Ode to E Pluribus Unum for Sunday September 22 2024

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The Towers

Barbara Medaille 60x80"

Barbara Medaille lives in Healdsburg, CA, an area that has been ravaged by wildfires for…well forever, I guess. She painted this in 2001, but could have been 2013, 2023, or perhaps 2053.

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Space Images from Chandra X-Ray Observatory

NGC 6872: In this composite image, a large spiral galaxy has some of its superheated gas stolen by a smaller, nearby neighbor.
NASA

To celebrate the 25th anniversary of the Chandra X-ray Observatory, NASA has published 25 brand new images snapped by the telescope — everything from supermassive black holes to supernova remnants. The telescope's X-ray technology allows it to light up regions of space that scientists wouldn't otherwise be able to see, including the matter orbiting black holes and exploding star debris.

https://bit.ly/4fmGMzw

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Ever Thought About Going from Zero to 338 mph in 3.7 Seconds?

Brittany Force setting the 1000 foot elapsed time record of 3.623 seconds
si.com

I don't know how many here are into NHRA Top Fuel Dragsters, but I found this and thought you might be interested.

Drag racing must be one of the most expensive hobbies on the Planet ! A single barrel of fuel is over $750.00 U.S., and here is what you get from that:

Top Fuel Acceleration Put into Perspective

- One Top Fuel dragster 500 cubic-inch Hemi engine makes more horsepower (11,000 HP) than the first 5 rows at the Daytona 500.
- Under full throttle, a dragster engine consumes 1.5 gallons of nitro methane per second; a fully loaded 747 consumes jet fuel at the same rate with 25% less energy being produced.
- A stock Dodge Hemi V8 engine cannot produce enough power to merely drive the dragster's supercharger.
- With 3000 CFM of air being rammed in by the supercharger on overdrive, the fuel mixture is compressed into a near-solid form before ignition. Cylinders run on the verge of hydraulic lock at full throttle.
- At the stoichiometric 1.7:1 air/fuel mixture for nitro methane the flame front temperature measures 7050 degrees F.
- Nitromethane burns yellow. The spectacular white flame seen above the stacks at night is raw burning hydrogen, dissociated from atmospheric water vapor by the searing exhaust gases.
- Dual magnetos supply 44 amps to each spark plug. This is the output of an arc welder in each cylinder.

- Spark plug electrodes are totally consumed during a pass. After 1/2 way, the engine is dieseling from compression plus the glow of exhaust valves at 1400 degrees F. The engine can only be shut down by cutting the fuel flow.
- If spark momentarily fails early in the run, unburned nitro builds up in the affected cylinders and then explodes with sufficient force to blow cylinder heads off the block in pieces or split the block in half.
- Dragsters reach over 300 MPH before you have completed reading this sentence.

    0 to 100 MPH in .8 seconds (the first 60 feet of the run)

    0 to 200 MPH in 2.2 seconds (the first 350 feet of the run)

- In order to exceed 300 MPH in 3.6 seconds, dragsters must accelerate an average of over 4 G's. In order to reach 200 MPH well before half-track, the launch acceleration approaches 8 G's.

    6 g-forces at the starting line (nothing accelerates faster on land)

    6 negative g-forces upon deployment of twin chutes at 300 MPH. A Top Fuel Dragster accelerates quicker than any other land vehicle on earth . . quicker than a jet fighter plane . . . quicker than the space shuttle.

- Top Fuel engines turn approximately 540 revolutions from light to light!
- Including the burnout, the engine must only survive 900 revolutions under load.
- The redline is actually quite high at 9500 RPM.
- The current Top Fuel dragster elapsed time record is 3,623 seconds for 1,000 feet. The top speed record is 338.94 mph as measured over the last 66 feet of the run, both by Brittany Force

The Bottom Line: Assuming all the equipment is paid off, the crew worked for free, nothing blows up, each run costs an estimated $2,000 per second.

Putting this all into perspective:

You are driving the average $140,000 Lingenfelter twin-turbo powered Corvette Z06. Over a mile up the road, a Top Fuel dragster is staged & ready to launch down a quarter-mile strip as you pass. You have the advantage of a flying start. You run the 'Vette hard up through the gears and blast across the starting line & pass the dragster at an honest 200 MPH.

- The 'tree' goes green for both of you at that moment.
- The dragster launches & starts after you.
- You keep your foot down hard, but you hear an incredibly brutal whine that sears your eardrums & within 3 seconds the dragster catches & passes you.
- He beats you to the finish line, a thousand feet away from where you just passed him.

Think about it - from a standing start, the dragster had spotted you 200 MPH and not only caught, but nearly blasted you off the road when he passed you within a mere 1000-foot race!

That's acceleration!

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A-4 For Sale

silodrome

https://silodrome.com/douglas-a-4-skyhawk-jet-for-sale/

Just what everyone needs.

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Jester's Cap

Jester looks at the September 8th Ode

Fluoridation: Jack D. Ripper was right!! Who knew??
https://www.youtube.com/watch?v=J67wKhddWu4

The graph shows IQ as a function of maternal fluoride levels. That implies that the effect happens in utero, which might make sense. But the article implies that it's an ongoing thing. The problem could be solved easily--you could get fluoridation in your mouth without it becoming systemic. If it's really true--and I don't know whether it is--it's a simple solubility product problem. Details on request.

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What do you do with a Humanoid Robot?

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Complexity problems are sometimes expressed in terms of how long it would take the fastest known machines to solve them. Sometimes the length of time is measured in ages of the universe--assumed to be ~ 13 billion years. Which gives a little insight into why the numbers, googol and googolplex, were created.

***

Regarding Kingfishers, about 40-45 years ago, a charming article appeared in, I believe it was Science. It was entitled Why Don't Woodpeckers Get Subdural Hematomas? or words to that effect. Turns out to be purely anatomic. The majority of SDH is caused by the skull stopping moving before the brain does. Veins, cunningly called "bridging veins," bridge the small space between the brain surface and the dura. These can tear under stretch, and if they do that, they bleed.

The back part of a woodpecker's dura is attached to the rear part of its beak, so when it makes contact with a tree--or, at my house, it was a chimney--the beak deflects, tightening the dura around the brain. The dura thus moves with the brain, so no stretch is created. Quite the mechanism. And my hat's off to the guys who figured this one out.

I'm putting money on Kingfishers having evolved the same way.

***

Thanks for the Social Rules from yesterday. Along the same lines, there's

https://bit.ly/3ZqYex8

It's wonderful. Warm, witty, not at all overbearing.

***

Like many famous people, Errol Garner was from Pittsburgh.

***

Error-free math...Shannon did, indeed, come up with the channel capacity theorem. It states that, with proper encoding, as long as you stay below the capacity (in bits/second), you can reduce the error to zero.

I think that's what lets acupuncture analgesia work. By flooding certain neural pathways with signals, you can overwhelm the capacity of the channel to transmit pain impulses to the brain. That choke point is the thalamus. And, happily, pain impulses travel more slowly than do others since they go on unmyelinated [read: uninsulated] nerve fibers. That gives other things, like pressure signals a head start. Once the system is at equilibrium, there are only so many gates through which information can pass. If pain is last in the queue, it gets at least partially ignored and goes away.

George Wald (of Nobel Prize fame with his wife, Ruth "Mother" Hubbard for working out how the rhodopsin molecule works) spoke at Tulane med in the winter of 1973. I made it a point to get to the talk. He talked about acupuncture. Before embarking on a then-recent trip to China, he discussed acupuncture with some of his colleagues in Boston. They all assured him that it was nonsense, and that it was purely suggestion, aka trance, aka hypnosis, at best.

So, he gets there and expresses a wish to see it in action. They happily comply. The following day, he sees it used in open surgery on an awake newborn and on an awake dog. So much for suggestion. I was skeptical until I heard this. And then it was obvious that it had Shannon written all over it.

***

The ads are sensational! I noticed Della Femina's name close to the top of the list. He wrote a wonderful book that you really have to read if in case you haven't:

https://bit.ly/3TxM9CH

There have been several movies about the subject as well: Putney Swope was early in the game. Crazy People is maybe even funnier. And it has Daryl Hannah, always a big plus. And on the dark, side, there's the Michael Crichton movie, Looker. I recommend all three. Highly.

And that's the week in sports....

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Homefront Dad Shows Mom How He's Caring for the Little Darling

A graphic artist living in Germany works from home while his wife leaves their baby girl with him each day as she goes off to work.

A few months ago, he got tired of her texting to check on how he was doing with the baby, so he started photoshopping responses to text back to her. I'll try and include a different one in subsequent Odes.

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The Reason Starliner Failed

pulseheadlines.com

Everything you need to know about the saga of the Boeing Starliner spacecraft

https://youtu.be/5ejHYVamyiw

Worthwhile, not only the specific events, but the role of corporate culture as well.

==========

Everglades: The World's Largest Environmental Restoration Project

The Everglades is one of the most important ecosystems in the US, responsible for providing

millions of Floridians with drinking water (
SimonSkafar/ iStock

Florida is housing the world's largest ecosystem restoration project. A reservoir the size of Manhattan is currently under construction in the Sunshine State, and it's being hailed as "the crown jewel" of a wider Everglades rehabilitation initiative.

Located south of Lake Okeechobee, the biggest freshwater lake in Florida, the 10,100-acre reservoir is designed to bring a safe, long-term supply of drinking water to South Florida residents while reducing the pollution that causes harmful algal blooms.

https://bit.ly/4dtyhBr

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Ikea's Inventory Drones Expansion

yankodesign.com

Developed in collaboration with AI and robotics provider Verity, IKEA's drone system employs advanced artificial intelligence algorithms to identify and photograph product storage locations. These autonomous flying devices are equipped with:

- A custom indoor positioning system for navigating higher storage levels
- Obstacle detection capabilities to avoid collisions
- Pre-scheduled flight paths for efficient operation

The drones can operate continuously, providing real-time inventory data without disrupting regular workflows. Since the initiative's launch in Switzerland in 2021, the fleet has expanded to over 250 drones operating across 73 locations in nine countries. This rapid growth demonstrates the effectiveness and scalability of the technology in improving inventory management processes.

https://bit.ly/3AxC3v3

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Pepsi MAX Jeff Gordon Test Drive 2

Pepsi

Pepsi's first prank was criticized on the Internet to be a fake. So to prove the critics wrong, they did another one with Jeff Gordon. This time the victim is with one of the most critical journalists that wrote about their first prank. This is a must watch. It's hilarious! What did you think of the prank? How would you of reacted to it if you were the victim? Please let us know in the comment section below and remember to share the video and sign up for our free newsletter! If you want to check out the first prank, click here.

https://youtu.be/ZWL3wJQGkmI

An oldie by goody.

==========

California's New Electric Train Makes for a Shockingly Better Trip

Caltrain's electric trains started rolling out last week. The advantages go far beyond just cutting CO2 emissions.

caltrain

First, the electric trains run faster than the diesel trains that they're replacing. Instead of a single locomotive in the front pulling the entire train behind it, each individual car is now an "electrical multiple unit," or EMU, with its own engine, connected to overhead electric wires. "It's generating power throughout the system," says Dan Lieberman, a public information officer for Caltrain. "It just allows it to get up to speed much faster."

Because the train can start and stop faster, Caltrain can add more stops to its express trains, and still shave minutes off the route.

https://bit.ly/3YTBMwo

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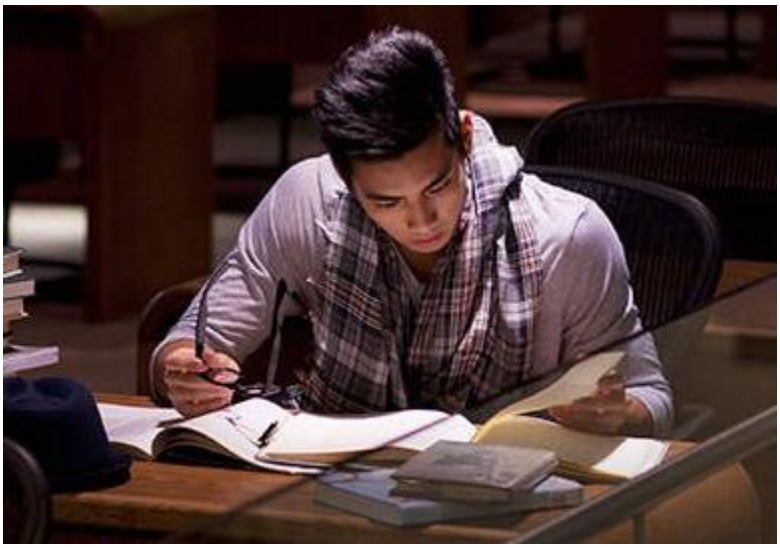
Almost 70% of US students Interested in Physics Leave the Subject



Worrying trend: students' reasons for leaving physics included not having the necessary skills to succeed. (Courtesy: iStock/Sam-Edwards)

More than two-thirds of college students in the US who initially express an interest in studying physics drop out to pursue another degree. That is according to a five-year-long survey by the American Institute of Physics, which found that students often quit due to a lack of confidence in mathematics or having poor experiences within physics departments and instructors. Most students, however, ended up in another science, technology, engineering and mathematics (STEM) field.

Carried out by AIP Statistical Research, the survey initially followed almost 4000 students in their first year of high school or college who were doing an introductory physics course at four large, predominantly white universities.

Students highlighted "learning about the universe", "applying their problem-solving and maths skills", "succeeding in a challenging subject" and "pursuing a satisfying career" as reasons why they choose to study physics.

Anne Marie Porter and her colleagues Raymond Chu and Rachel Ivie concentrated on the 745 students who had expressed interest in pursuing physics, following them for five academic years.

Over that period, only 31% graduated with a physics degree, with most of those switching to another degree during their first or second year. Under-represented groups, including women, African-American and Hispanic students, were the most likely to avoid physics degree courses.

Pull and push

While many who quit physics enjoyed their experience, they left due to "issues with poor teaching quality and large class sizes" as well as "negative perceptions that physics employment consists only of academic positions and desk jobs". Self-appraisal played a role in the decision to leave too. "They may feel unable to succeed because they lack the necessary skills in physics," Porter says. "That's a reason for concern."

Porter adds that intervention early in college is essential to retain physicists with introductory physics courses being "incredibly important". Indeed, the survey comes at a time when the number of bachelor's degrees in physics offered by US universities is growing more slowly than in other STEM fields.

Meanwhile, a separate report published by the National Academies of Science, Engineering, and Medicine has called on the US government to adopt a new strategy to recruit and retain talent in STEM subjects. In particular, the report urges Congress to smooth the path to permanent residency and US citizenship for foreign-born individuals working in STEM fields.

Something wrong with the subject? No? How about secondary ed preparation?

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Watch A Spectacular Sea Hare Swimming Through the Ocean

The structures on the creature's head are called rhinophores, which help detect chemicals in the

water.
Image Credit: Susan Aide Morales Cruz via Storyful

Susan Aide Morales Cruz was snorkeling in Playa Miramar in Tampico, Mexico when she came across a bright red sea hare at the surface of the water.

Sea hares are actually marine mollusks, but their shell is internal. They are often mistaken for the nudibranchs sometimes called sea slugs, but sea hares are related to them. Their most notable feature is their "ears", which emerge from the top of their head like the long ears of a hare. These ears are actually structures called rhinophores that can detect chemical signals in the water.

https://bit.ly/3AL5fP2

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Climate Change Is Altering the Chemistry of Wine

UC Davis viticulture expert Kaan Kurtural is conducting experiments to improve vine resiliency and protect grapes from heat at the Oakville Experimental Vineyard in Napa Valley.
Credit: Katarina Zimmer

Warming, wildfires and unpredictable weather threaten to disrupt the delicate processes that underlie treasured wines. Researchers and producers are innovating to keep ahead.

Soon after the devastating Glass Fire sparked in California's Napa Valley in September 2020, wine chemist Anita Oberholster's inbox was brimming with hundreds of emails from panicked viticulturists. They wanted to know if they could harvest their grapes without a dreaded effect on their wine: the odious ashtray flavor known as smoke taint.

Industry laboratories were slammed with grape samples to test, with wait times of up to six weeks. Growers didn't know whether it was worth harvesting their crops. Eight percent of California wine grapes in 2020 were left to rot.

https://bit.ly/3WSEUpC

For the better, I hope.

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Chords & Riffs

Maria Luigi Carlo Zenobio Salvatore Cherubini 1760-1842

Cherubini was both a classical and romantic composer whose most significant compositions were operas and sacred music. As for his bona fides, Beethoven considered him the greatest composer of his era.

His music was strongly influenced by Niccolò Jommelli, Tommaso Traetta, and Antonio Sacchini, who were the leading Italian composers of the day.

Disappointed with his lack of acclaim in the theater, Cherubini turned increasingly to church music, writing seven masses, two requiems, and many shorter pieces.

Requiem in C minor (1816), commemorating the anniversary of the execution of King Louis XVI of France, was a huge success and his Requiem in D minor was performed at his own funeral.

Ave Maria https://youtu.be/lR5Ujul7Xo8?t=14

Médée – Ouverture https://youtu.be/fW-gtPnslo8

Marche funèbre https://youtu.be/54LrQR_DVPY

Requiem in C minor https://youtu.be/UWQOTRLP1Cs

Missa Solemnis No 2 D minor https://youtu.be/1bajzkOxpVk

The Requiems are long but far from tedious. Just let them play.

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8.7m Years Fossils Old Found Under Los Angeles High School

Researchers find two sites with fossils including saber-toothed salmon and megalodon, the huge prehistoric shark

The fossilized mandible of a saber-toothed salmon is among the items found under the school. Photograph: Wayne Bischoff/Envicom Corp

Marine fossils dating back to as early as 8.7m years ago have been uncovered beneath a south Los Angeles high school.

On Friday, the Los Angeles Times reported that researchers had discovered two sites on the campus of San Pedro high school under which fossils including those of a saber-toothed salmon and a megalodon, the gigantic prehistoric shark, were buried.

https://bit.ly/3Tuz9Oa

Do you suppose they might be relics of education past?

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Filtration Material Removes Long-Lasting Chemicals from Water

Membranes based on natural silk and cellulose can remove many contaminants, including "forever chemicals" and heavy metals.

Istock

Water contamination by the chemicals used in today's technology is a rapidly growing problem globally. A recent study by the U.S. Centers for Disease Control found that 98 percent of people tested had detectable levels of PFAS, a family of particularly long-lasting compounds also known as "forever chemicals," in their bloodstream.

A new filtration material developed by researchers at MIT might provide a nature-based solution to this stubborn contamination issue. The material, based on natural silk and cellulose, can remove a wide variety of these persistent chemicals as well as heavy metals. And, its antimicrobial properties can help keep the filters from fouling.

The findings are described in the journal ACS Nano, in a paper by MIT postdoc Yilin Zhang, professor of civil and environmental engineering Benedetto Marelli, and four others from MIT.

https://bit.ly/3znWpqd

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Designing a Better Water Filter

Mizzou researcher Maryam Salehi is developing a fabric-like filter to remove tiny plastics and lead from drinking water.

Maryam Salehi and graduate student Anandu Gopakumar Nair investigate filter properties in her lab in Lafferre Hall.
Photo by Zac Anderson

University of Missouri researcher Maryam Salehi and collaborators are coming up with a new way to trap those tiny invaders — and protect the public — through a fabric-like filter.

"The idea is to design a filter that can be attached to a faucet so it can remove microplastic and lead at the same time from tap water," said Salehi, an assistant professor of civil and environmental engineering in Mizzou's College of Engineering. "We're envisioning an inexpensive point-of-use filter that could connect to any faucet."

The filter membrane is made from polyvinyl alcohol fibers, which are polymers currently used in biomedical applications. The team chose the material because it's low-cost and biocompatible, meaning it's not toxic to humans, animals or plants.

It's also proving to be effective. In lab tests, the membrane was able to remove nearly 100% of larger microplastics and nearly 80% of the smallest microplastics, while at the same time removing about 70% of lead contamination.

"We still need to test the filter to see how it tolerates other conditions — such as disinfectant use in water — but the idea is to hopefully have something that can be commercialized and used to easily purify tap water," Salehi said.

The team outlined their findings in a cover article published in Applied Polymer Science. Co-authors were Anandu Gopakumar Nair, a doctoral student at Mizzou, Alexander Ccanccapa, a post-doctoral researcher, and Kati Bell, an industry partner. The work is supported by Brown and Caldwell, as well as the National Science Foundation.

Salehi is a core researcher at the Missouri Water Center, which brings together stakeholders from academia, industry and government to advance water research.

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World's Largest Solar Farm Approved

The Australian government has issued environmental approvals for the construction of a 12,400 hectare solar farm, the largest on the planet.

Some of the about 30 hectares (74 acres) of solar panels at the Williamsdale Solar Farm are displayed south of Canberra, Australia, on June 29, 2020.
[Photo: Lukas Coch/AAP Image via

Australian company Sun Cable plans to build a 12,400-hectare solar farm and transport electricity to the northern Australian city of Darwin via an 800-kilometer (497-mile) overhead transmission line, then on to large-scale industrial customers in Singapore through a 4,300-kilometer (2,672-mile) submarine cable.

https://bit.ly/3Z2Pld4

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Harvesting Ambient Wasted Radio Signals to Power Small Devices

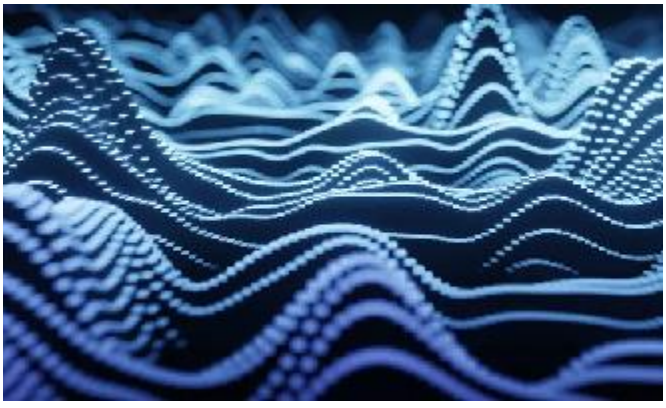

Image credit: Flavio Coelho/Getty Images)

Wi-Fi and Bluetooth signals can be converted into electricity using a new kind of antenna rooted in how electrons behave at a quantum level.

Researchers have created a highly sensitive "rectenna," or rectifying antenna, a component that exploits quirks of quantum physics to efficiently convert

electromagnetic energy into direct current (DC) electricity. The researchers used this novel approach of capturing electrons to power a commercial thermometer.

In a study published July 24 in the journal Nature Electronics, the scientists suggested this technology could be scaled up to power Internet of Things (IoT) devices and sensors using a small proportion of the excess radiofrequency (RF) signals they use to communicate with one another.

https://bit.ly/3yODDZ0

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Cathay Pacific Grounds Its Airbus A350-1000s

An unspecified engine anomaly in flight led to a fleetwide inspection.

Photo: Cathay Pacific

Airbus is taking a turn on the negative-publicity rollercoaster. Cathay Pacific, the flagship carrier for Hong Kong, announced it has grounded its fleet of Airbus A350-1000s for inspection after finding faulty engine components in 15 of 18 aircraft. According to a report today (Sept. 3) in online outlet Channel News Asia, Cathay Pacific Flight CX383 took off from Hong Kong for Zurich, Switzerland, yesterday, but turned back after the failure of an unspecified component of one of its Rolls-Royce Trent XWB-97 engines. The twin-aisle Airbus landed safely 75 minutes after takeoff, following two holding circuits to burn fuel.

Reuters reported that a person familiar with the incident said the discrepancy involved a fuel nozzle. It is not clear whether the engine lost power. Cathay Pacific said in a statement that the flight was the "first of its type to suffer such failure on any A350 aircraft worldwide."

The long-range A350 series, all powered by Rolls-Royce Trent engines, can carry between 300 and 480 passengers. The smaller A350-900 is powered by the TXWB-84 version of the Trent series. Cathay Pacific's A350 fleet includes 18 A350-1000s. It is not clear whether the -84 engine is also affected by the inspection.

Mark Phelps for AVweb

This just for Boeing stockholders

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USPS' New Mail Truck Debuts to Rave Reviews from Carriers

abcnews

The Postal Service's new delivery vehicles aren't going to win a beauty contest. They're tall and ungainly. The windshields are vast. Their hoods resemble a duck bill. Their bumpers are enormous.

"You can tell that (the designers) didn't have appearance in mind," postal worker Avis Stonum said.

Odd appearance aside, the first handful of Next Generation Delivery Vehicles that rolled onto postal routes in August in Athens, Georgia, are getting rave reviews from letter carriers accustomed to cantankerous older vehicles that lack modern safety features and are prone to breaking down — and even catching fire.

Within a few years, the fleet will have expanded to 60,000, most of them electric models, serving as the Postal Service's primary delivery truck from Maine to Hawaii.

Once fully deployed, they'll represent one of the most visible signs of the agency's 10-year, $40 billion transformation led by Postmaster General Louis DeJoy, who's also renovating aging facilities, overhauling the processing and transportation network, and instituting other changes.

The current postal vehicles — the Grumman Long Life Vehicle, dating to 1987 — have made good on their name, outlasting their projected 25-year lifespan. But they're well overdue for replacement.

By David Sharp And Ron Harris for AP

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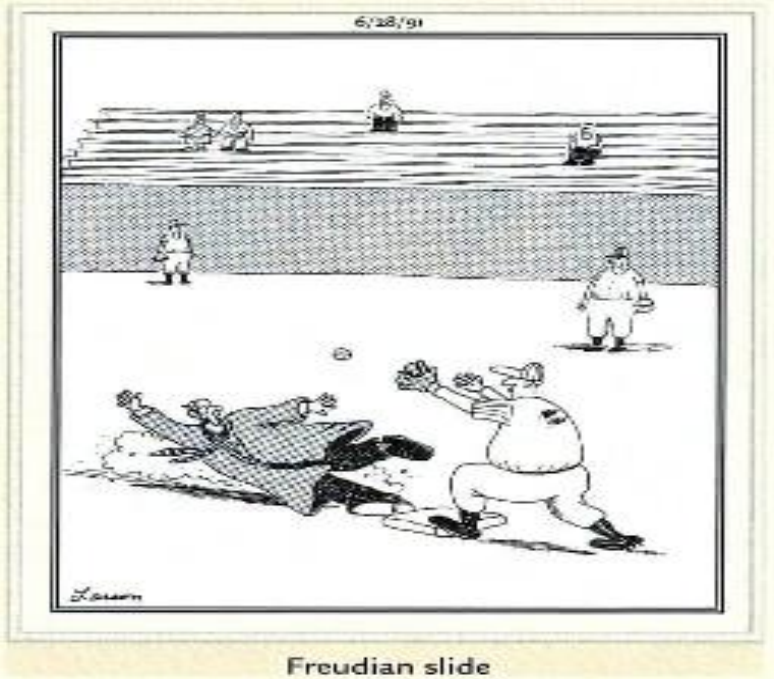

Freudian slide

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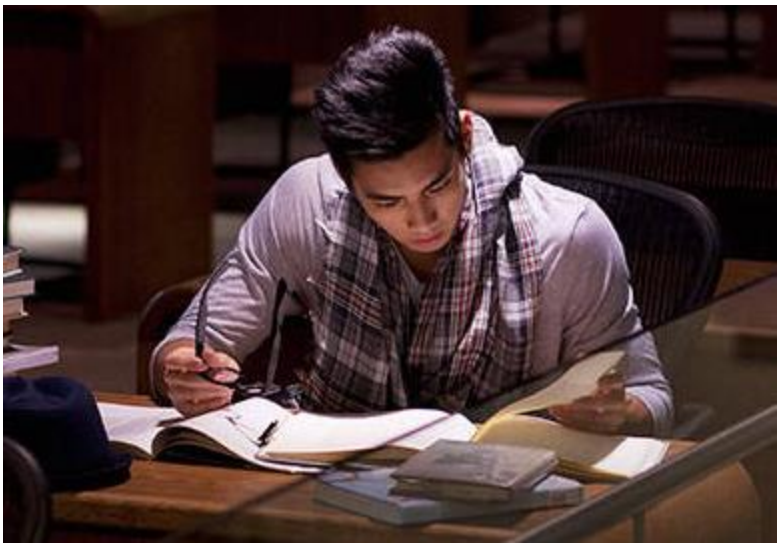

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Something wrong with the subject? No? What then?

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Is this the Most Ancient Hebrew Book Ever Discovered?

Found in a cave in Afghanistan, the parchment dates to between 660 and 780 CE. Soon, it will be on display at the Museum of the Bible.

The Afghan Liturgical Quire, the oldest Hebrew book containing Sabbath morning prayers, poetry, and a partial Haggadah will be displayed in Washington, D.C., later this month.
(Museum of the Bible)

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In 2019 a curator from the Museum of the Bible in Washington, D.C., and an elderly scholar from Jerusalem were at work on an odd manuscript: a pocket-sized Hebrew book of uncertain age and origin.

Over the years, the manuscript had been variously identified as a fragment of the Talmud, a seventeenth-century book of Psalms, a relic from Babylon, a ninth-century prayer book, and a remnant of a famous medieval repository of texts from a synagogue in Cairo. It was rare enough to draw the attention of scholars, if not the public. Some of the pages contained a previously unknown poem for the Jewish festival of Sukkot. On one page, an untrained scribe, perhaps a child practicing lessons, wrote out the Hebrew alphabet. Other pages had a version of the Haggadah, the text read by Jewish families at the festive Passover meal.

The Jerusalem scholar, Malachi Beit-Arié, had a hunch that the book's story was other, and older, than it seemed.

Beit-Arié, 82 at the time, was one of the world's preeminent authorities on Hebrew manuscripts, and his hunches were taken seriously. (He died four years later, in 2023.) The research team sent four parchment fragments for carbon dating, then waited for several months in suspense. ...

Matti Friedman for The Free Press.

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How Does the Electric Grid Work?

Data centers, electric vehicles, and sustainability efforts are all changing how the US generates and distributes power.

Amelia Kinsinger

The grid" isn't a single entity: Any given spot in the US is served by one of three regional grid systems—one of which serves only the state of Texas—though they do connect to each other on some level to distribute power to millions of customers.

Utilities that are part of the grid commonly generate their own electricity, transmitting it to customers directly.

Another distribution model came along in 1996, creating an alternative to the status quo "wholesale" electricity market. The government paved the way for independent system operators and regional transmission organizations to compete for the chance to buy and sell power services.

https://bit.ly/3Tg7cK0

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Can "Button Dogs" Understand Words on Soundboards?

New Study Says Yes

David Walter Banks for The Washington Post
Getty Images

Canine communication devices have been around for decades (check out this one from 1997), but in the last few years, updated versions of the tech have gained popularity. Videos of pups pressing colorful tiles or buttons to ask for a "walk" or "treat" — and sometimes even seeming to string together words into the semblance of a sentence — garner millions of views on social media.

But do these "button dogs," as they're referred to, actually understand the recordings that come out of the soundboards when they press their paws down, or are they merely responding to body language cues from their owner?

A new study out of the University of California, San Diego says it's the former — to some degree, at least. The research evaluated three types of soundboard words: those indicating mealtime, going outside, and playing. The team found that dog participants were able to successfully associate two of the categories with the correct outcomes in real life.

"This study addresses public skepticism about whether dogs truly understand what the buttons mean," study lead Federico Rossano, a cognitive scientist recently featured in the Netflix documentary Inside the Mind of a Dog, said in a news release. "Our findings are important because they show that words matter to dogs, and that they respond to the words themselves, not just to associated cues."

David Walter Banks for The Washington Post via Getty Images

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Get Out Your Pocketbook History Buffs

There's a 1941 Nakajima A6M2 Model 21 Zero waiting for you.

Platinum Fighter Sales

https://www.platinumfighters.com/inventory/1941-nakajima-a6m2-model-21-zero/

It can be yours for a measly $5,000,000.

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Ocean Photographer of the Year 2024

Check out some of the best photos from 2024's Ocean Photographer of the Year competition.

This photo of wide-eyed midshipman fish babies sitting on top of luminous embryonic sacs was the winner in the Ocean Portfolio category.
(Image credit: Shane Gross)

The stunning images were among those short-listed at the 2024 Ocean Photographer of the Year awards. The winners of the competition, which is run by Oceanographic Magazine and sponsored by the Swiss watch company Blancpain, were announced Thursday (Sept. 12) at an event in London's Somerset House.

https://bit.ly/3Y2fd8d

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Full-Fat Dairy Foods and Cardiovascular Disease

worldculturepictorial.com

Some recent research suggests that eating milk, cheese and yogurt — regardless of fat content — is not directly associated with a higher risk of heart disease or stroke.

This may give you more flexibility when choosing the fat level in your milk, cheese and yogurt options. Here's an overview of current research and important points to consider when choosing between full-, reduced-, low-fat or fat-free dairy foods from the Mayo Clinic.

https://bit.ly/3Bm7lVS

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CCA: Loyal Wingman Collaborative Combat Aircraft

mikeshouts.com

As envisioned by service leaders, CCA will lead to loyal wingman drones flying alongside fighters, a force multiplier that will be the airpower backbone of America's future military. It's no surprise that such a program is complex — and comes with a lot of questions about how these systems will be used, whether the technology will be ready, and who will make them.

https://youtu.be/u92zn2kp3gk?t=1

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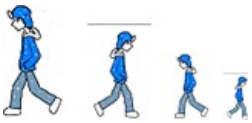
My Walking Thoughts



For Sunday September 22 2024

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T-28 Formation Training

Before you can formate (well maybe I'm taking some license here with a word more apt to be found in your chemistry handbook), first you have to get two or more aircraft together, and that's the subject for today's missive.

The guy who took on the task of developing the methods for doing so was a Frenchman by the name of Ron d'Voo, a member of the famous World War 1 outfit, the Escadrille No.1, known for its proficiency in arriving at aerial engagements late and lacking any vestige of coordination. That was until Ron took it upon himself to rectify the situation.

What he discovered was that Escadrille 1's approach to the multi aircraft situation was for the flight leader to take off first, head off in the direction of where he thought the enemy might be while the rest of his flight struggled to catch up, more often than not getting lost in the tail-chase process. The process led to what even to this day is known as a gaggle.

Yes, he did determine it was possible to get together this way, but it rarely worked in time for the pilots to join up before the enemy—the dreaded Hun—pounced them from out of the sun. Not good, and even if two or three somehow managed to take their places as 'wingmen,' they would be at a serious disadvantage having burned far more fuel than the leader playing catch-up.

It was with this recognition that Ron had his epiphany.

He started by giving the tail chase practice the name '*Running*.' Admitting that while possible it was clearly impracticable…a virtual guarantee for creating the gaggle. In its place he devised what he called a '*Turning'* maneuver in which the leader established a banked turn against which the wingmen could establish a bearing—think 45 degrees—allowing them to close on the leader quickly and without the need for increased fuel use. It took military aviation by storm, leading to the need for giving the options names. Thus even today we refer to procedure either as a *Running* or a *Turning Rendezvous*, the misspelling of its author's name created by senior French officials intent on putting a French stamp on everything having to do with aviation…aileron, longeron, empennage, etc..

There are a couple of things you need to know about the Turning Rendezvous. One is that the wingmen on an inside bearing, get close to the leader, they have to perform what is known as a 'conversion,' transferring their closing velocity and angle-off to match the leader's. vector and airspeed. At Whiting in 1960, T-28 students were taught to begin the conversion while inside the leader's turn and at the last moment, the slide under his tail and anchor themselves on the outside wing.

"Piece of cake," you say. "Yeah, I can do that," except for the times you arrive close in with a very serious overtake. That's where you shout into your oxygen mask, "Holy

Moly," roll the wings level, pray you don't smack the leader's bird on the way by, and end up so far outside the turn that you're now in the position to perform Ron d'Voo's 'Running' maneuver.

https://youtu.be/vrw3nUvT5J8

After two or three of the Holy Molys, most students learned to begin the conversion maneuver far enough out before things turned to worms. Those who didn't could expect to learn some new words and epithets from terrified instructors who were none too happy being tasked as 'targets' for their students excess zeal.

On more thing: Because of the big paddle at the blunt end of the T-28, backed by 1300 horses at the command of their left hands, Trojan students found it a lot easier to handle a Holy Moly experience than those herding the faster but less responsive T-2B Buckeyes over at Meridian MS, where students and instructors both could grow beards recovering from overshoots.

With thanks again to Monsieur d'Voo, next week you'll learn about parades and cruises.

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