the planet Earth hovers just over the horizon. Goals for future robotic Blue Ghost landers include supporting lunar astronauts in NASA's Artemis program, with Artemis III currently scheduled to land humans back on the Moon in 2027.

https://cdn.jwplayer.com/previews/RdCUtOU6

==========

Poetry Corner

Robert Frost (1874-1963)



Frost wrote hundreds of poems, but his process was controlled and he typically destroyed his working drafts. As a result, unknown and unpublished Frost poems don't turn up very often. The last time one surfaced was in 2006. That poem, "War Thoughts at Home," made national news. Like "Nothing New," Frost wrote that poem in a copy of North of Boston in 1918.

"Nothing New" is a melancholy meditation on memory and time that begins with an everyday moment, a spray of "dust" (as in a dusting of snow) in the speaker's face. In just eight lines, Frost moves from this concrete experience to recollections of childhood, dreaming, and the cyclical nature of life, where everything is fresh and yet nothing is new.

***

Nothing New

Amherst 1918

One moment when the dust to-day
Against my face was turned to spray,
I dreamed the winter dream again
I dreamed when I was young at play,
Yet strangely not more sad than then—
Nothing new—
Though I am further upon my way
The same dream again.

—Robert Frost (1874-1963)

Read Jay Parini on this recently discovered poem.

==========

Chords & Riffs

Charles Mingus (1922-1979)

There never has been anyone in jazz quite like him.

woodstockwhisperer.info

Charles Mingus was an American jazz composer, bassist, bandleader, and pianist whose work, integrating loosely composed passages with improvised solos, both shaped and transcended jazz trends of the 1950s, ’60s, and ’70s.

Mingus studied music as a child in Los Angeles and at 16 began playing bass. The foundation of his technique was laid in five years of study with a symphonic musician. After stints with Louis Armstrong and Kid Ory in the early 1940s, Mingus wrote and played for the Lionel Hampton big band from 1947 to 1948 and recorded with Red Norvo. In the early 1950s he formed his own record label and the Jazz Composer's Workshop, a musicians' cooperative, in an attempt to circumvent the commercialism of the music industry.

Mingus drew inspiration from Duke Ellington, Charlie Parker, Thelonious Monk, African American gospel music, and Mexican folk music, as well as traditional jazz and 20th-century concert music.

As a bassist, Mingus was a powerhouse of technical command and invention; he was always more effective as a soloist than as an accompanist or sideman. The Mingus composition most frequently recorded by others is "Goodbye, Porkpie Hat," a tribute to Lester Young, and his most frequently cited extended work is "Pithecanthropus Erectus," a musical interpretation of human evolution. His volatile personality and opinions were captured in his autobiography, Beneath the Underdog, published in 1971.

***

Devil's Blues https://youtu.be/ODnOQ0t37Ik

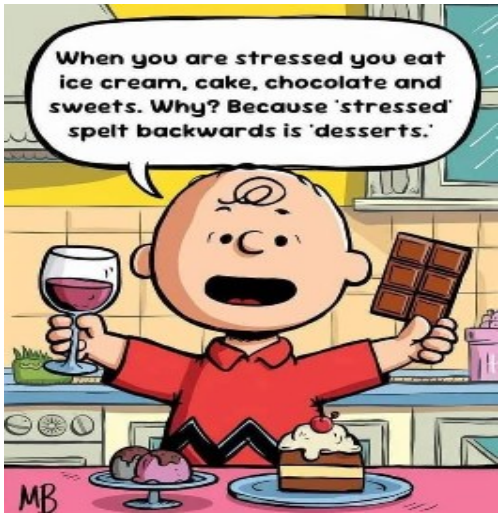
Charles Mingus Sextet, https://youtu.be/Ch71BX1PskQ

Goodbye Pork Pie Hat https://youtu.be/xPWvA1EiezI?t=94

Charles Mingus Sextet, at the University Aula https://youtu.be/BR1WtrZEGM8

Charles Mingus: Volatile, Angry, https://youtu.be/X9_EUc2n2gM

==========



==========

Flower Etymologies for Your Spring Garden

Merriam Webster

For example, the pansy that for this delicate flower is deeper than it seems: the word pansy is related to the word pensive. It comes from Middle French pensée meaning "thought," from the past participle of penser "to think," and ultimately from Latin pensare "to ponder."

https://bit.ly/3RagJkq

==========

==========

FLASHMOB CENTRAL

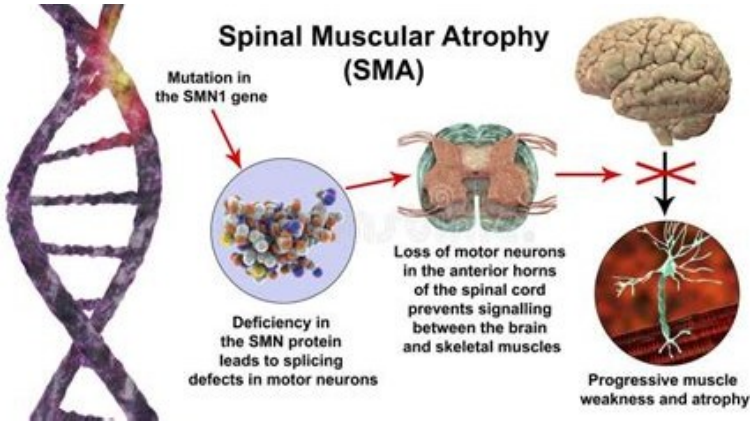
Flash Mob at the Ohio Union Ohio State University

youtube

https://youtu.be/HDNOB6TnHSI

==========

Degenerated Muscles Restored



dreamstime.com

A trio of patients suffering from spinal muscular atrophy saw significant improvements in their muscle function while receiving electrical stimulation in their lower spines, according to research released yesterday. The process is the first neurotechnology to reverse the decay of nerve circuitry and revive cell function in patients with a neurodegenerative disease.Spinal muscular atrophy is a rare, inherited disease that gradually kills off spinal nerve cells responsible for muscle movement (how it works). As the so-called motor neurons die, the muscles they control wither, causing significant mobility issues. There is currently no cure, though treatments exist to slow the disease's progression.

In the trial, two spinal cord stimulation electrodes implanted in three individuals with the disease's milder form (Types 3 or 4) were stimulated for four hours at a time over

29 days. During the test period, each patient saw gains in leg strength, walking distance, and more, though upon removal, the implant's benefits faded. Larger clinical trials are expected, as well as applications to other neurodegenerative diseases.

==========

Results from First Prenatal Therapy for Spinal Muscular Atrophy

Scientists at St. Jude Children's Research Hospital report results from a promising new approach to treat the rare neurodegenerative disorder.
Scientists at St. Jude Children's Research Hospital report results from a promising new approach to treat the rare neurodegenerative disorder.

St Jude Children's Research Hospital

Scientists at St. Jude Children's Research Hospital led the first in utero treatment of SMA with the orally administered drug risdiplam. More than two years after the child was born, no identifiable features of SMA have been observed. This study demonstrates the feasibility of treating SMA prenatally and supports further investigation into the approach. The findings were published in a letter to the New England Journal of Medicine.

SMA is caused by a lack of survival motor neuron protein and occurs in around 1 in every 11,000 births in the United States. If not treated, SMA type 1 (SMA-1), the most common and severe form, results in progressive muscle weakness that leads to death. Currently, treatments for SMA-1 have demonstrated improved survival and motor function in infants, especially if administered shortly after birth before symptoms begin, but is not a cure.

https://bit.ly/4hLPFUd

==========

==========

Why Is Deepseek Such a Game-Changer?

Scientists explain how the AI models work and why they were so cheap to build.

DeepSeek is a new artificial intelligence (AI) model from China.
(Image credit: Thomas Fuller/SOPA Images/LightRocket via Getty Images)

DeepSeek claimed in a technical paper uploaded to GitHub that its open-weight R1 model achieved comparable or better results than AI models made by some of the leading Silicon Valley giants — namely OpenAI's ChatGPT, Meta's Llama and Anthropic's Claude. And most staggeringly, the model achieved these results while being trained and run at a fraction of the cost.

Nvidia, a company that makes high-end H100 graphics chips presumed essential for AI training, lost $589 billion in valuation in the biggest one-day market loss in U.S. history. DeepSeek, after all, said it trained its AI model without them — though it did use less-powerful Nvidia chips. U.S. tech companies responded with panic and ire, with OpenAI representatives even suggesting that DeepSeek plagiarized parts of its models.

https://bit.ly/40YActJ

==========

How Disruptive Is China's New Model, DeepSeek? l

Experts weigh in on the implications of DeepSeek's open-source model and its impact on technology, geopolitics, the arts, and more.

Chris Ellis / Midjournet

In recent weeks, the emergence of China's DeepSeek — a powerful and cost-efficient open-source language model — has stirred considerable discourse among scholars and industry researchers. At the Stanford Institute for Human-Centered AI (HAI), faculty are examining not merely the model's technical advances but also the broader implications for academia, industry, and society globally

Central to the conversation is how DeepSeek has challenged the preconceived notions regarding the capital and computational resources necessary for serious advancements in AI. The capacity for clever engineering and algorithmic innovation demonstrated by DeepSeek may empower less-resourced organizations to compete on meaningful projects. This clever engineering, combined with the open-source weights and a detailed technical paper, fosters an environment of innovation that has driven technical advances for decades.

While the open weight model and detailed technical paper is a step forward for the open-source community, DeepSeek is noticeably opaque when it comes to privacy protection, data-sourcing, and copyright, adding to concerns about AI's impact on the arts, regulation, and national security. The fact that DeepSeek was released by a Chinese organization emphasizes the need to think strategically about regulatory measures and geopolitical implications within a global AI ecosystem where not all players have the same norms and where mechanisms like export controls do not have the same impact.

https://bit.ly/4gO5g4c

Looks as if the cat's out of the bag and not looking to go back in.

==========

XB-1 Boom Aircraft Second Flight

globalsecurity.org

https://youtu.be/gcMB5kb-PUM

It may be Geppetto pulling the strings, but here are the people that gave him the tools.

==========

What's with People Who Can't 'See with Their Mind's Eye?

People with aphantasia still generate brain activity when attempting to visualize, but that image may be getting lost in translation, a new study suggests.

While some people can conjure vivid images in their minds, other can't. Why is that?
(Image credit: Jorm Sangsorn via Getty Images)

People with aphantasia lack the ability to summon crisp images in their "mind's eye." But even though they can't visualize in this way, the blueprints for those imaginary images might still be nestled in their brains, a new study suggests.

The brain constantly merges visual information from the left and right eyes to construct one cohesive image, and thus it cannot fully process this binocular rivalry. Its attempt to process the flashing stripes typically results in a visual illusion in which the two patterns fluctuate, with one image dominating for a few seconds.

The work, published in the journal Current Biology Jan. 10, provides early evidence that the brains of people with aphantasia can light up as if they were generating mental images in their primary visual cortex — the main part of the brain responsible for processing visual information. However, these signals may be getting lost in translation.

https://bit.ly/4aJYo6v

==========

==========

Japan's Solar Super-Panel Could Replace 20 Nuclear Reactors!

These cutting-edge solar panels could transform urban landscapes into power-generating hubs and potentially rival the output of nuclear reactors.

Japan's Solar Super-Panel Breakthrough Could Replace 20 Nuclear Reactors!
The Daily Galaxy --Great Discoveries Channel

Japan is revolutionizing the renewable energy sector with the development of perovskite solar cells (PSCs), an innovative technology poised to reshape how solar energy is generated. Lightweight, flexible, and adaptable, these solar "super panels"

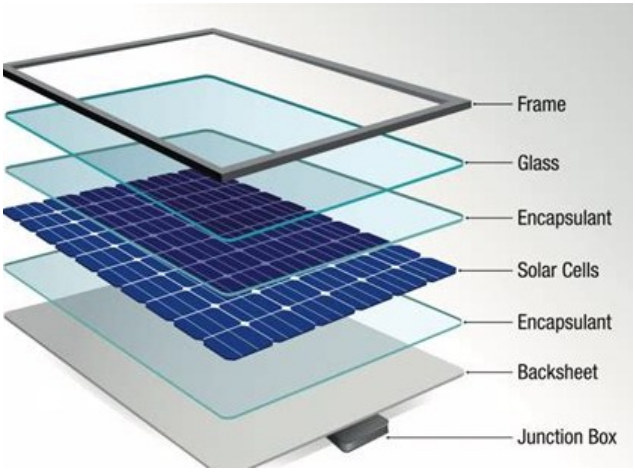
aim to overcome land shortages and redefine the possibilities of clean energy production in urban environments.

Unlike traditional solar panels, which require large open spaces, PSCs excel in urban settings, making them ideal for cities with limited land. Their adaptability could transform skyscrapers into vertical power plants, paving the way for urban areas to generate significant amounts of clean energy.

https://bit.ly/4hiMfYP

==========

How Solar Panels Are Made



itekenergy.com

Albert Einstein's 1905 paper on the photoelectric effect—for which he won the Nobel Prize—introduced a new theory of light scientists used to develop modern solar technology.

Charles Fritts invented the first solar cell in 1883 with selenium, however, it had less than 1% efficiency. In 1953, scientists at Bell Labs invented the first solar cell using silicon, increasing the efficiency to 6%.

Silicon solar cells didn't immediately catch on commercially, but were widely adopted by NASA during the Space Race to power satellites and spacecraft. Solar technology is still used in space flight today.

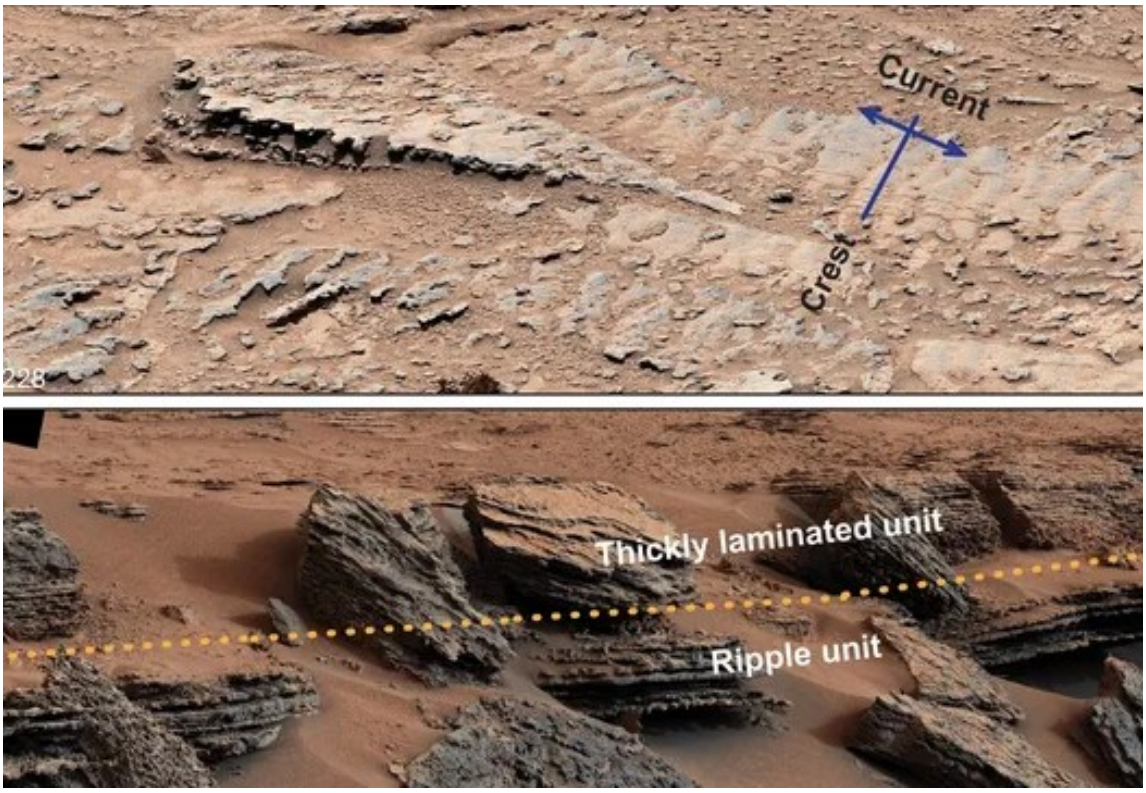
Technology has continued to improve, with the average efficiency at 21%, and the world record at 47.6% (see timeline). Costs have also substantially decreased from roughly $1,500/watt in the 1950s to now less than $1/watt.

https://youtu.be/alQFVKYLwT0

==========

NASA Rover Discovers Liquid Water 'Ripples' Carved into Mars Rock

NASA's Curiosity rover photographed remnants of rippling waves in an ancient Martian lakebed, proving that the Red Planet had open water for longer in its history than previously thought.



NASA's Mars Curiosity rover discovered symmetric ripple marks at two separate spots within the Red Planet's Gale Crater — offering strong evidence that Mars was flowed with open, liquid water.
(Image credit: NASA/JPL-Caltech/MSSS)

Planetary geologists and astronomers studying Mars have known for decades that water was once likely present on the planet, after NASA's Mariner 9 mission captured images of dry gullies in the 1970s. But there has been ongoing debate about what form that water took and how long it lasted. Some models predict that any liquid water on Mars' surface must have been covered by sheets of ice before it disappeared.

However, the new findings, which were published Jan. 15 in the journal Science Advances,, tell a different story. The patterns, which were photographed by NASA's Curiosity rover, are known as wave ripples — minute ridge-like structures that form along the shores of lakebeds. This means that exposed liquid water must have flowed across Mars' surface at some point in its history.

https://bit.ly/3EIdGNg

Is Gluten Really That Bad for You?

Here's what happens when you stop eating it

Only a small percentage of the population actually needs to avoid gluten, yet millions have jumped on the trend. Here's what science says about the risks and benefits of going gluten-free.

"Gluten is a protein found in wheat, rye, and barley," says Melinda Dennis, a registered dietitian and nutrition coordinator at the Celiac Center at Beth Israel Deaconess Medical Center in Boston (BIDMC). "It acts as a binding agent in food, meaning it gives structure to bread and adds texture and taste."

Wheat—a key source of gluten—is full of good-for-you nutrients. "It's packed with protein, fiber, iron, and vitamins," says Dennis. "Whole wheat, in particular, can play a beneficial role in the heart-healthy diet."

Gluten-free labels didn't appear on packaged foods in the U.S. until 2014, when the FDA began regulating them. Suddenly, products that never contained gluten—like bottled water or potato chips—began advertising their gluten-free status, reinforcing the idea that gluten was something to avoid.

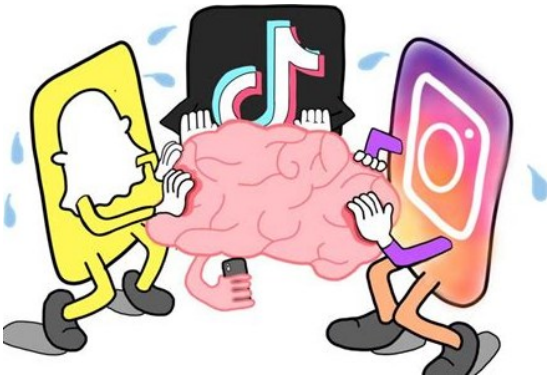
"Personally and professionally, I think it's a side effect of food marketing," says Janelle Smith, registered dietitian at the UCLA Vatche and Tamar Manoukian Division of Digestive Diseases, who has celiac disease herself.

Unlike a "heart-healthy" label, gluten-free doesn't mean healthier—it simply marks the absence of an allergen. Yet, brands expanded their market by making it seem beneficial for everyone, despite only one percent of the world's population having celiac disease.

==========

What Happens to Your Brain on a Break from Social Media?

From dopamine deficits to withdrawal symptoms, detoxing from social media can be challenging. This is how to make it work for you.



wjpitch.com

Think you're spending too much time scrolling on your phone? You're not alone. The average American adult logs over two hours a day on social media, while teens double that on platforms like TikTok and Instagram.

As experts warn of the addictive features of social networks, more people are looking for ways to break free—evidenced by a 60 percent surge in Google searches for "social media detox" in recent months.

But does stepping away from your feed really make a difference? Researchers say yes, and the benefits for your brain and well-being might surprise you.

Effects of social media on the brain

Many of us suspect we spend too much time scrolling—a concern underscored by Oxford University Press selecting "brain rot" as 2024's word of the year. But finding the willpower to cut back is not an easy feat, thanks to how social media taps into our brain's reward system.

Anna Lembke, addiction medicine expert and author of Dopamine Nation: Finding Balance in the Age of Indulgence, explains that people can get addicted to digital media just like they can get addicted to drugs. Based on what we know about how drugs and alcohol affect the brain, we can infer that a similar process takes place when we check social media, with every like, comment, or cute cat video triggering a surge of dopamine, the brain's "feel-good" chemical.

However, our brain is designed to maintain an overall dopamine balance—what Lembke describes as a teeter-totter mechanism. Endless scrolling eventually disrupts this balance, prompting the brain to compensate by producing less dopamine or slowing its

transmission. Over time, this can lead us into a state of "dopamine deficit," where we need more time online to get back to feeling "normal."

(This is your brain on dating apps.)

Hitting "pause" on this social-media-induced dopamine cycle can allow the brain to reset reward pathways, Lembke says, allowing us to stop the kind of compulsive overconsumption that leads to "brain rot."

There is no one-size-fts-all solution when it comes to social media detoxing, says Paige Coyne, co-author of a study on the health impacts of a two-week social media detox on 31 young adults. "Excessive social media use can mean different things to different people," she says, adding that what's key is to make realistic goals to bring down our usual social media consumption. "Some people may want to give it up entirely while others may want to cut down time spent on social media by half."

==========

Economics Behind Ferrari's Domination of the Luxury Car Market

Limiting production is helping to make its sportscars coveted—and the company the most valuable automaker in Europe

Le Ferrari hypercar
Photo: Ferrari

"We are not—we are not—an automotive company," said Chief Executive Officer Benedetto Vigna in a recent interview in Maranello, the city in northern Italy where Ferrari is based. "We are a luxury company that is also doing cars."

LaFerrari was the company's first roadworthy hybrid, combining a 12-cylinder "V12" engine with an electric motor to deliver what was then Ferrari's most powerful production car. The F80 builds on that hybrid tradition, which originated on the Formula

One racetrack more than 15 years ago, to deliver even more horsepower—1,200, five or six times that of your average family car—through an eight-speed, twin-clutch automatic transmission. With big butterfly doors and a tiny cockpit, the F80 wears its racing heart on its sleeve.

To get a LaFerrari, customers needed to have bought a Ferrari within the past three years, as well as own a certain number of vehicles.

https://bit.ly/4i82c46

While the standard models aren't subject to strictly limited runs, the company still lives by Enzo Ferrari's scarcity dictum: "Ferrari will always deliver one car less than the market demands."

==========

Shop Classes Offer a Hedge Against an Artificial-Intelligence Future.

photo: caleb alvarado for the wall street journal

School districts around the U.S. are spending millions to revamp high-school shop classes, betting on the future of manual skills overlooked in the digital age. With higher-education costs soaring and white-collar workers under threat by generative AI, the timing couldn't be better, reports Te-Ping Chen. Shop classes lost enrollment for decades, pushed aside by demand for college-prep courses. Yet school officials now say these classes give students a broader view of career prospects with or without college—and student interest is high.

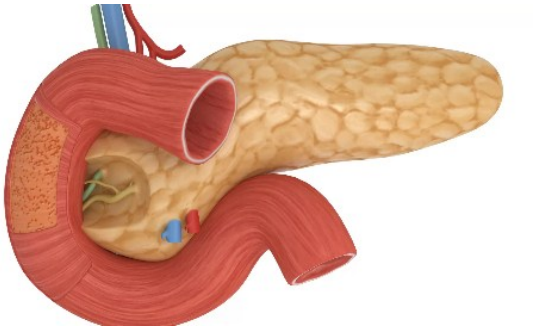
https://bit.ly/41mlf3V

Are schools ready to handle the task?

==========

Pancreatic Cancer Vaccine Shows Potential in Early Trial

The five-year survival rate of people diagnosed with pancreatic cancer is currently 13 percent.



Dreamstime.com

The American Cancer Society estimates that about 67,440 Americans (34,950 men and 32,490 women) will be diagnosed with pancreatic cancer this year. Of those, about 51,980 people (27,050 men and 24,930 women) will die of pancreatic cancer. The lifetime risk of pancreatic cancer is about 1 in 56 in men and about 1 in 60 in women.

Pancreatic cancer is one of the more deadly forms of this malady because around 80 percent of patients will be diagnosed at Stage IV, which is after the cancer has metastasized throughout the body. Stage IV pancreatic cancer has a five-year survival rate of 1 percent. Overall, the five-year survival rate of people diagnosed with pancreatic cancer is 13 percent. If the disease is caught very early, up to 10 percent of patients become disease-free.

Two breakthroughs are bringing hope for successfully treating this malignancy. First, researchers at the Oregon Health & Science University reported earlier this month in Science Translational Medicine that they had developed a simple blood test that can detect the activity of proteins associated with early-stage pancreatic cancer. Nature notes that the test "correctly identified healthy individuals 98% of the time, and identified people with pancreatic cancer with 73% accuracy. It always distinguished between individuals with cancer and those with other pancreatic diseases."

Combining the new test with another standard test improves diagnostic accuracy to 85 percent. The researchers calculate that the test would take 45 minutes to run at a cost of only 1 cent per test. Regularly deploying this test means that the cancer could be detected and treated much earlier.

The five-year survival rate for Stage I pancreatic cancer is around 83 percent.

https://bit.ly/3QERkPu

==========

Intel's Blueprint for a Fully Repairable and Modular Computer

Intel's reference laptop design aims to cut e-waste and make computers you can easily repair.

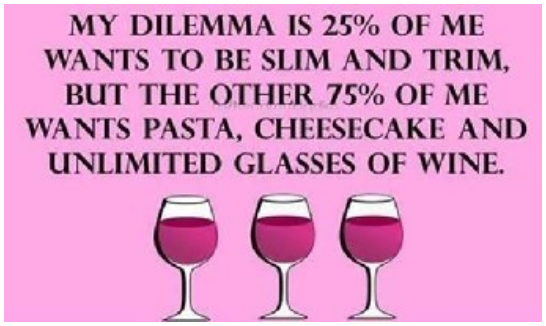
(Image credit: Witthaya Prasongsin/Getty Images)

The computing giant has shown off its ambitions to create a new PC architecture for laptops that revolves around a motherboard split into several modules — comprising a core mainboard and separate I/O modules for handling things like connectivity. This differs from the all-in-one design commonly found in most laptops. The engineers published their blueprints on Jan. 22 in a blog post.

Splitting a traditional motherboard into multiple components creates a scalable design that enables the reuse of components in laptops of different sizes and layouts. This modular approach means you can swap out faulty motherboard components rather than needing to replace the entire mainboard. Adopting a standardized modular design also means laptop makers could cut manufacturing costs and reduce waste.

https://bit.ly/4k1XBlC

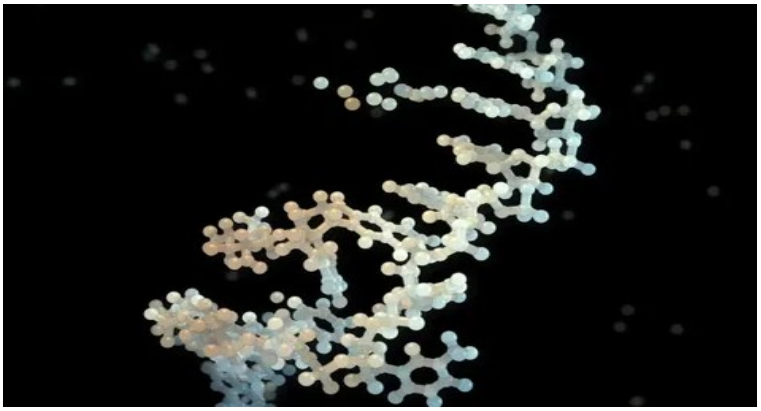
==========



==========

Study Reveals Genetic 'Hotspots' Linked To Bipolar Disorder

A new study has greatly expanded the number of gene variants thought to be tied to bipolar disorder.



Past studies that probed the genetics of bipolar disorder mainly looked at people of European ancestry. A new study considered a wider range of groups.
(Image credit: Design Cells via Getty Images)

In the largest study of its kind to date, an international research team conducted a thorough analysis of DNA from almost 3 million individuals, including more than 158,000 with bipolar disorder. The DNA data was collected from people of European, East Asian, African and Latino descent, located in 27 countries.

In this trove of genetic information, the researchers identified 298 stretches of the genome containing gene variants that may boost the risk of bipolar disorder. They also zoomed in on 36 specific genes linked to the disorder. The new study was published Jan. 22 in the journal Nature.

https://bit.ly/4grHn25

==========

==========

Evidence Our Ancestors Lived in Rainforests 150,000 Years Ago

The earliest evidence of humans living in tropical rainforests in Africa, around 150,000 years ago, has been published in a new study in Nature.

Sediments containing Middle Stone Age tools found at an archeological site in Côte d'Ivoire, Africa, to a time when tropical rainforests existed across the region.
University of Sheffield

Humans were thought to have not lived in rainforests until relatively recently due to them being thought of as natural barriers to human habitation.

However the new study - published by an international team led by the Max Planck Institute of Geoanthropology, with contributions from the University of Sheffield - found that humans were living in rainforests within the present-day Côte d'Ivoire around 150,000 years ago.

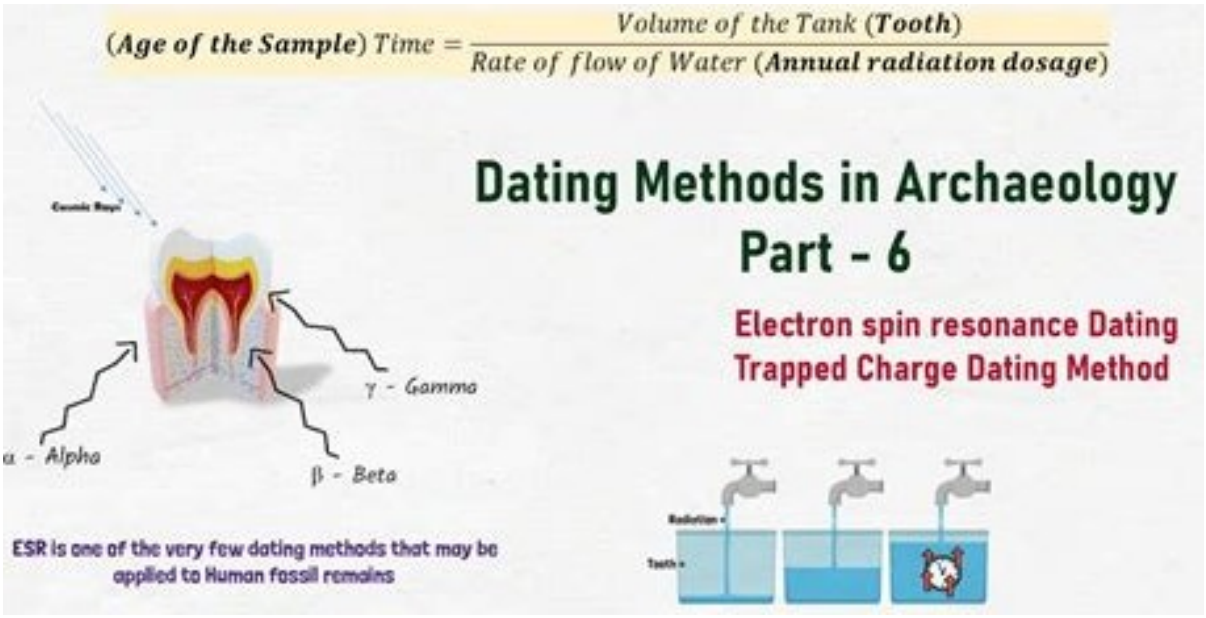
The study puts the evidence for humans living in rainforests anywhere in the world, back by 80,000 years, and argues that human evolution happened across a variety of regions and habitats.

https://bit.ly/4hW5KXt

==========

In Case You're curious About Electron Spin Resonance Dating

ESR dating has contributed to understanding the origins of hominin species, overlap (or lack of same) between Neanderthals and modern humans, and the expansion of hominids from Africa all the way to the Western Hemisphere.



youtube.com

Electron spin resonance (ESR) dating is based on the time dependent accumulation of electrons and holes in the crystal lattice of certain minerals. The process is the result of the exposure of the mineral to radiation which is emitted from radioactive isotopes in the sample and its surroundings.

In such a way, the mineral acts as a natural dosimeter. A numerical age can be derived from the estimation of the dose a sample has received in the past and the dose rate generated by the above-mentioned radioactive elements. Analysis of tooth enamel is the most common ESR dating application in archaeology.

The advantages of ESR dating, particularly when applied to human fossils, lies in providing valuable information to our understanding of modern human evolution. The dating range of ESR goes well beyond the radiocarbon barrier and covers about the last 500,000 years./

https://bit.ly/4gVvHoN

==========

Tired of Paying Amazon for Books? Try Bookshop.Org/

bookshop.org

Bookshop.org and Libro.fm have emerged as alternatives to Amazon, sharing a cut of sales with independent bookstores around America. But for e-book readers, it's been challenging to buy new titles without going through Amazon's ecosystem. Bookshop.org's expansion into e-books gives consumers a long-awaited option to buy these digital books while also supporting small businesses.

"When we launched Bookshop.org, the vision was to support local bookstores in their battle against Amazon and other online retailers," Andy Hunter, founder and CEO of Bookshop.org, said in an announcement of the service's new capabilities. "This launch represents our commitment to keeping bookstores afloat."

As it stands, Bookshop.org's e-books are only available in the web browser, or on the Bookshop.org apps, which are available for Android and iOS.

To maximize its impact in the market, however, Bookshop.org will need to offer ways to download its e-books onto e-readers like the Kindle.

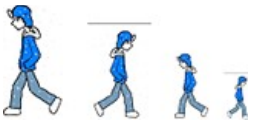
"Bookshop selling e-books is not a cure-all. Amazon has monopolized the e-book space for way too long for it to be," wrote book critic Maris Kreizman on Bluesky. "But it's an important first step and that's worth celebrating."

For instance, Phantoms from Vietnam

==========

==========

My Walking Thoughts



For Sunday March 9 2025

==========

Getting it together with Ron d'Vooz

Do you remember my dicey episodes with good old Ron while flying the T-28? Well, he's even more fun here at Kingsville in the Cougar. Such features as higher closuring speeds, slower response to power, less obvious visual clues at high altitudes, etc., add to the complexity of bringing a bird into tight formation with another one.

You may remember that in my first formation training hop I used excess airspeed to run down and join the leader in what is referred to as a running rendezvous. There, with closure rate a function of only one factor—the speed differential—the process is simple with little in the way of risk of collision… always the number one no-no.

Not so in a turning rendezvous where closure is a function both of airspeed differential and approach angle between the lead and chase aircraft. There, with greater distances involved at typically higher jet operating altitudes and speeds, the rate of closure is difficult to assess until late in the maneuver – the conversion -- where the return to stable formation flight is accomplished.

When properly managed—think the Blue Angels—the process appears simple and almost inevitable. But trust me when I say, "it ain't." So the training begins with the wingman in trail—perhaps a half mile or more—and the leader rolls a banked turn in one direction or another. The wingman allows the turn to proceed until an angle-off of something in the neighborhood of 20 degrees is achieved, at which point he turns to place himself on a steady closure bearing, riding it until close in. There he breaks off the closure by ducking under the leader's aircraft and steadying up on his outboard wing.

Getting to the point where this sequence becomes fairly routine involves hours of practice, lots of mistakes, and more than few 'Omygosh' moments' in which you find yourself at the conversion point with absolutely no chance of salvaging the maneuver. There, in what I've always thought of as 'a trip to the boondocks,' you find yourself outside the leader's radius of turn, falling farther and farther behind and quite possibly courting a stall… neither of which is fun or likely to endear you to your leader or instructor.

After you get around to showing some comfort level in the various aspects of two-plane formation flight, there comes the time for the syllabus to toss a curveball into the game… namely night formation, the most thrilling aspect of which focuses on—what else?—a night rendezvous where your only cues to the leader's aircraft location and bearing are the fuselage deck strobe and wingtip lights.

Allow me to describe my first shot at this task one insanely pitch black night somewhere over the King Ranch with the episode commencing at a comfortable 360 knots and twenty thousand feet.

The flight had begun with a running rendezvous right after takeoff, followed by a random sequence of random turns as we climbed to altitude. There, the leader initiated the first of several breakup and rejoin exercises, establishing the downwind interval between the two aircraft at roughly a mile. When I reported, "in trail," the leader began a turn to the left, the direction I've always found more challenging. (Why? I haven't a clue).

"Don't rush it," my instructor in the back seat advised, hoping to avoid my turning too soon and ending up in a lengthy tail chase. So I waited… and waited… until the winking lights moved to about the ten o'clock position on my canopy. At this point I wrenched the bird around to set myself on a closing bearing, which by the time I arrived on it, was closer to 60 degrees rather than the preferred 20 degrees… in the parlance not just a little 'hot,' but over-the-top, blisteringly so.

It was an impossible situation, but it was the one with which I was stuck, so I dodged to the right a bit, then pressed back in. In the process I knocked perhaps ten degrees off the angle-off, but it was still way too hot.

I crossed under the leader's aircraft banked up 90 degrees pulling for all I was worth yet still 30 degrees short of matching his heading. It was here that I pulled into an incipient stall that prevented me from decreasing the outside angle-off, at the same time causing me lose altitude at an enormous rate.

Over the radio I heard the leader chortle, "ride 'em cowboy," causing me to wonder if I was about to make myself a "home on the range."

By the time I had the Cougar back under control I found myself down two thousand feet and about a mile in trail of the leader. Worse still were the gales of laughter coming from my instructor over the hot mike.

Climbing back to the base altitude I called the leader to set up for another try.

"You're sure?" my instructor asked, his voice weak from laughing.

"Damn sure," I answered and this time I set up on a proper bearing and managed to get aboard without undo drama.

I had four more shots at Mr. d'Vooz that evening and managed to live through all.

During the debrief, the pilot of the lead aircraft said that he was a might worried when he saw me streaking in at an impossible angle, but that thereafter things were pretty funny.

As an instructor several years later, I sometimes had to be the target on a student's first night formation hop, a situation that invariably scared holy hell out me.

==========