

Ode of Happiness for Sunday August 29 2021

## Explosions from White Dwarf Star RS Oph



*Illustration Credit & Copyright: David A. Hardy & PPARC*

Spectacular explosions keep occurring in the binary star system named RS Ophiuchi.

Every 20 years or so, the red giant star dumps enough hydrogen gas onto its companion white dwarf star to set off a brilliant thermonuclear explosion on the white dwarf's surface.

At about 5,000 light years distant, the resulting nova explosions cause the RS Oph system to brighten up by a huge factor and become visible to the unaided eye. The red giant star is depicted on the right of the above drawing, while the white dwarf is at the center of the bright accretion disk on the left.

As the stars orbit each other, a stream of gas moves from the giant star to the white dwarf. Astronomers speculate that at some time in the next 100,000 years, enough matter will have accumulated on the white dwarf to push it over the Chandrasekhar Limit, causing a much more powerful and final explosion known as a supernova.

Starting early this month, RS Oph was again seen exploding in a bright nova.

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## Like Humans, Cuttlefish Can Form Complex Memories

By Rodrigo Pérez



*phys.org*

Remember that mouthwatering meal you had 20 years ago at that unforgettable restaurant? Old cuttlefish can remember that sort of thing, too. In a new study, researchers found the squid relative can recall the entire experience of its favorite meal—and, unlike in people, that ability gets better with age.

In human brains, some memories have more staying power than others. Recall of facts such as the location of the nearest grocery store or the date of the first Moon landing—what scientists call semantic memory—generally doesn't fade with time. But we can also remember unique events in our own lives, which include not only where and when a thing happened, but also the specific sensations we experienced as it was happening. This "episodic memory" often dims over the years. Studies in jays, rats, and monkeys show they also have both kinds of memories. And 8 years ago, another animal joined the club: the cuttlefish.

<https://www.youtube.com/watch?v=GDwOi7HpHtQ>

To find out how cuttlefish memory might change over time, researchers first tested their semantic memory, or their recall of facts. Because they couldn't ask the cephalopods about the first Moon landing, they tested them on something they could recall: where they got their food each day.

<https://www.youtube.com/watch?v=fFDMxieOmwk>

The researchers first trained 12- and 24-month-old cuttlefish (*Sepia officinalis*) to eat each meal of the day at specific, different locations in their tanks. After 3 weeks, they tested their ability to remember those locations. Even when the scientists didn't deliver a meal, both the young and old animals showed up for breakfast, lunch, and dinner at the right place and time. That suggested they had learned valuable facts—and that their semantic memory was strong.

<https://www.youtube.com/watch?v=iWX3f2GMrtY>

To test their episodic memory, the researchers added another variable: the animals' personal preference. They offered the cuttlefish two meals—some rather dull prawn meat and their favorite live grass shrimp—at the same time in two different places in their tanks. Then they offered another two meals at the designated tank locations, but at different times: One hour after the first meal, the cuttlefish got prawn, or, 3 hours later, they were given both prawn and shrimp.

After 4 weeks, the researchers let the animals “choose” their meal by swimming to the right part of the tank at the right time. If they swam to the prawn area 1 hour after their first meal, they'd get prawn—but they'd forfeit the shrimp. If they waited 3 hours and headed over to the shrimp area, they got both shrimp and prawn.

Eventually, both the young and old animals learned to wait longer to get their shrimp. That suggested they had formed complex, episodic memories that included not only where and when they had eaten, but also which meal was tastier, researchers report this week in the Proceedings of the Royal Society B. What's more, the old cuttlefish achieved this recall much faster than the young ones, suggesting their ability to form these memories remains strong with age—and may even improve over time.

“It's a clever study,” says Daniel Osorio, a neuroscientist at the University of Sussex who wasn't involved in the work. “It shows that these animals are really good at learning complicated things.” Many studies make big claims about cephalopod intelligence, he says, but few demonstrate it in such a sophisticated way.

That this ability stays strong with age also speaks to “fundamental differences” in nervous system organization in cuttlefish versus mammals, says Marcos Frank, a neuroscientist at Washington State University, Spokane, who was not involved with the research. And it also shows these animals clearly have a sense of time, he says.

Although cuttlefish, like mammals, show signs of deterioration in their brain during aging, their vertical lobe—a structure related to learning and memory—appears to stay intact when they're old. The fact that cuttlefish mate until very late in life, just a few weeks before dying, might have something to do with this, says Alexandra Schnell, lead author of the study and a comparative psychologist at the University of Cambridge and the Marine Biological Laboratory in Woods Hole, Massachusetts. “They go out with a bang,” she says. She speculates that because the main goal of the cuttlefish during the breeding season is to mate with as many partners as possible, the preservation of episodic memory helps them remember who they mated with—and where and when—so they don't keep mating with the same individual.

For Schnell, the fact that neither type of memory declined with age in the cuttlefish was surprising. “I thought the older cuttlefish ... just wouldn't perform as well as the younger cuttlefish,” she says.

She and her colleagues are now interested in finding out whether cuttlefish are able to plan for the future, an ability that requires episodic memory. Earlier this year, they showed cuttlefish have good self-control, a sign that they learn to expect things that

are coming later. But the jury is still out over whether this “mental time travel” is possible for them.

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## Ring Ripples



Let's talk about our solar system's second-largest – and most beautiful – world, Saturn. Particularly about the planet's crowning glory: those stunning, wafer-thin rings. While the rings are beautiful, that's not all they are. They can also reveal the secrets of the swirling world they encircle.

The structure of Saturn's rings is finely tuned by its internal gravity. When something moves inside the planet, that change in gravity pulls on the rings as well. That's important, because it's nearly impossible to learn about the interiors of gas giants – we can't see them, and the pressures are so intense that we can't send probes in to find out. Because of this, we don't even know if Jupiter has a solid core.

So, when astronomers spotted ripples in Saturn's innermost rings about 30 years ago, they hypothesised that those ripples could be caused by sloshing deep

beneath the cloud tops. As it turns out, that hypothesis was correct. Data from [the Cassini spacecraft](#), which orbited Saturn from 2004 to 2017, allowed researchers to [determine the planet's rotation speed](#) from ripples in rings.

Even then, not all the ripples in the rings were explained. A pair of researchers from the California Institute of Technology identified one extra wave that let them [peer even deeper into the planet](#).

The researchers compared observations of this wave with a series of models of how [Saturn's guts](#) might be structured and found that the planet's core is what planetary scientists call "fuzzy". That means that rather than being the hard sphere of rock or metal that most people think of when we consider a planet's core, Saturn's heart is a soupy blob of ice, rock and exotic metal fluids. The transition from Saturn's upper layers to the core is gradual, getting increasingly dense as you dive deeper into the planet.

The core is also surprisingly enormous, inhabiting about 60 per cent of the width of the entire planet and 17 times as massive as Earth. All this creates issues for our understanding of Saturn more generally. A core that large and fuzzy cannot undergo the kind of motion required to create a global magnetic field, but Saturn has one anyway. Figuring that out will take more modelling.

However, it does give us a potential window into what's going on [inside Jupiter](#), which doesn't have the thick rings required to give us this kind of information. [Uranus and Neptune](#) have more substantial rings than Jupiter, though, and the methods these researchers used could be put to work understanding those worlds.

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## Secret Second Jobs



The Hustle recently asked readers if they secretly work 2nd jobs. Their answers are incredible.

- "I'm a full-time health care business analyst moonlighting as a restaurant chef. I'm doing video conferences with colleagues around the world (camera off) while taking lunch orders."
- "I'm a director of sales for a software company. I'm the only employee in my state and most of our business is inbound... This has given me the flexibility to build up my side gig: a bartending company for bachelorette parties."
- "I work as a youth pastor full time. I'm not fully remote, but I can be and am most of the week. I also spend Thursday-Saturday running a swimming pool repair and maintenance business."
- "I'm a software dev, working 3 W-2's at around \$120k base each. Thursday at 9am I have 2 stand-ups going at the same time. I usually have 1 meeting on my phone with a single AirPods in 1 ear and another meeting on my laptop."
- "I work a part-time position at the local post office for insurance benefits. I also have my own company for website design & social media management, plus I edit books for 1st-time authors."
- "I'm the COO of a cannabis company in California. I also own a saltwater aquarium business in South Florida, so I'm now a remote COO that balances Google meetings with water changes for 20-25 aquarium clients."
- "It's really easy for me to keep my 3D printer going while I'm doing my full-time remote job, so I started a side hustle making 3D-printed parts for 1996-2002 Toyota 4Runners. Over my first 6 months I did about \$10k in sales."

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## **SFO Helps to Save Endangered Species**

A parcel of land owned by the international airport is home to the largest population of the San Francisco garter snake



*A San Francisco garter snake can grow up to 3 feet long.  
Photograph: Richard Kim/USGS Western Ecological Research Center*

By Gabrielle Canon

Across from the San Francisco international airport, and past the bustling highway that hugs it, lies what appears to be an empty lot. But the 180-acre, airport-owned parcel of land, which sits beyond the tarmac, tucked against residential homes, isn't quite empty. It's home to roughly 1,300 snakes.

With brightly painted bands of blue, orange-red and black that line their slender bodies, the garter snakes, which can grow up to 3ft long, are considered among the most beautiful in the world. They are also among the most threatened.

Endemic to the now highly urbanized San Francisco peninsula, the snakes have been pushed out by cities, agriculture and transportation systems, and there's little space left for them to thrive. People have tried to pocket them for the pet trade, and the climate crisis has also put pressure on their prey and thinned the population further.

But officials at the Bay Area's biggest airport and their on-staff wildlife biologist, Natalie Reeder, have worked for years to ensure the snakes have a haven – and now federal researchers have found that the habitat at the West-of-Bayshore property holds more of them than anywhere else. It also provides refuge to the endangered red-legged frog, which happens to be one of the snakes' favorite snacks.

"Everything that happens there is designed to protect these species," said San Francisco airport (SFO) spokesperson Doug Yakel. "For us, success would be that there is a stable thriving population, but to find out we had the largest population – it was really a pleasant surprise."

The study, commissioned by the US Geological Survey and the US Fish & Wildlife Service, estimated the population of the snakes and determined that the habitat facilitated by the airport provided a local resurgence of a species that has been endangered for decades.

Their preferred place to live is near ponds, where they can spend their days hiding in vegetation or sunning on the banks. Hawks and herons are still their main predators,

but in residential communities pets, especially off-leash dogs or outdoor cats, can also pose a problem.

But at Bayshore, they mostly have the land to themselves. The public is barred from the property, which has been converted into ideal conditions for snake and frog. Ponds dot the parcel and long grasses sway in the ocean breeze. "Our goal has been to ensure we are regulating the water flow," Yakel said. "It looks undeveloped, but behind the scenes there's a lot of work going on to preserve the vitality of that space, and preserving as natural a space as we possibly can."

The success of the program is great news for the snakes, and for those who study and protect them. "It is really hopeful," said Brian Halstead, a research wildlife biologist with the US Geological Survey. He said it shows how important managed lands can be for the snakes.

But even with the success of the program, Halstead said it's unclear if the population will be sustainable there long-term, because they are so isolated from other populations. Climate crisis could also complicate efforts into the future. Already, for the snakes that dwell in isolated wetlands, human water-use has had an effect, and the landscape is drying.



*A pair of endangered California red-legged frogs.*

*Photograph: AP*

One site where the snakes are studied is drier now than it was during 2014 and 2015, when the state was in its last record-breaking drought. Because the snakes rely on amphibians for food – especially young frogs that are just emerging from their tadpole state – when the water recedes, so do their chances.



"Climate change absolutely can impact them," he said. "Anything we can do to slow climate change is going to help amphibians and the snakes that rely on them."

Still, there's more good news than bad when it comes to the San Francisco garter snake. Halstead thinks this could also have a positive effect on other animals that are struggling to survive.

"It is kind of neat that we can use this snake that is endangered as an ambassador for other snakes" he said. "Maybe we can reel people in and change their mind if we can show them how important it is not to lose these snakes, the frogs they eat, or any aspect of the ecosystems they depend on."

<https://www.theguardian.com/us-news/2021/aug/19/san-francisco-airport-endangered-garter-snake>

Officials at SFO are proud to play a role, too.

Like most airports, Yakel said SFO is constantly looking to the future and reimagining how to enhance and change the experience for the tens of millions of passengers that pass through its terminals each year. But when it comes to Bayshore, it is exactly the opposite.

"As our airport continues to evolve, this is the one place that continues to stay the same," Yakel said. "We want to continue to provide a good stable environment for these two endangered species. Hearing that they are thriving – that is the ultimate validation."

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## Poem for Today

### Me or You?

History. People flocked to  
public hangings, lashings  
lynchings  
blood thirst first when  
crowds felt wronged  
heads on spikes lined roads  
mapping crowd sourcing  
before those words  
combined  
now it's smart phones  
drawing lines  
as though the next breath  
already belongs to the  
hash tag or  
photo  
splashed worldwide

no time to regulate  
think explore  
ask for more  
what is shown  
typed  
is what is true  
everyone is bait  
no one excused  
world wide trial  
jury devil driven  
it's hard living in this  
avenue  
turkey vulture trolls  
the sky  
watching as I sit  
and swing  
is it me he's after  
or you?

*Katherine Holden*

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## **Islands in the Mind**

*This was sent by my Indian friend and mentor, NC Vasuki, who after many years the founding director of the Delaware Solid Waste Authority, retired and is still sharing his knowledge with people and countries around the world.*

The Israelis do not make islands in the shape of palm trees, towering skyscrapers, expensive hotels, nor do their leaders use cars with massive silver bodies (allusion to Dubai and the United Arab Emirates). The pride of Israel is that its technologies will be able to be used by all humanity:

1. Tel Aviv University is developing a nasal vaccine that will protect people from Alzheimer's and stroke.
2. The Technion, Institute of Technology (Haifa), has developed a simple blood test capable of detecting different types of cancer.
3. The Ichlov Center (Tel Aviv) isolated a protein that makes colonoscopy unnecessary to detect colon cancer, with a simple blood test. Colon cancer kills about 500,000 people annually.
4. Acne doesn't kill, but does cause anxiety in teens. The Curlight Laboratory has created a cure. Emitting UV rays at high intensity, kills the bacteria that cause acne.
5. The Given Imaging Laboratory has developed a tiny camera in the form of swallowed pills and transmits thousands of photos of the digestive tract. These high-quality photos (2 per second for 8 hours) can detect polyps, cancers, and sources of bleeding. The

photos are sent to a chip that stores them and sends them to a computer. At the end of the process, the chamber is eliminated via the rectum.

6. The Hebrew University (Jerusalem) developed an electrical neurostimulator (batteries) that is implanted in the chest of Parkinson's patients, similar to the pacemaker. The emissions from this device block the nerve signals that cause tremors.

7. The simple smell of a patient's breath can detect if a patient has lung cancer. The Russell Berrie Institute for Nanotechnology has created sensors capable of sensing and registering 42 biological markers that indicate the presence of lung cancer without the need for a biopsy.

8. Cauterization can be dispensed with in many cases. Endopat is a device placed between the indicator fingers, which can measure the state of the arteries and predict the possibility of a heart attack in the next 7 years.

9. The University of Bar Ilan studies a new drug that fights viruses through the bloodstream. It is called Vecoy Trap, as it tricks a virus into self-destruction. Very useful to combat hepatitis, and in the future Aids and Ebola.

10. Israeli scientists at Hadassah Medical Center (Jerusalem) may have discovered the first cure for amyotrophic lateral sclerosis, known as Lou Gehring's disease, in an Orthodox rabbi. Stephen Hawking, a famous British scientist, suffered from this disease and used methods invented by Israeli scientists to communicate.

You will never get this from main-stream media.

The world shouldn't live on bad news alone so spread this good news.

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**Mona Lisa Speaks to All of Us**



*Restored Mona Lisa*

<https://www.youtube.com/watch?v=q8XF6u7M7oQ>

<https://www.youtube.com/watch?v=alqjkVthM9o>

<https://www.youtube.com/watch?v=NIDX18XI16s>

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**Stephen Pless, Medal of Honor Winner**



54 years ago on 19 August, 1967, Major (then Captain) Stephen W. Pless, United States Marine Corps, earned the Congressional Medal of Honor.

As a UH-1E helicopter gunship pilot flying with VMO-6, Pless and his crew rescued three downed U. S. Army personnel that had been wounded and taken captive by a 30 to 40 man Viet Cong enemy force. For this combat action Pless earned the Medal of Honor and his three-man crew were each awarded the Navy Cross.

In addition to the MOH, Major Pless also earned the Silver Star, the Distinguished Flying Cross, the Bronze Star, the Purple Heart, 38 Air Medals, and the Navy Commendation Medal with combat "V" for Valor. He was the only Marine aviator awarded the Medal of Honor in the Vietnam War.

Major Pless and his crew are the highest decorated Marine aircrew to come out of Vietnam.



The helicopter that Major Pless flew during his Medal of Honor mission was located years later, restored and is now on display at the National Museum of the Marine Corps in Quantico, Virginia.

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## Fun in the Pun

Q: Can February March?

A: No. But April May!

Q: Did you hear about the painter who was hospitalised?

A: Reports say it was due to too many strokes!

Q: Have you heard the joke about the butter?

A: I better not tell you, it might spread!

Q: How do you know that carrots are good for your eyesight?

A: Have you ever seen a rabbit wearing glasses?

Q: Music Teacher: What's your favourite musical instrument?

A: Kid: The lunch bell!

Q: What did the triangle say to the circle?

A: You're pointless!

Q: What do you call a ghosts mom and dad?

A: Transparents!

Q: What do you call a group of men waiting for a haircut?

A: A Barbercue!

Q: What do you call a person that chops up cereal

A: A cereal killer!

Q: What do you call a South American girl who is always in a hurry?

A: Urgent Tina!

Q: What do you call two fat people having a chat?

A: A heavy discussion!

Q: What kind of emotions do noses feel?

A: Nostalgia!

Q: What kind of shorts do clouds wear?

A: Thunderwear!

Q: What's easy to get into but hard to get out of?

A: Trouble!

Q: Where do boats go to when they get sick?

A: The dock!

Q: Who cleans the bottom of the ocean?

A: A Mer-Maid!

Q: Why can't a leopard hide?

A: Because he's always spotted!

Q: Why can't your nose be 12 inches long?

A: Because then it would be a foot!

Q: Why did the barber win the race?

A: Because he took a short cut!

Q: Why did the boy tiptoe past the medicine cabinet?

A: He didn't want to wake the sleeping pills!

Q: Why did the tomato turn red?

A: It saw the salad dressing!

Q: Why did the tree go to the dentist?

A: To get a root canal!

Q: Why don't you see giraffes in elementary school?

A: Because they're all in High School!

Q: Why was the maths book sad?

A: Because it had too many problems!

And May the force be with you

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## Robots Getting Smarter and More Agile.



<https://www.youtube.com/watch?v=tF4DML7FIWk&t=2s>

<https://www.youtube.com/watch?v=Jky9I1ihAkg>

<https://boston.cbslocal.com/2021/07/01/boston-dynamics-spot-robots-dancing-bts/>

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**Distortion Pedal .Used on a Harp**





<https://www.youtube.com/watch?v=fNINWMqxQQc>

Don't like the way your harp sounds? Here's a way to jump it into a new galaxy.

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## **Man Sinks Car into Yakima River to 'Fill up Radiator' with Water**



*KIMA Action News Staff*

YAKIMA, Wash. (KIMA) — Emergency crews responded Tuesday to an SUV that drivers spotted submerged in the Yakima River, but the Yakima County Sheriff's Office says the driver claims he did it intentionally.

At about 11 a.m., callers said they saw the blue Suburban in the water of the Yakima River, near Century Landing, in the gap south of Yakima and Union Gap.

Sheriff's deputies responded and found the vehicle in the water and the owner nearby.

According to YCSO, the owner of the vehicle told them he had replaced the thermostat in the vehicle and needed to fill the radiator with water.

Deputies say the driver told them he intentionally drove the SUV into the water so that he could get water into the radiator.

The vehicle has been towed back out of the river.

*Apparently Washington's License Requirements are a bit Relaxed*

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## **New Glass Harder Than a Diamond Has Applications for Multiple Industries**

Shane McGlaun



Scientists in China have created a new type of glass that is harder than a diamond. Diamond is one of the hardest known materials and is often used to cut harder materials. Typically diamond can cut glass, but the new glass developed by researchers in northern China could scratch a diamond.

The product is being called AM-III currently, but the name could change down the road. The glass is described as having a yellowish tint, and it's made exclusively of carbon.

AM-III glass has a Vickers hardness of 113 GPa. For comparison, a natural diamond has a Vickers hardness of between 50 and 70 GPa, while artificial diamonds can reach a hardness of 100 GPa.

The new type of glass has potential uses in several industries, despite likely being years away from mass production. For example, the material could be used to create bulletproof glass in the realm of 20 to 100 times stronger than mainstream materials currently used. It also has potential use in the technology industry.

AM-III is a semiconductor almost as efficient as silicon. With its high efficiency, the material may one day find use in constructing extremely durable solar panels able to withstand large hail and other impacts. AM-III differs from normal pieces of glass, which are typically weak, because it is glass with crystals inside. When viewed under a microscope, the material has an ordered structure similar to a crystal.

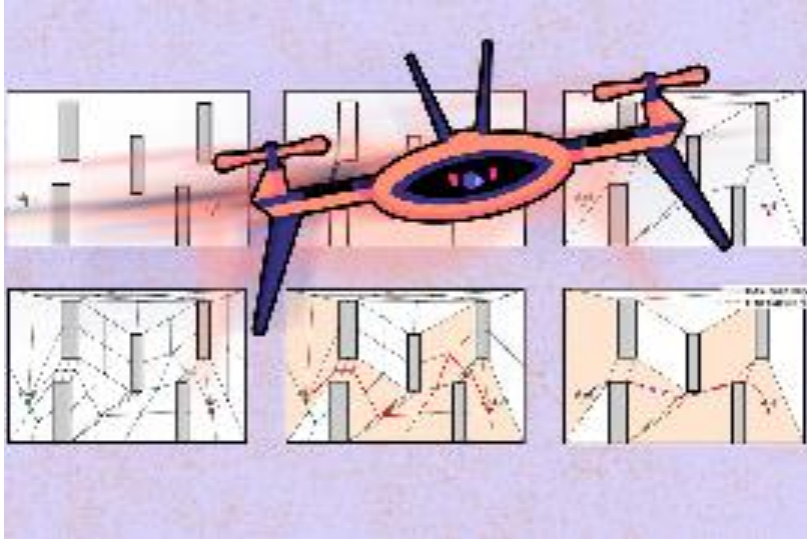
However, when viewed with less magnification, the structure appears highly disordered. Researchers say the combination of order and disorder gives the material its unusual traits. Project scientists say their creation has the highest portion of atoms and molecules in order compared to other materials they experimented with, which gives AM-III its strength.

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## **System Trains Drones to Fly Around Obstacles at High Speeds**

New algorithm could enable fast, nimble drones for time-critical operations such as search and rescue.

Jennifer Chu | MIT News Office



If you follow autonomous drone racing, you likely remember the crashes as much as the wins. In drone racing, teams compete to see which vehicle is better trained to fly fastest through an obstacle course. But the faster drones fly, the more unstable they become, and at high speeds their aerodynamics can be too complicated to predict. Crashes, therefore, are a common and often spectacular occurrence.

But if they can be pushed to be faster and more nimble, drones could be put to use in time-critical operations beyond the race course, for instance to search for survivors in a natural disaster.

Now, aerospace engineers at MIT have devised an algorithm that helps drones find the fastest route around obstacles without crashing. The new algorithm combines simulations of a drone flying through a virtual obstacle course with data from experiments of a real drone flying through the same course in a physical space.

The researchers found that a drone trained with their algorithm flew through a simple obstacle course up to 20 percent faster than a drone trained on conventional planning algorithms. Interestingly, the new algorithm didn't always keep a drone ahead of its competitor throughout the course. In some cases, it chose to slow a drone down to handle a tricky curve, or save its energy in order to speed up and ultimately overtake its rival.

"At high speeds, there are intricate aerodynamics that are hard to simulate, so we use experiments in the real world to fill in those black holes to find, for instance, that it might be better to slow down first to be faster later," says Ezra Tal, a graduate student in MIT's Department of Aeronautics and Astronautics. "It's this holistic approach we use to see how we can make a trajectory overall as fast as possible."

“These kinds of algorithms are a very valuable step toward enabling future drones that can navigate complex environments very fast,” adds Sertac Karaman, associate professor of aeronautics and astronautics and director of the Laboratory for Information and Decision Systems at MIT. “We are really hoping to push the limits in a way that they can travel as fast as their physical limits will allow.”

Tal, Karaman, and MIT graduate student Gilhyun Ryou have published their results in the International Journal of Robotics Research.

<https://youtu.be/FjCIZ5ISRg0>

### **Fast effects**

Training drones to fly around obstacles is relatively straightforward if they are meant to fly slowly. That’s because aerodynamics such as drag don’t generally come into play at low speeds, and they can be left out of any modeling of a drone’s behavior. But at high speeds, such effects are far more pronounced, and how the vehicles will handle is much harder to predict.

“When you’re flying fast, it’s hard to estimate where you are,” Ryou says. “There could be delays in sending a signal to a motor, or a sudden voltage drop which could cause other dynamics problems. These effects can’t be modeled with traditional planning approaches.”

To get an understanding of how high-speed aerodynamics affect drones in flight, researchers have to run many experiments in the lab, setting drones at various speeds and trajectories to see which fly fast without crashing — an expensive, and often crash-inducing training process.

Instead, the MIT team developed a high-speed flight-planning algorithm that combines simulations and experiments, in a way that minimizes the number of experiments required to identify fast and safe flight paths.

The researchers started with a physics-based flight planning model, which they developed to first simulate how a drone is likely to behave while flying through a virtual obstacle course. They simulated thousands of racing scenarios, each with a different flight path and speed pattern. They then charted whether each scenario was feasible (safe), or infeasible (resulting in a crash). From this chart, they could quickly zero in on a handful of the most promising scenarios, or racing trajectories, to try out in the lab.

“We can do this low-fidelity simulation cheaply and quickly, to see interesting trajectories that could be both fast and feasible. Then we fly these trajectories in

experiments to see which are actually feasible in the real world,” Tal says. “Ultimately we converge to the optimal trajectory that gives us the lowest feasible time.”

### **Going slow to go fast**

To demonstrate their new approach, the researchers simulated a drone flying through a simple course with five large, square-shaped obstacles arranged in a staggered configuration. They set up this same configuration in a physical training space, and programmed a drone to fly through the course at speeds and trajectories that they previously picked out from their simulations. They also ran the same course with a drone trained on a more conventional algorithm that does not incorporate experiments into its planning.

Overall, the drone trained on the new algorithm “won” every race, completing the course in a shorter time than the conventionally trained drone. In some scenarios, the winning drone finished the course 20 percent faster than its competitor, even though it took a trajectory with a slower start, for instance taking a bit more time to bank around a turn. This kind of subtle adjustment was not taken by the conventionally trained drone, likely because its trajectories, based solely on simulations, could not entirely account for aerodynamic effects that the team’s experiments revealed in the real world.

The researchers plan to fly more experiments, at faster speeds, and through more complex environments, to further improve their algorithm. They also may incorporate flight data from human pilots who race drones remotely, and whose decisions and maneuvers might help zero in on even faster yet still feasible flight plans.

“If a human pilot is slowing down or picking up speed, that could inform what our algorithm does,” Tal says. “We can also use the trajectory of the human pilot as a starting point, and improve from that, to see, what is something humans don’t do, that our algorithm can figure out, to fly faster. Those are some future ideas we’re thinking about.”

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Never ever, ever, ever go  
to the horse auction after  
4 margaritas  
Lesson learned.



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### **Méditation de Thaïs" for Mother and Baby Elephant**



[https://www.youtube.com/watch?v=vESixmsrV\\_I](https://www.youtube.com/watch?v=vESixmsrV_I)

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## Mars in 4K



<https://www.youtube.com/embed/ZEyAs3NWH4A>

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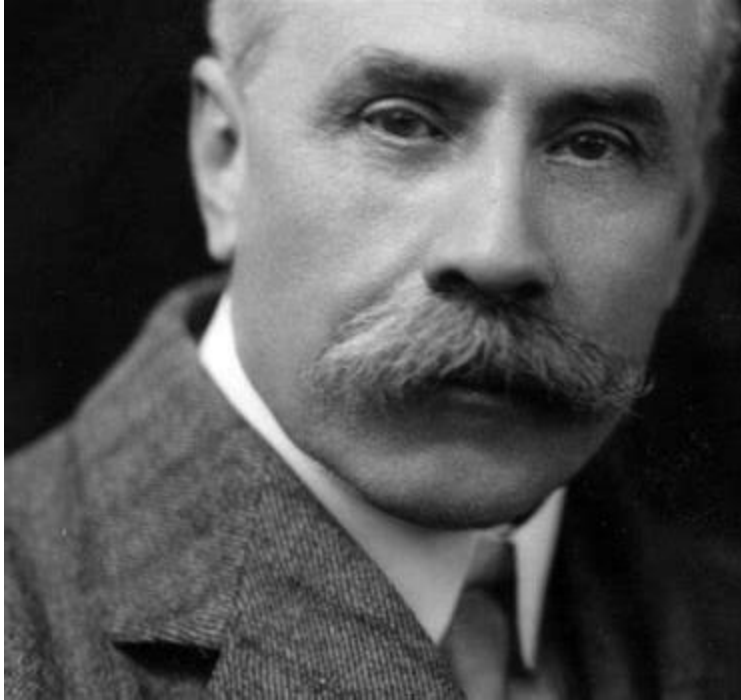




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**Eduard Elgar**



Sir Edward William Elgar, (1857 - 1934) was an English composer, many of whose works have entered the British and international classical concert repertoire. Among his best-known compositions are orchestral works including the Enigma Variations, the Pomp and Circumstance Marches, concertos for violin and cello, and two symphonies.

In musical circles dominated by academics, he was a self-taught composer; in Protestant Britain, his Roman Catholicism was regarded with suspicion in some quarters; and in the class-conscious society of Victorian and Edwardian Britain, he was acutely sensitive about his humble origins even after he achieved recognition.

I find myself drawn to Elgar's *Enigma Variations*, particularly *Nimrod* when I'm in need of refreshment, thus I am highlighting both an orchestral and organ version prior to the entire piece.

## Nimrod from Enigma Variations



<https://www.youtube.com/watch?v=Nz8p9mOLr8U>

<https://www.youtube.com/watch?v=r4MJRNVOplo>

**Enigma Variations** (Warsaw Philharmonic Orchestra, Jacek Kasprzyk

<https://www.youtube.com/watch?v=vLNLvcBmogo>

**Pomp and Circumstance** <https://www.youtube.com/watch?v=R2-43p3GVTQ>

**Cello Concerto**, 1<sup>st</sup> Movement, Jaqueline du Pre

<https://www.youtube.com/watch?v=OH0jUQTCCQI>

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## Church Bulletins From Another Time and Place

They're Back! Those wonderful Church Bulletins! Thank God for the church ladies with typewriters. These sentences actually appeared in church bulletins or were announced at church services:

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The Fasting & Prayer Conference includes meals.

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Scouts are saving aluminum cans, bottles and

other items to be recycled Proceeds will be used  
to cripple children.

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The sermon this morning: 'Jesus Walks on the  
Water. 'The sermon tonight: 'Searching for  
Jesus.'

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Ladies, don't forget the rummage sale. It's a  
chance to get rid of those things not worth  
keeping around the house. Bring your husbands.

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Don't let worry kill you off - let the Church  
help.

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Miss Charlene Mason sang 'I will not pass this  
way again,' giving obvious pleasure to the  
congregation.

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For those of you who have children and don't  
know it, we have a nursery downstairs.

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Next Thursday there will be try-outs for the  
choir. They need all the help they can get.

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Irving Benson and Jessie Carter were married on  
October 24 in the church. So ends a friendship  
that began in their school days.

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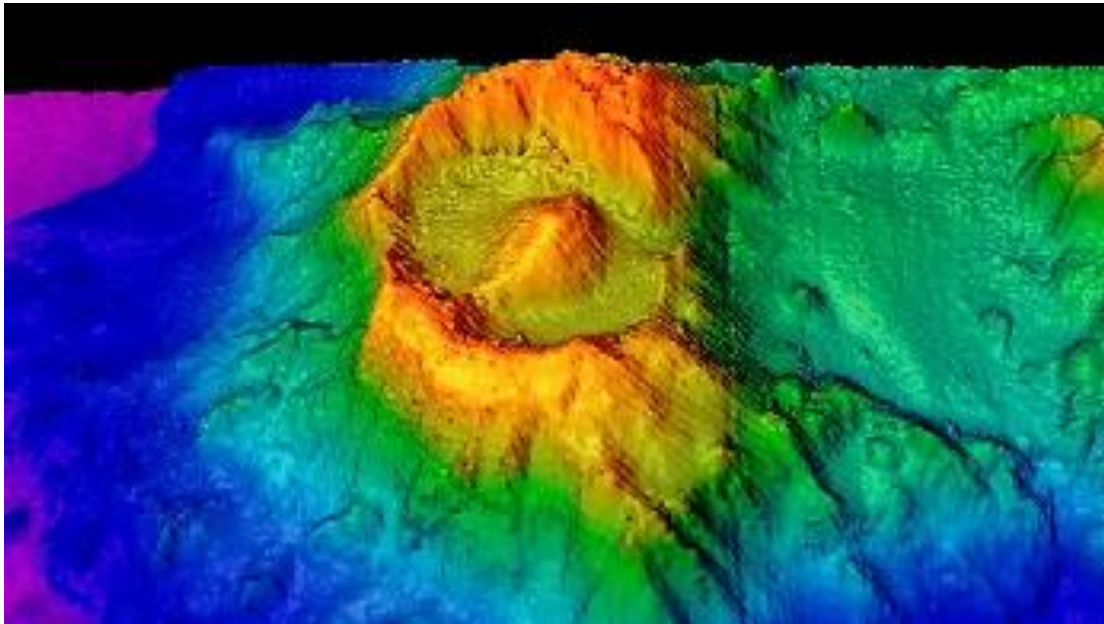
**A bean supper will be held on Tuesday evening in the church hall. Music will follow**

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## **'Eye of Sauron' Volcano and Other Deep-Sea Structures Discovered in Underwater 'Mordor'**

By Harry Baker – Live Science Staff Writer

It is one of several discoveries named after "The Lord of the Rings."



*A 3D map of the caldera known as the 'Eye of Sauron'.  
(Image credit: 3D imagery courtesy of CSIRO/MNF, GSM)*

Researchers exploring the Indian Ocean have discovered the remains of a collapsed underwater volcano with an uncanny resemblance to the all-seeing "Eye of Sauron" from J.R.R. Tolkien's famous fantasy series "The Lord of the Rings," as well as two other seafloor structures named after places in Tolkien's Middle-earth. The eye is actually an oval-shaped depression measuring 3.9 miles (6.2 kilometers) long by 3 miles (4.8 km) wide. Called a caldera, this giant divot is left over from the ancient collapse of a deep-sea volcano. The caldera is surrounded by a 984-foot-tall (300 meters) rim, giving the impression of eyelids, and an equally tall cone-shaped peak at the center, which looks like a pupil, according to The Conversation. The unusual structure is located 174 miles (280 km) southeast of Christmas Island — an Australian external territory off mainland Australia — at a depth of 10,170 feet (3,100 m).

A team of researchers discovered the structure while onboard the ocean research vessel Investigator, owned by Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO), on the 12th day of an expedition to Australia's Indian Ocean

Territories. The researchers used multibeam sonar to create 3D maps of the caldera and the surrounding seafloor.

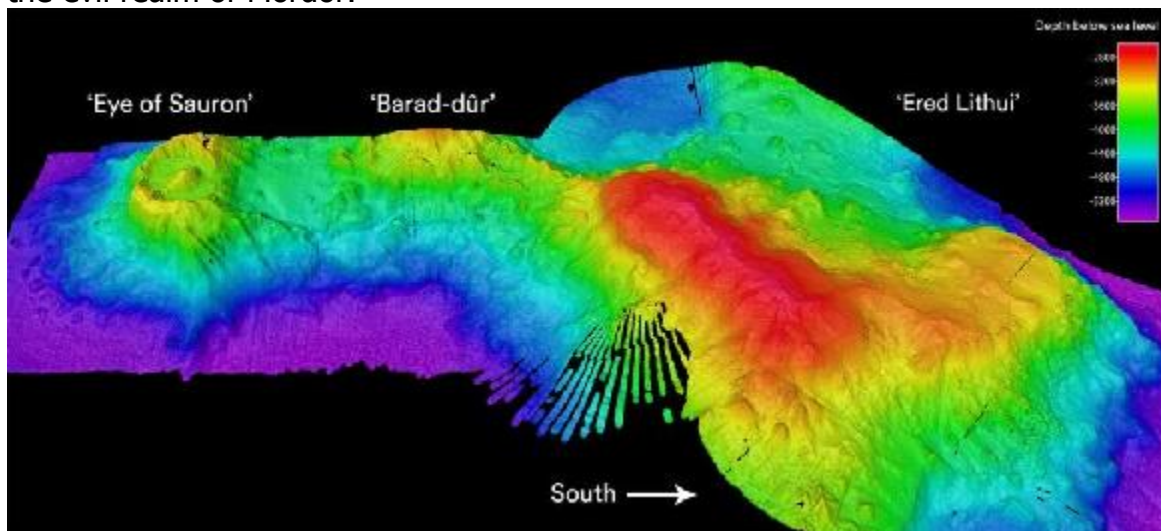
Like other calderas, this one formed when the peak of the original volcano collapsed, according to the researchers.

"The molten magma at the base of the volcano shifts upwards, leaving empty chambers [below]," chief scientist Tim O'Hara, senior curator at Museums Victoria in Australia, wrote in *The Conversation*. "The thin, solid crust on the surface of the dome then collapses, creating a large, crater-like structure."

The area surrounding the volcanic crater is also home to two other noteworthy structures.

"Our volcanic 'eye' was not alone," O'Hara wrote. "Further mapping to the south revealed a smaller sea mountain covered in numerous volcanic cones, and further still to the south was a larger, flat-topped seamount."

Continuing the connection to Tolkien's fantasy epic, the researchers named the cone-covered mountain Barad-dûr, after Sauron's main stronghold, and the seamount Ered Lithui, after the Ash Mountains, both of which are found alongside the Eye of Sauron in the evil realm of Mordor.



*A map showing off the locations of all three features named after places in Mordor. (Image credit: 3D imagery courtesy of CSIRO/MNF, GSM)*

The Ered Lithui seamount is part of a cluster of seamounts thought to date back about 100 million years, O'Hara wrote. The Ered Lithui seamount was once above the water's surface, giving it its flat top, and it has gradually sunk to around 1.6 miles (2.6 km) below sea level.

Over millions of years, sand and sinking detritus — particulate matter, including plankton, excrement and other organic matter — have coated the seamount in a thick layer of sediment around 328 feet (100 m) deep. However, the caldera remains relatively uncovered, suggesting it may be significantly younger, O'Hara said. "This sedimentation rate should have smothered and partially hidden the caldera," O'Hara

wrote. It also "looks surprisingly intact for a structure that should be 100 million years old."

This freshness suggests that the volcano was created, and subsequently collapsed, after the seamount began sinking into the ocean.

"It is possible that volcanoes have continued to sprout long after the original foundation," O'Hara wrote. "Our restless Earth is never still."

*Originally published on Live Science.*

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## **Aldo Nova**



Fantasy <https://www.youtube.com/watch?v=vPQgfaB3S1c>

Monkey on your back <https://www.youtube.com/watch?v=qs6iMer68co>

Aldo Nova (born Aldo Caporuscio on November 13, 1956) is a Canadian guitarist, keyboardist, vocalist, songwriter, and producer.

Signing with Portrait Records, Nova released a self-produced album Aldo Nova in 1982, that had two singles: "Fantasy" and "Foolin' Yourself". His second album Subject...Aldo

Nova from 1983, had two singles: "Monkey on Your Back" and "Always Be Mine". His third album Twitch from 1985 had two singles: "Rumours of You" and "Tonite (Lift Me Up)".

In 1996, he received a Grammy Award as producer for Celine Dion's Falling into You for Album of the Year. In 1997, he released the much acclaimed, mostly instrumental album, Nova's Dream, which featured a different side of his talents as a musician writer. The album is considered by his fans as one of his best alongside his eponymous debut and Subject

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## **Today's chuckles**

My doctor asked if anyone in my family suffered from mental illness. I said, "No, we all seem to enjoy it."

Just once, I want a username and password prompt to say: "close enough."

Being an adult is the dumbest thing I have ever done.

I'm a multitasker. I can listen, ignore and forget all at the same time !!!

Went to an antique show and people were bidding on me.

I won't say I'm worn out, but I don't get near the curb on trash day.

Sometimes it takes me all day to get nothing done.

I don't trip, I do random gravity checks.

Losing weight doesn't seem to be working for me, so from now I'm going to concentrate on getting taller

Some people you're glad to see coming; some people you're glad to see going.

Common sense is not a gift It's a punishment because you have to deal with everyone who doesn't have it.

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## **Corsica Closes Beaches After Rampaging Cows Hurt Tourists**

By Paula Froelich





*Beaches in Corsica were closed after aggressive cows started goring tourists.  
Pascal Pochard-Casabianca/AFP/Getty Images*

Moo-ve over!

Beaches in Corsica were closed this week after unusually aggressive cows started goring tourists.

The French-owned Mediterranean island has over 15,000 cows who have become unusually headstrong after a year of lockdown. Tourists returning to the island's famed beaches are now fighting over their spots of sand with the bovine horde.

One man was sent to hospital after being gored in the neck on a beach in Lotu, another herd of cows chased tourists down a popular street, and in the mountain village of Lozzi, a 70-year-old woman was flown to hospital with a "severe leg wound" after being attacked while hanging out her laundry, according to the Times of London.

"The lady was wounded two centimeters from the femoral artery," Lozzi mayor Francois Acquaviva told local newspaper Corse. "If this goes on, there will be deaths."

In the southern part of the island near Ajaccio, beaches were closed after crowds of cattle were caught damaging cars, private property and rampaging through picnics.

"Tourists laugh at this as folklore and take pictures, but it's a real pest," a local councilor told the paper, and one animal rescue official warned: "When you see that [the cows] are heading in a particular direction, it is best to give them priority."

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