

Welcome to the January 18th, 2017 Edition of THE REVENGE HUMP DAY!

Things have been getting back to normal since the septic tank was pumped out and the system is “back to normal”. I complain about the problems of living in a 42 year old house, but I wouldn’t live anyplace else. The first time Linda and I saw this house in October of 1976, we both said we were home. And home this place has been for the whole Bolgeo Clan. The kids have grown up here and Linda’s Mother and Father have lived here with us. Pop is still living here and visits Granny every day in the Soddy Daisy Nursing Home that is only 10 minutes or so away from Casa Bolgeo. This spring I hope to renovate the kitchen a little bit with a new glass backsplash, a light fixture, wallpaper and a coat of paint on the ceiling. I also hope to get around to a lot of spring fix up and repair around the old homestead.

That is the happy stuff to think about, but this week hasn’t been all roses. Trust me. I have been having to deal with a new medical drug plan and getting it all straightened out for the past 3 weeks. And trust me, it is anything but straightened out. All of this mail order drug stuff is driving me crazy. You know you think it is all done and then Aetna RX Home Delivery sends me an email saying that some of the prescriptions are on hold for more information from the doctor. Then you receive another email saying that some of the other prescriptions have been cancelled. Then you try to start running down what the hell is going on. Trust me on this, building a nuclear plant was easier than working with some of these people.

So on that “Dizzy Note”, why don't y'all sit back and relax because here's the best in gossip, jokes and science for your reading pleasure!

Uncle Timmy

<G>~<O>~<S>~<S>~<I>~<P>~<S>~<T>~<A>~<R>~<T>~<S>~<H>~<E>~<R>~<E>~<I>

CAPTAIN EUGENE "GENE" CERNAN, THE LAST MAN TO LEAVE THE MOON, HAS PASSED AWAY AT THE AGE OF 82.

From: “Tim Bolgeo” tbolgeo@epbfi.com



**LAST MAN
TO WALK
ON THE
MOON DIES
AT AGE 82**

[David Szondy,](http://newatl.com/astronaut-out-gene-cernan-dies/47406/)
January 16,
2017
<http://newatl.com/astronaut-out-gene-cernan-dies/47406/>

Captain Cernan was the Commander of Apollo 17(Credit: NASA)

Captain Eugene "Gene" Cernan, the last man to leave the Moon, has passed away at the age of 82. A holder of multiple space records, Cernan was Commander of the Apollo 17 mission in 1972, one of only 12 astronauts to walk on Moon – of which only six survive – and a staunch US space program advocate. He passed away today after unspecified ongoing health issues. He is survived by his wife Jan Nanna Cernan, his daughter, son-in-law, two step-daughters and nine grandchildren.

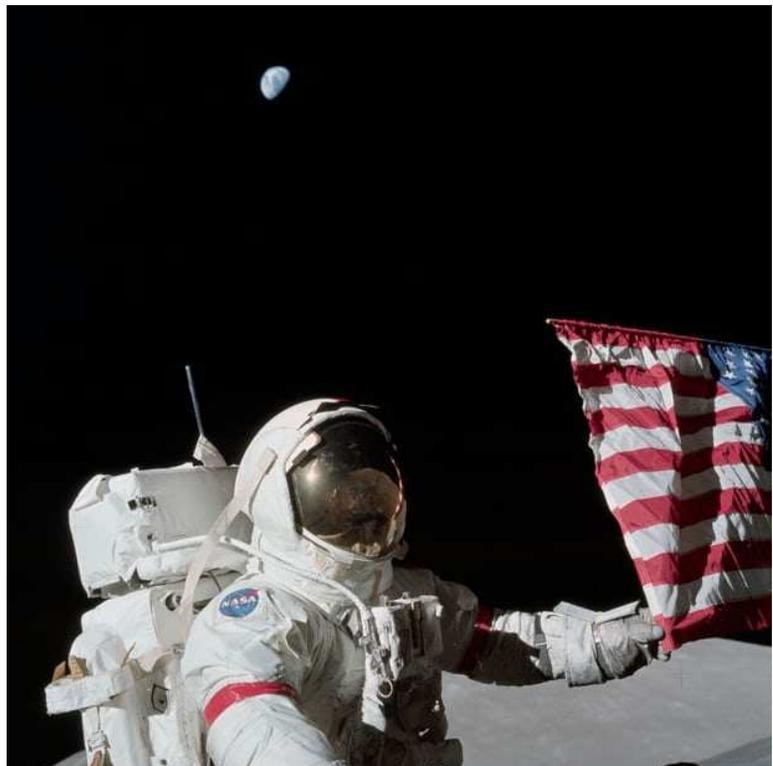
Eugene Andrew Cernan was born on March 14, 1934 in Chicago, Illinois. Son of a Slovak father and a Czech mother, he graduated from Proviso East High School in 1952 and attended Purdue University. After graduation in 1956 with an electrical engineering degree, he joined the US Navy with an ROTC commission rank of Ensign and became a carrier fighter pilot while continuing his studies.

In October 1963, Cernan was a member of the third group of astronauts selected by NASA and made three trips into space – two of them to the Moon. He was Pilot on [Gemini 9A](#) along with Senior Pilot Thomas Stafford, after the primary crew was killed in a jet crash. During the mission, he became the second American and the third person in history to conduct a spacewalk.

In 1969 Cernan was Lunar Module Pilot on [Apollo 10](#) and flew the lander in lunar orbit to within 47,000 ft (14,300 m) of touchdown before returning to the Command Service Module. To ensure against any last minute temptations, NASA deliberately shorted the spacecraft of fuel to prevent its landing.

Cernan and his crewmates still hold the world record for the highest speed attained by any manned vehicle at 24,791 mph (39,897 km/h), and the farthest distance traveled away from the Earth.

Cernan turned down a chance to land on the Moon on Apollo 16 in favor of waiting for his own command.



In December 1972, as Apollo 17 Mission Commander, Cernan made the last manned trip so far to the Moon along with Lunar Module Pilot Harrison Schmitt and Command Module Pilot Ronald Evans. Cernan and Schmitt landed in the [Taurus Littrow](#) region of the lunar highlands and used the Lunar Rover vehicle to make extensive surveys of the area. During this, Cernan set an unofficial Moon land speed record of 11.2 mph (18.0 km/h). Apollo 17 also spent the most time in lunar orbit and returned the heaviest load of geological samples at

kg).



Cernan (left) went to the Moon twice(Credit: NASA)

When it came time to blast off from the lunar surface, Cernan paused at the bottom of the ladder after Schmitt had boarded the lander and said, "[A]s I take man's last step from the surface, back home for some time to come – but we believe not too long into the future – I'd like to just [say] what I believe history will record: that America's challenge of today has forged man's destiny of tomorrow. And, as we leave the Moon at Taurus–Littrow, we leave as we came and, God willing, as we shall return, with peace and hope for all mankind. Godspeed the crew of Apollo 17."

Cernan retired from NASA and the US Navy in 1976 with the rank of Captain. He carried on in private business, acted as a commentator during the Space Shuttle Missions, and was a contributor to American and British television. In 2010, he gave testimony before the US Congress to try to save the Constellation program from cancellation by the Obama administration.

"It is with very deep sadness that we share the loss of our beloved husband and father," said Cernan's family in a statement. "Our family is heartbroken, of course, and we truly appreciate everyone's thoughts and prayers. Gene, as he was known by so many, was a loving husband, father, grandfather, brother and friend.

"Even at the age of 82, Gene was passionate about sharing his desire to see the continued human exploration of space and encouraged our nation's leaders and young people to not let him remain the last man to walk on the Moon."

The video AT THE WEBSITE shows a lighter moment of the Apollo 17 mission.

Source: [NASA](#)

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A GREAT HONOR FOR ONE OF LIBERTYCON'S OWN

From "Fritz Ling's (Kevin Fotovich) Facebook Page



Fritz Ling
January 10, 2017

This is not a joke, and this JUST happened.

I was asked to come to @ConditionedAirSolutions this afternoon to give a Photoshop tutorial to Kiley Kinzer Henry and a few others.

I walked in and there were a number of folks in the room. I was about to get ready to set up when I was asked to "Please come stand over here."

I was not there to give a tutorial. That was a ruse.

I was there to be awarded Honorary Colonel for all the work I've done over the years supporting A 'Smile for Troops', '22 Won't Do', and all the other volunteer work and leadership that I've done with other nonprofit organizations.

I am overwhelmed and filled with an immense amount of tearful joy.

Still, y'all can call me Colonel Fritz from now on!

CONGRATULATIONS COLONEL FRITZ AND IT IS A WELL DESERVED HONOR. FOR THOSE OF YOU WHO DO NOT KNOW, FRITZ IS THE SECRETARY OF LIBERTYCON. HE IS A NICE GUY AND A VERY HARD WORKER. THIS AWARD IS LONG OVER DO. UT

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BAEN BOOKS LIST OF PUBLICATIONS AVAILABLE FOR NOMINATIONS FOR AWARDS FOR 2016

From: Christopher Ruocchio

Dear Mr. Bolgeo,

Toni Weisskopf asked that I send you a copy of our 2016 Awards Eligibility list, which I've attached here.

Christopher Ruocchio
Editorial and Marketing Assistant
Baen Books

I HAVE BEEN PICKING ON TONI FOR YEARS TO SEND ME THE LIST OF BAEN PUBLICATIONS THAT ARE AVAILABLE FOR AWARDS EVERY YEAR. THIS YEAR, SHE HAD ONE OF HER MINIONS, CHRISTOPHER, SEND ME THE 'COMPLETE LIST'. SINCE IT IS SO LARGE, I HAVE ADDED IT TO THIS MISSIVE AT THE VERY END. FOR ANY OTHER EDITORS OR PUBLISHERS WHO READ THE REVENGE, I AM MAKING THE SAME OFFER TO YOU. PLEASE SEND ME YOU LIST OF PUBLICATIONS FOR LAST YEAR AND I WILL BE HAPPY TO PUBLISH IT TO HELP GET YOUR BRAND MORE PUBLICITY FOR AWARDS.

I HAVE TO ADMIT THAT CHRISTOPHER'S MESSAGE TICKLED ME BECAUSE HE CALLED ME MR. BOLGEO. I HAD TO WRITE BACK TO HIM TO ASK HIM TO CALL ME UNCLE TIMMY LIKE THE REST OF THE FANNISH UNIVERSE. I KNOW THAT IT WAS A BUSINESS LETTER, BUT I AM AT THE POINT IN MY LIFE THAT I PREFER THE INFORMALITY OF PEOPLE OVER PROPER BUSINESS PROTOCOL. I GUESS IT JUST ME GETTING OLDER.

BTW TONI, THANKS FOR SENDING THE LIST. I REALLY APPRECIATE IT. UNCLE TIMMY

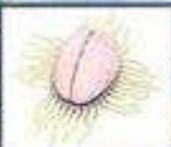
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ARMY SPONSORS MAD SCIENTIST SCIENCE FICTION WRITING CONTEST

From: "Chris Cowan" cowanc1028@earthlink.net

Picked this up at Marscon this weekend - it's a natural for Revenge readers! And it IS a for-real, despite the header

CHRISTINA, I CUT AND PASTED INTO A JPG SO THAT I COULD INCLUDE IT IN THE MISSIVE. LOOKS PRETTY GOOD TO ME. UT



U. S. ARMY TRAINING AND DOCTRINE COMMAND
MAD SCIENTIST
SCIENCE FICTION WRITING CONTEST
TOPIC: WARFARE IN 2030-2050
Deadline 15 February 2017

Are you or your organization interested in submitting a story that talks about warfare in 2030-2050 that helps us visualize the future? If so, enter the Mad Scientist—Science Fiction Writing Contest for your chance to gain recognition for your work!

HOW TO ENTER



- For full details, go to APAN: <https://community.apan.org/wg/tradoc-g2/mad-scientist/> **CLICK ON WRITING CONTEST**
- Send release form (available on APAN) and submission to **Allison Winer** <allison.d.winer.civ@mail.mil>

TOPICS OF INTEREST

- We are looking for ideas that are unorthodox and outside of what the Army is already considering about the future.
- How future capabilities may be employed within future warfare in 2030-2050?
- How Science & Technology (in any realm) will effect way wars are fought in 2030-2050?

PRIZES

- **Winning Submission:** ONE author will be selected as a winner to present at the Mad Scientist Conference in August 2017 (expenses paid) AND have their paper made into a visualization (short video).
- **Publication** Papers meeting the criteria will be published in Army Press or Small War Journals

SUBMISSION GUIDELINES

- Focused on Science Fiction Writing
- Papers submitted without release form **WILL NOT BE CONSIDERED** (release form available on APAN)
- Submissions must be Distribution A, Unclassified (USG/DoD requirement)
- Papers must be cleared through your organizations release processes, DoD and USG authors required to submit through PAO
- Please submit all documents in word format, 5000 WORD LIMIT (8 PAGE LIMIT), single spaced, 12 point font, 8.5x11 page size
- Acceptable file types: .doc and .docx

In partnership with



TRADOC G-2



ARCIC

Let me know if the scanned-in version is OK.

<L>~<I>~~<E>~<R>~<T>~<Y>~<C>~<O>~<N>

Re: The January 11th, 2017 Edition of THE REVENGE HUMP DAY!

From: "Chris Cowan" <cowanc1028@earthlink.net>

I'd say the whole thing stinks, but you'd probably put out a hit on me! You poor babies!

~~~~~

And I am SO glad I wasn't drinking anything when I saw the vaccuum cleaner video

<T>~<H>~<E>~<J>~<O>~<K>~<E>~<S>~<S>~<T>~<A>~<R>~<T>~<H>~<E>~<R>~<E>

From: "Ray Beloate" [beerman@rittermail.com](mailto:beerman@rittermail.com)

WHAT IS CONFIDENCE?

A Navy Seal walks into a bar and takes a seat next to a very attractive woman.

He gives her a quick glance then casually looks at his new Apple watch for a moment.

The woman notices this and asks, "Is your date running late?"



"No," he replies, "just got this state-of-the-art Apple watch, and I was just testing it."

The intrigued woman says, "A state-of-the-art watch? What's so special about it?"  
He says, "It uses alpha waves to talk to me telepathically."

The lady says, "What's it telling you now?"

"Well, it says you're not wearing any panties."

The woman giggles and replies, "Well it must be broken because I am wearing panties!"

The Navy man smirks, taps his watch and says, "Darn thing's an hour fast."

And that, my friends.....is Confidence!

<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Mike Waldrip" [waldripk@gmail.com](mailto:waldripk@gmail.com)

[:-)] A little tough on language, but cute

**HOW TO GET TO HEAVEN FROM IRELAND - A true Story from an Irish Sunday School Teacher**

I was testing children in my Dublin Sunday school class to see if they understood the concept of getting to heaven.

'I asked them, ' If I sold my house and my car, had a big garage sale and gave all my money to the church, would that get me into heaven?'

'NO!' the children answered.

'If I cleaned the church every day, mowed the garden, and kept everything tidy, would that get me into heaven?'

Again, the answer was 'NO!'

'If I gave sweets to all the children, and loved my husband, would that get me into heaven?'

Again, they all answered 'NO!'

I was just bursting with pride for them. I continued, 'Then how can I get into heaven?'

A little boy shouted out: 'YUV GOTTA BE FOOKN' DEAD.'

It's a curious race, the Irish. Brings a tear to the eye, doesn't it

<J>~<O>~<K>~<E>~<S>

**THE NEW TASER**

Last weekend I saw something at The Gun Show that sparked my interest. I was looking for a little something different for my wife Dana. What I came across was a 100,000-volt, pocket/purse-sized Tazer.

The effects of the Tazer were supposed to be short lived, with no long term adverse affect on your assailant, allowing her adequate time to retreat to safety...??

WAY TOO COOL! Long story short, I bought the device and brought it home.. I loaded two AAA batteries in the darn thing and pushed the button. Nothing! I was disappointed I

learned, however, that if I pushed the button and pressed it against a metal surface at the same time, I'd get the blue arc of electricity darting back and forth between the prongs.

**AWESOME!!!** Unfortunately, I have yet to explain to Dana what that burn spot is on the face of her microwave.

Okay, so I was home alone with this new toy, thinking to myself that it couldn't be all that bad with only two AAA batteries, right?

There I sat in my recliner, my cat Leo looking on intently (trusting little soul) while I was reading the directions and thinking that I really needed to try this thing out on a flesh & blood moving target.

I must admit I thought about zapping Leo (for a fraction of a second) and then thought better of it. He is such a sweet cat. But, if I was going to give this thing to my wife to protect herself against a mugger, I did want some assurance that it would work as advertised. Am I wrong?

So, there I sat in a pair of shorts and a singlet with my reading glasses perched delicately on the bridge of my nose, directions in one hand, and Tazer in another. The directions said that:

a one-second burst would shock and disorient your assailant;

a two-second burst was supposed to cause muscle spasms and a major loss of bodily control;

and a three-second burst would purportedly make your assailant flop on the ground like a fish out of water.

Any burst longer than three seconds would be wasting the batteries.

All the while I'm looking at this little device measuring about 5" long, less than 3/4 inch in circumference (loaded with two itsy, bitsy AAA batteries); pretty cute really, and thinking to myself, 'no possible way!'

What happened next is almost beyond description, but I'll do my best.

I'm sitting there alone, the cat looking on with his head cocked to one side so as to say, 'Don't do it stupid,' reasoning that a one second burst from such a tiny lil ole thing couldn't hurt all that bad.. I decided to give myself a one second burst just for heck of it.

I touched the prongs to my naked thigh, pushed the button, and...

**HOLY MOTHER OF GOD. WEAPONS OF MASS DESTRUCTION. WHAT THE... !!!**

I'm pretty sure Hulk Hogan ran in through the side door, picked me up in the recliner, then body slammed us both on the carpet, over and over and over again. I vaguely recall waking up on my side in the fetal position, with tears in my eyes, body soaking wet, both nipples on fire, testicles nowhere to be found, with my left arm tucked under my body in the oddest position, and tingling in my legs! The cat was making meowing sounds I had never heard before, clinging to a picture frame hanging above the fireplace, obviously in an attempt to avoid getting slammed by my body flopping all over the living room.

**Note:**

If you ever feel compelled to 'mug' yourself with a Tazer, one note of caution:

There is NO such thing as a one second burst when you zap yourself! You will not let go of that thing until it is dislodged from your hand by a violent thrashing about on the floor!

A three second burst would be considered conservative!

A minute or so later (I can't be sure, as time was a relative thing at that point), I collected my wits (what little I had left), sat up and surveyed the landscape.

- My bent reading glasses were on the top of the TV.
- The recliner was upside down and about 8 feet or so from where it originally was.
- My triceps, right thigh and both nipples were still twitching.
- My face felt like it had been shot up with Novocain, and my bottom lip weighed 88 lbs.
- I had no control over the drooling.
- Apparently I had crapped in my shorts, but was too numb to know for sure, and my sense of smell was gone.
- I saw a faint smoke cloud above my head, which I believe came from my hair.

I'm still looking for my testicles and I'm offering a significant reward for their safe return!

PS: My wife can't stop laughing about my experience, loved the gift and now regularly threatens me with it!

<J>~<O>~<K>~<E>~<S>

### **The Funniest Staff Meeting Ever!**

The boss of a Madison Avenue advertising agency called a spontaneous staff meeting in the middle of a particularly stressful week. (This is one pretty sharp boss!) When everyone gathered, the boss, who understood the benefits of having fun, told the burnt out staff the purpose of the meeting was to have a quick contest. The theme: Viagra advertising slogans. The only rule was they had to use past ad slogans, originally written for other products that captured the essence of Viagra. Slight variations were acceptable.

About 7 minutes later, they turned in their suggestions and created a Top 10 List.. With all the laughter and camaraderie, the rest of the week went very well for everyone! The top 10 were:

10. Viagra, Whaazzzz up!
9. Viagra, The quicker pecker picker upper.
8. Viagra, like a rock!
7. Viagra, When it absolutely, positively has to be there overnight.
6. Viagra, Be all that you can be.
5. Viagra, Reach out and touch someone.
4. Viagra, Strong enough for a man, but made for a woman.
3. Viagra, Home of the whopper!
2. Viagra, We bring good things to Life!

And the unanimous number one slogan:

1. This is your peepee... This is your peepee on drugs.

<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Kay Bolgeo" [ronkaybo@gmail.com](mailto:ronkaybo@gmail.com)

**A History Lesson**

"Are you sitting comfortably?  
Then I will begin..."



Do you know what happened 166 years ago this summer.... September 9, 1850?

California became a state! The people had no electricity, the state had no money and almost everyone spoke Spanish. There were gunfights in the streets.

So basically NOTHING has changed except back then the women had real tits and the men didn't hold hands.

And that, my friends, is your history lesson for today.

<J>~<O>~<K>~<E>~<S>~<of>~<the>~<W>~<E>~<E>~<K>

From: "Robert Kennedy"

**Apology Letter To Spouse - PRICELESS**

Hi Sweetheart,

I am sorry about getting into an argument about putting up the Christmas lights. I guess that sometimes I feel like you are pushing me too hard when you want something. I realize that I was wrong and I am apologizing for being such a hard-headed guy. All I want is for you to be happy and be able to enjoy the holiday season. Nothing brightens the Christmas spirit like Christmas lights! I took the time to hang the lights for you today; and now I will be off to play some golf...

Again, I am very sorry for the way I acted yesterday. I'll be home late.

---

Her response -

Hi Honey,

Thank you for that heart-felt apology. I don't often get an apology from you, and I truly appreciate it. I, too, felt bad about the argument and wanted to apologize. I realize that I can sometimes be a little pushy. I will try to respect your feelings from now on. Thank you for taking the time to hang the Christmas lights for me. It really means a lot. In the spirit of giving, I washed your truck for you; and now I am off to the mall.

I love you too!



<YOU>~<>~<JUST>~<>~<CAN'T>~<>~<MAKE>~<>~<THIS>~<>~<STUFF>~<>~<UP!>

**YOU JUST CAN'T MAKE THIS STUFF UP!**

From: "Tim Bolgeo" [tbolgeo@epbfi.com](mailto:tbolgeo@epbfi.com)

**REPORT FINDS INCREASED CANNABIS USE AMONG OLDER AMERICANS**

by UPI11 Jan 201723

<http://www.breitbart.com/news/report-finds-increased-cannabis-use-among-older-americans/>

**IOWA CITY, Iowa, Jan. 11 (UPI) — A new report has found that cannabis use by people over age 50 has increased significantly and outpaced growth across all other age groups.**

**The U.S. Substance Abuse and Mental Health Services Administration found that in 2000, 1 percent of Americans over 50 had used cannabis within the past year, but by 2012, that number had increased to 3.9 percent.**

**Researchers from the University of Iowa studied the use of cannabis in older people to try to understand what's behind the increase.**

**“Some older persons have responded to changing social and legal environments, and are increasingly likely to take cannabis recreationally,” Brian Kaskie, Ph.D., a professor at the University of Iowa College of Public Health and lead author of the study, said in a press release. “Other older persons are experiencing age-related health care needs and some take cannabis for symptom management, as recommended by a medical doctor.”**

**The study found that the majority of people over 50 who reported using cannabis in the past year said they did so less than once every 10 days, and one-quarter said they used it less than five times in the past year.**

**The study participants were more likely to have started using cannabis before the age of 30 and many before age 18.**

**Researchers collected data from eight state medical cannabis programs and analyzed variables such as social attitudes, state laws, health needs and prescription drug use to show how participants came to use cannabis in later years.**

**Kaskie and his team recommend creating a statewide or nationwide survey to study how changing legal, medical and other factors influence older Americans' attitudes regarding cannabis and its use.**

**The study was published in the Oxford University Press**

**THE NAME OF THIS ARTICLE SHOULD HAVE BEEN, “BABY BOOMERS REBEL!” UT**

**<?>~<YOU JUST CAN'T MAKE THIS STUFF UP!>~<?>**

**THE DEATH OF THE TUNNEL TREE**

**By Nathan Heller, January 15, 2017**

[http://www.newyorker.com/culture-desk/the-death-of-the-tunnel-tree?mbid=synd\\_digg](http://www.newyorker.com/culture-desk/the-death-of-the-tunnel-tree?mbid=synd_digg)

**Early last Monday morning, a friend of mine sent news that a tree we knew, a sequoia, had collapsed in a winter mountain storm. I was in New York, where two inches of hard snow sat on cars and tree branches that themselves looked like death. He was in Northern California, near the place where we grew up. No one is certain of the fallen tree's age, but it**

is thought to have lived at least a thousand years. Any tribute I could give it would be fatuous; the tree was older than the language in which I can write.

The tree meant something more time-bound to humans, though, and, like a playboy worn down by the party circuit, bore the traces of a personable past. Giant sequoias are believed to be the largest living thing on Earth by volume. They are tall with short branches, and wear mantles of thick, russet bark that feels like Styrofoam and has the soft curves of poured wax. This one had a huge hole in its base—about ten feet tall, and even wider—that was carved in the eighteen-eighties. The idea was to let you walk not just around the tree but through it, making it a kind of skyscraper, a place in the forest where people could dwell.



Any tribute I could give the tunnel tree, which collapsed last week in a winter storm, would be fatuous; the tree was older than the language in which I can write. PHOTOGRAPH BY CALIFORNIA STATE PARKS / AFP / GETTY

Over the years, the hollowed-out sequoia came to be called the Pioneer Cabin Tree, like a built thing, or the tunnel tree, like an essential piece of infrastructure. What was really meant was that it was our tree, our human tree, the one we singled out and marked with the illusions of our time. Its hollow had been razored with initials, and its wood had the polish of frequent touch. When the dusty, ferny mountain forest became Calaveras Big Trees State Park, in 1931, the tunnel tree emerged as a centerpiece, the California mountains' Tour Eiffel.

In death, it was more. The A section of the Times, a paper not traditionally much concerned with California flora, gave the tree more than ten inches of space. The Los Angeles Times called it "iconic." I watched the coverage with the media-age awkwardness of someone trying to feel the touch of death from a great distance. No one knew quite what to say, it seemed, and, although we all felt some vague measure of loss, it was unclear what

to think about a life that had lasted longer than all memory. In the way of human grief, I want, instead of honoring the tree directly, to conjure up the world in which it was a monument for me.

Calaveras County is a straight shot east from San Francisco, through the Central Valley and then out again along the two-lane Highway 4, which follows an old stagecoach route for gold. The names of towns along the incline into the Sierras often take a form that's one part literally descriptive and one part fantastic: Copperopolis, a rocky mining village where the highway sways left, barely had a four-digit population when I first encountered it. (The populace has more than tripled since, to an almost metropolitan 3,742.) Angels Camp is where Mark Twain set his famous jumping-frog story, and it is also where the landscape along Highway 4 starts changing quickly, from the oak-tree-speckled foothills to the fir forests of the middle Sierras. Higher, an alpine zone begins, with granite bluffs and meadows at the elbows of big lakes. It's harsh there: the air parches your nose, and your arms can burn from a few minutes in the sun. Most year-round residents have towing hitches on their cars, but those of us who come infrequently—a week in summer, or in winter for the snow—arrive with a peculiar, naïve eagerness that's free of expectations for function or change.

Most summers, as long as I remember, my family has rented, for a week, a cabin in the middle Sierras just off Highway 4. It's quiet there, and inexpensive, and there aren't a lot of Jet Skis on the water. When we started going up to Calaveras—that's the family expression, "up to Calaveras"—it was because that's where my mother's parents took her. Later, my mother began urging other families to take cabins nearby. We arranged big dinners on creaking wood decks and ate grilled chicken in the light of citronella candles. When the summer meteor showers came, we'd lie on empty roads and watch the stars. The rented cabins would invariably be A-frames in the style of the high Carter Administration (ski-lodge shag carpet, macramé owls on the walls), and you would will yourself to sleep despite fears that a giant spider was about to leap down from the eaves. These unfamiliar terrors made the weeks seem long and sweet. One August, we were nearly washed off some boulders and downriver in an unexpected thunderstorm; the next July, I floated with the special harmony of adolescent lassitude across a lake, on an air mattress, with friends. I was fifteen, and it was the night when, by the prophecies of Nostradamus, the world was sure to end.

That it didn't end then, or the evening after, taught me something about wise men. That I'd felt at peace with the apocalypse—I was confident my fifteen-year-old life had a pleasant roundness, even a fulfillment—teaches me today how poorly we can see beyond the near horizon of experience. Visiting a place again and again, year after year, announces the slow progress of human growth. A kid that you recall shows up, abruptly, with the problems and the powers of a woman or a man.

That's what the tunnel tree in Big Trees State Park meant to me: the function of eternity to graduate the progress of a life. The first time I saw the tree, I was about five, and my family took a photo in its hollow. We took another photo the next time we visited, and again after that. Over the years, I've been back probably twenty times, and a catalogue of imagery—first film, then digital—marks my family's slow, peculiar progress. We look heartbreakingly small. The tree is really very big. That record ended this week, and I cannot shake the feeling that a certain vector of our history ended then as well.

Those of us who come from out West have no habit of confronting relics of an otherworldly past. We do not lunch on the steps of cathedrals built over centuries. We are not, as Robert Lowell was, haunted by the long shadows of headstones; we don't usually inhabit houses made by humans whipped to death. We get our sense of arcing time, of being small and full of blame in history, from the living world. "The clown- / faced woodpecker probing the dead sculpted trunk / of that black birch is, by his presence, / some tragic falling off from a first world / of undivided light," Robert Hass wrote—lines, and anxiety, that no one but a native Californian would think to express. In "Vertigo," Madeleine Elster touches the rings on a trunk during her putative possession. "Here I was born, and there I died," she says. Old trees do not give life meaning, but they give it scale. They force us to acknowledge that "tradition" bears a very human weight. Our history is a weak conception of the past.

The temptation is to herald the tunnel tree's death as an emblem. (The Times, in a second piece, presented its collapse as a symbol of this dire American season.) It is also easy, maybe just, for humans to take blame. Although trees often fall in storms, sequoias are equipped for the long haul—their stance is wide; their bark is fire-resistant—and a spell of winter weather is unlikely to have felled the tunnel tree without the huge, destabilizing chasm near its roots. We made the tree our own and, in the process, took away its immortality. It experienced time as few sequoias can, through human eyes: with friendship, wounds, some fame, and death.

My family still vacations up in Calaveras, but less frequently. Children have made lives for themselves and are hard to gather. People who once sat on decks with us have died. The tunnel tree, I hear, is being left on the forest floor, to crumble back into the earth, and new trees will grow from the old. It seems a good end to a life, if a precipitous one. I always assumed that, of the two of us, I would go first.

<YOU>~<>~<JUST>~<>~<CAN'T>~<>~<MAKE>~<>~<THIS>~<>~<STUFF>~<>~<UP!>

**YOU JUST CAN'T MAKE THIS STUFF UP!**

From: "John Vannucci" [jvannucci@comcast.net](mailto:jvannucci@comcast.net)

Fly Over

I don't know who the Chiefs were playing, but it would have been great if it had been the 49ers- and C. Kaepernick had been on the field.

As you know, Obama cuts have eliminated the military flyovers at large events. Well, there's a group of guys in Kansas City who do some formation flying, in their own planes, and decided they'd volunteer to pick up the slack. They invited a couple of other groups to join them and before they knew it they had 48 guys with their own airplanes signing up to join in. If they had more time, they probably would have gotten an even larger group as people kept joining and a 49th was added near the event.

One additional feature of the flyover was the use of pink smoke for cancer awareness.

The folks from the Guinness Book were there and are expected to confirm it as the largest formation flight ever. And to top it off the crowd later set the record for the loudest

gathering at a football stadium. Be sure your speakers are turned up... best if watch at full screen.

<https://www.youtube.com/embed/VImNBuJW3sQ?rel=0>

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From: "Tim Bolgeo" [tbolgeo@epbfi.com](mailto:tbolgeo@epbfi.com)

## CONCRETE DEFECTS COULD BECOME STRENGTHS

By Christopher Intagliata on January 5, 2017

[https://www.scientificamerican.com/podcast/episode/concrete-defects-could-become-strengths/?WT.mc\\_id=SA\\_TECH\\_20170110](https://www.scientificamerican.com/podcast/episode/concrete-defects-could-become-strengths/?WT.mc_id=SA_TECH_20170110)

By optimizing the imperfections in concrete, manufacturers could make the material tougher and stronger—allowing builders to use less of it. Christopher Intagliata reports.

Concrete is one of the most widely used materials on the planet. "And this consumption comes with a heavy ecological price." Rouzbeh Shahsavari, a materials scientist at Rice University. "Around 5 to 10 percent of total CO2 emissions comes from concrete production."

One way to reduce those emissions, he says, would be to increase the strength and toughness of concrete. So you need less of it in construction. But to make something stronger, you need to understand its weaknesses.

So Shahsavari and his team studied the defects in a rock called tobermorite. (TO-ber-MOR-ite) The rock is an analog for wet cement, the main ingredient in concrete. And they found that certain defects in the rock actually made the rock tougher, if they were aligned in a specific configuration. Sounds counterintuitive: Defects a good thing?

"Defects are typically considered a bad feature of material. But when it comes to complex systems, like cement or concrete, it's not the case. It may actually be an opportunity to introduce toughness, or get something better out of it." The study is in the journal ACS Applied Materials and Interfaces. [Ning Zhang, Philippe Carrez, and Rouzbeh Shahsavari]

Next step, Shahsavari says, would be to optimize concrete recipes—to use these defects in their favor. Play with manufacturing temperatures, or alter the ratios of impurities in the mix. "Since we're using it pretty much in every building, every bridge, every highway in all parts of the world, even a slight impact in the performance could have a huge consequence in terms of energy consumption, CO2 footprint, and all those things." And take a little concrete out of the concrete jungle.

[The above text is a transcript of this podcast.]

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SPACEX DETAILS ITS PLANS FOR LANDING THREE FALCON HEAVY BOOSTERS AT ONCE

Environmental assessment says SpaceX could launch 6 Falcon Heavy rockets a year.

ERIC BERGER - 1/11/2017, 3:49 PM

<http://arstechnica.com/science/2017/01/spacex-details-its-plans-for-landing-three-falcon-heavy-boosters-at-once/>

As part of the process to gain federal approval for the simultaneous landing of its Falcon Heavy rocket boosters in Florida, SpaceX has prepared an environmental assessment of the construction of two additional landing pads alongside its existing site. The report considers noise and other effects from landing up to three first stages at the same time. After undergoing a preliminary review by the US Air Force, the document has been released for public comment.



A recent satellite view of SpaceX's Landing Zone 1 shows the single, large landing pad. Apple Maps

First reported by NASASpaceFlight.com, the document offers some interesting details about the proposed launch and landing of SpaceX's heavy lift rocket, which the company hopes to fly for the first time in the spring or early summer of 2017. After previously demonstrating the ability to land a single Falcon 9 booster, SpaceX also hopes to land the three first-stage boosters that will power the Falcon Heavy for potential re-use.

The company states this reusability as its rationale for the new construction—reducing the cost of access to space. "This purpose continues to support SpaceX's overall missions for NASA and the USAF," the document states. "The action continues to fulfill the U.S. expectation that space transportation costs are reduced in order to make continued exploration, development, and use of space more affordable."

As part of the document, SpaceX also says it would like to build a Dragon capsule processing facility on the landing zone to support refurbishment of the Dragon 2 spacecraft, designed to carry crew into orbit. The 130-foot-long facility would provide a "temporary" facility for vehicle propellant load and propulsion system servicing.

When it originally designed its Landing Zone 1 facility at Cape Canaveral Air Force Station, for the single Falcon 9 first stage booster, the company envisioned the need for one main pad approximately 200 feet across, and four smaller contingency pads, each approximately 150 feet in diameter. The chosen site had enough acreage to accommodate all five pads.

Improvements in the rocket's landing navigation guidance system obviated the need for the contingency pads with the Falcon 9, however. So now the company wants to use the additional space to construct two concrete landing pads, each with an approximate diameter of 282 feet surrounded by an approximate 50-foot-wide hard-packed soil "apron." This would give SpaceX three landing pads and the ability to bring back all three Falcon Heavy boosters to land while also retaining the option to land one or two on drone ships in the Atlantic Ocean.

In addition to the potential for a dozen Falcon 9 launches and landings each year, the document says SpaceX may eventually make six Falcon Heavy launches a year, potentially returning an additional 18 boosters to the Florida-based site. The new pads and crane sites would be configured to allow parallel processing of landed boosters. With US Air Force Approval, construction could begin as early as this spring.

If approval for the expansion of the landing zone is not granted after public comments, SpaceX indicated that it would still launch the Falcon 9 and Falcon Heavy rockets from Florida, but only a single booster would return to Landing Zone 1. "The remaining Falcon Heavy boosters would either fall into the Atlantic Ocean downrange or land on the dronship," the document says. "SpaceX's ability to fully meet the National Space Transportation Policy goals of providing low-cost reliable access to and from space would be negatively affected. Therefore, this alternative is not preferred."

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## LEGENDARY ARECIBO OBSERVATORY FACES A BLEAK FUTURE

Although still producing world-class science, a lack of funding could soon mothball the storied radio telescope

By Alexandra Witze, Nature magazine on January 11, 2017

[https://www.scientificamerican.com/article/legendary-arecibo-observatory-faces-a-bleak-future/?WT.mc\\_id=SA\\_SPC\\_20170112](https://www.scientificamerican.com/article/legendary-arecibo-observatory-faces-a-bleak-future/?WT.mc_id=SA_SPC_20170112)

Credit: H. Schweikerm, NAIC, Arecibo Observatory

It is the radio telescope that hunts killer asteroids, probes distant cosmic blasts and decades ago sent Earth's most powerful message to the stars. Yet the storied Arecibo Observatory, an enormous aluminium dish nestled in a Puerto Rican sinkhole, might soon find itself out of the science game.



The US National Science Foundation (NSF), which owns the observatory, wants to offload the facility to free up money for newer ones. In the coming weeks, it will ask for ideas about how Arecibo might be managed if the NSF reduces its current US\$8.2-million annual contribution. By May, the agency plans to release a final environmental-impact statement, a federally mandated analysis of the effects of various scenarios—from continuing to run Arecibo to mothballing or even demolishing its iconic dish. Soon after that, the NSF will decide which path to take.

Arecibo advocates are not going to let the telescope die without a fight. On 4 January, they pressed their case at a meeting of the American Astronomical Society in Grapevine, Texas—arguing that Arecibo is putting out some of the best science it has ever done, and that the NSF is moving too quickly to divest itself of an astronomical treasure.

“Arecibo definitely has a future,” says Francisco Cordova, the observatory’s director. “Though it will be a different future.”

SOAR, Southern Astrophysical Research; WIYN, Wisconsin–Indiana–Yale–National Optical Astronomy Observatory. Source: NSF

Arecibo is playing a key part in illuminating the mystery of fast radio bursts, which are emerging as a completely new class of celestial phenomenon. And at the astronomy meeting, observatory scientists revealed a previously unknown contributor to the Universe’s cosmic microwave background glow—cold electrons—plus a pair of pulsars that has surprisingly erratic radio emissions.

“It is still a state-of-the-art observatory,” says Nicholas White, senior vice-president for science at the Universities Space Research Association in Columbia, Maryland, which helps to manage Arecibo for the NSF.

NSF officials agree. But they say they need money for new projects such as the Large Synoptic Survey Telescope, which is under construction in Chile. A 2012 review of the NSF’s astronomy portfolio recommended cutting support for some of its smaller and older facilities. Although Arecibo was not among them, the report recommended that the NSF evaluate the facility’s status later in the decade.

Some of the observatories targeted in the review have found potential partners: New Mexico State University in Las Cruces is leading an effort to take over the Dunn Solar Telescope in Sunspot, New Mexico. Others remain in limbo, including the 100-metre radio telescope in Green Bank, West, where university partners have offered limited help.

In October, the NSF released a draft environmental impact statement for Arecibo that outlines how various management options would affect everything from endangered plants to local tourism. The NSF would prefer to find collaborators to shoulder most of the cost of operating the observatory for science purposes. But the draft statement includes the possibility of shuttering the facility, and even details which explosive would be needed to dismantle the 305-metre-wide dish.

### ON THE BLOCK

| Telescope                                            | Location                | Status                                                                             |
|------------------------------------------------------|-------------------------|------------------------------------------------------------------------------------|
| Arecibo Observatory (radio)                          | Puerto Rico             | Environmental-impact study underway                                                |
| Green Bank Observatory (radio)                       | West Virginia           | Has left National Radio Astronomy Observatory, environmental impact study underway |
| Long Baseline Observatory (radio)                    | 10 US locations         | Has left National Radio Astronomy Observatory, part-time funding from US Navy      |
| McMath-Pierce Solar Telescope (solar)                | Arizona                 | Likely to close this year                                                          |
| Mayall 4-Meter Telescope (optical)                   | Arizona                 | To transition to Department of Energy for dark-energy studies                      |
| WIYN 3.5-metre observatory (optical)                 | Arizona                 | NSF to partner with NASA for exoplanet studies                                     |
| Global Oscillation Network Group (solar)             | Six locations worldwide | National Oceanic and Atmospheric Administration to share operating costs           |
| Richard B. Dunn Solar Telescope (solar)              | New Mexico              | Likely to transition to consortium led by New Mexico State University              |
| SOAR 4.1-metre telescope (optical and near-infrared) | Chile                   | To be reviewed                                                                     |

The US National Science Foundation is planning to divest itself of older telescopes to free up money for newer facilities.

NSF officials included this bleak option to satisfy federal rules that require them to describe the environmental impact of all possible outcomes. “We specifically leaned towards making

things look a bit more drastic,” says James Ulvestad, head of the NSF’s astronomy division.

Gravitational-wave astronomers are among those who are unhappy about the idea of Arecibo going offline. The international NANOGrav consortium uses about 850 hours of Arecibo time each year to discern how ripples in space-time affect radio pulsars. Between Arecibo and Green Bank, the team is just now reaching the sensitivity at which it should be able to detect gravitational waves. “We’re so close,” says Xavier Siemens, an astrophysicist at the University of Wisconsin–Milwaukee. “Losing Arecibo would mean losing US leadership in the field.”

Arecibo also has a unique role in stimulating public interest in science, says Edgard Rivera-Valentín, a planetary radar specialist at the observatory. Like many Puerto Ricans, he first visited Arecibo as a child, on a family trip. “It just blew me away,” he says. “I knew pretty much then that I wanted to do astronomy.”

The NSF pays for roughly two-thirds of Arecibo’s \$12-million annual budget. Half of that comes from its astronomy division and half from its atmospheric and geospace sciences division, which uses Arecibo to study Earth’s ionosphere. The remainder comes from NASA, which tracks near-Earth asteroids from Arecibo and would probably keep doing so if other collaborators stepped in to make up for NSF cutbacks.

Arecibo’s current operating contract ends in March 2018. After that, new approaches to make ends meet could include charging scientists hourly rates to use the observatory, instead of having them apply for time through federal agencies. “This is where the rubber hits the road,” says White.

This article is reproduced with permission and was first published on January 10, 2016.

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## BEHIND NEW ZEALAND'S WILD PLAN TO PURGE ALL PESTS

The country is gearing up to get rid of rats, possums, stoats and other invasive predators by 2050. Is it a pipe dream?

By Brian Owens on January 11, 2017

[https://www.scientificamerican.com/article/behind-new-zealands-wild-plan-to-purge-all-pests1/?WT.mc\\_id=SA\\_ENGYSSUS\\_20170112](https://www.scientificamerican.com/article/behind-new-zealands-wild-plan-to-purge-all-pests1/?WT.mc_id=SA_ENGYSSUS_20170112)

Razza the rat nearly ended James Russell’s scientific career. Twelve years ago, as an ecology graduate student, Russell was releasing radio-collared rats on to small islands off the coast of New Zealand to study how the creatures take hold and become invasive. Despite his sworn assurances that released animals would be well monitored and quickly removed, one rat, Razza, evaded capture and swam to a nearby island.

For 18 weeks, Russell hunted the animal. Frustrated and embarrassed, he fretted about how the disaster would affect his PhD. “I felt rather morose about the prospects for my dissertation,” he says.



**Possum trapper Stu Flett hanging out possum carcasses to dry in his garage in Matapouri on New Zealand's North Island. Credit: AFP/Stringer Getty Images**

Although there was a lot of literature on controlling large rat populations, little had been written about tracking and killing a single rodent, which turns out to be rather important in efforts to completely eradicate a species. “It demonstrated how hard it is to catch that very first rat as it arrives on an island — or, conversely, the very last rat that you’re trying to get off,” says Russell, now at the University of Auckland.

Razza’s escape became the subject of a paper in *Nature* as well as a popular children’s book. And now, with more than a decade of successful pest-eradication projects behind him, Russell is taking on a much bigger challenge. He is coordinating research and development for a programme that the government announced last July to eliminate all invasive vertebrate predators — rats, brushtail possums, stoats and more — from New Zealand by 2050 to protect the country’s rare endemic species.

The audacious plan is not as far-fetched as it sounds, says Josh Donlan, director of Advanced Conservation Strategies, a consultancy that has designed invasive-species eradication projects in Europe, South America and the United States. Around the world, more than 1,000 islands have been cleared of invasive species through ‘mega eradications’. And New Zealand, home to some of the leading experts in the field, carried out more than 200 of them. With enough money, time and political will, Donlan says, it should be possible to clear the entire country.

But the size of this latest target represents a tremendous leap. The largest island ever cleared is Australia’s Macquarie Island, which covers about 128 square kilometres. New

Zealand's total area is about 268,000 square kilometres, and the country's cities and towns complicate eradication efforts and provide countless places in which animals can hide.

"With current techniques, it's not feasible," says Richard Griffiths, an ecologist based in Auckland with the environmental group Island Conservation. To scale up, new approaches will be required.

That's where Russell and his colleagues come in. They are about to start a major research project to develop some of the necessary technologies, such as new baits, species-specific poisons and genetic tweaks that interfere with animal fertility. To succeed, the project will require public and political support — and money. In a 2015 paper<sup>2</sup>, the team estimated the entire cost at around NZ\$9 billion (US\$6 billion), arguing that the savings to pest-control programmes, and the reduction in environmental damage and crop loss, would more than cover the outlay. Their argument has been convincing. "Our government just grabbed that paper, and the surrounding evidence and public goodwill, and announced this policy," Russell says. "It's been pretty hectic here ever since."

## A DYING WISH

New Zealand is a poster child for the havoc wrought by invasive species. For millennia it was an island of small lizards and flightless birds, such as the iconic kiwi. Since land mammals, including humans, first arrived some 750 years ago, the number of species of native vertebrate fauna have nearly halved — at least 51 species of bird have disappeared in that time. Losses sped up dramatically after Europeans arrived in the late eighteenth century.

The mammalian pests are a drain on New Zealand's economy. The government spends around NZ\$70 million each year on pest-control programmes for animals, and invasive predators cost the country an estimated NZ\$3.3 billion a year in lost productivity<sup>3</sup>. Most of the losses come from agriculture, but government officials also worry about the hit to the country's reputation as a destination for unspoilt natural beauty. "Last year, tourism overtook agriculture as our biggest revenue earner," says Maggie Barry, the minister of conservation. "Our environment is what attracts people here."

Although the environmental and economic arguments had been around for some time, many people credit physicist Paul Callaghan with getting the public to back eradication plans. Callaghan was an eminent scientist and a household name in New Zealand — a sort of Kiwi David Attenborough — writing popular books and presenting television shows about science and innovation. In a public address in 2012, he encouraged New Zealanders to save the nation's native fauna by eradicating its invasive pests. "It's crazy and ambitious but I think it might be worth a shot," he said. The address would be his last; he died of cancer a few months later.

Callaghan's plea caught the public's imagination, tapping into a groundswell of support for local conservation programmes designed to protect native birds and other animals.

A lot of the techniques for clearing an island are well established. The standard practice for killing rats and other invaders is to lace bait stations with a poison — usually sodium fluoroacetate, known as 1080, or the anticoagulant brodifacoum — and to spread the poison across the landscape by helicopter. The few animals that survive the chemical onslaught are caught in traps or shot. The active phase of eradication is very quick. It takes

just a few days to spread the bait, and within a few weeks all the invaders are gone, says Griffiths. Most of the time is spent on preparation. “You generally have just one chance to get it right,” he says, mainly because of the high cost. “So 90% of the work is planning and logistics.”

In 2011, Griffiths reached the end of a four-year project costing NZ\$3.5 million<sup>4</sup> to eradicate all invasive mammals from Rangitoto and Motutapu, two inhabited islands with a combined size of 38 square kilometres. After two years of planning and consultations with local people, rats were wiped out in 3–4 weeks; conservationists then moved on in stages to deal with rabbits, stoats, hedgehogs and feral cats. The effort was complicated by the presence of human inhabitants, and by the islands’ proximity to Auckland, New Zealand’s largest city, which provides a deep pool of potential reinvasers.

“The ferry goes there six times a day, with hundreds of people, and boats pull up every weekend,” says Russell. Hitchhiking rats and mice are intercepted about once a year, but the island has remained pest-free for the past five.

## NEW TECHNOLOGIES

Tackling all of New Zealand isn’t just about scaling up efforts. “We’re good at killing things,” says Barry, “but we’ll rely on scientific breakthroughs to get us over the line.” Some of the first innovations that Griffiths would like to see are new baits, poisons and traps, as well as tools for detecting invaders. The poison 1080 has been in widespread use since the 1950s and is an effective pesticide, but it can kill game animals such as deer and pigs (which are also introduced species, but not the target of eradication efforts); it also threatens the kea (*Nestor notabilis*), a native alpine parrot. Many hunters and animal-rights groups oppose use of the chemical, especially when it is sprayed from helicopters.

“Something that targets only rats or mice would be wonderful,” Griffiths says. For possums, Russell and his colleagues plan to sequence the creature’s genome in the hope of identifying targets unique to its marsupial biology.

Traps could be improved by developing devices that need minimal human intervention. A New Zealand company called Goodnature already makes rat and possum traps with a skull-crushing piston that is powered by compressed gas. It can reset itself 24 times (clean-up is provided by scavenging birds and cats). Russell’s colleague Andrew Kralicek is working on wireless electronic biosensors that can detect species-specific molecules given off by a pest. Such devices could be used to monitor traps or send warnings about new invaders.

And drones, which have already been used to monitor sheep herds in the country, could be fitted with those biosensors to sniff out targets and quickly drop a precise dose of poison. This could be useful in areas where releasing tonnes of laced bait by helicopter is not feasible. “That’s kind of a Skynet future,” says Russell, “but it could work in pest control.”

The ideas that are generating the most excitement in conservation circles are genetic biocontrols that might be able to suppress invaders by introducing harmful traits. The powerful gene-editing tool CRISPR–Cas9 could be used to disrupt a gene that is vital for survival or reproduction or that makes an animal more susceptible to a certain poison. Then, using what is known as a gene drive, scientists could engineer that gene to spread through the population. “It can go from 1% to 100% of the population in around 10

generations,” says Ethan Bier, a geneticist at the University of California, San Diego, who is using gene drives to engineer mosquitoes that are resistant to the malaria parasite<sup>5</sup>.

So far, gene drives have been used only in the lab and mostly with insects, but there is nothing to suggest that they wouldn't work in the wild on possums or rats. The problem, says Bier, is that once you start introducing harmful traits, you're fighting against evolution, which tends to eliminate problematic mutations. There is also the danger of reverse invasions. The possums that have become invasive in New Zealand originated in Australia. If some sort of gene-driven 'suicide possum' made its way back there, it could wreak havoc on the native populations.

Another genetic technique, being developed in New Zealand as part of Russell's project, could avoid some of these difficulties. The Trojan Female Technique targets mitochondria, the tiny power plants inside cells. Mutations in mitochondrial DNA can seriously impair the ability of sperm to swim. Because these mutations affect the fitness only of males, and because mitochondria are passed down only through the female line, these traits can survive natural selection. Females carrying the mutations would have sterile male offspring, but their daughters would be able to breed, producing yet more sterile males.

Daniel Tompkins, an ecologist in Dunedin, New Zealand, and his colleagues have already shown in computer models and lab experiments that this technique can work in fruit flies<sup>6</sup>: a single release of Trojan females kept population numbers low over ten generations, with no sign of natural selection fighting back.

Of course, when it comes to mammals, releasing thousands of Trojan female rats would be counterproductive: those rats would be just as much of a threat to the ecosystem as the ones you're trying to get rid of. So Tompkins, who works for Landcare Research, a government research institute, sees it more as a coup de grâce — a way to prevent pest populations from recovering after they have been cut back by conventional techniques. Once the numbers are small, releasing a few Trojan females would cap population regrowth, he says. Those small populations might then simply die out naturally, or survive at such low levels that they would no longer pose a threat to native species.

## **BACK-YARD BATTLES**

All these techniques are several years away from large-scale deployment, and none is a silver bullet, cautions Russell, who says that the answer will be to use a mixture of methods, staggered over a long period. “What might be the cheapest or most appropriate in the forest won't be the most appropriate in someone's back yard,” he says.

And getting access to those back yards will make or break the project, says Donlan. An eradication has to be close to 100% successful for it to work, and that means getting buy-in from almost everyone concerned. If any large groups of people refuse to cooperate with the plan, areas could be left uncleared, providing havens for invaders. “The all-or-nothing nature of eradication makes social issues more important and challenging,” says Donlan. “Support has to be greater than just a simple majority.”

That's an area where New Zealand is relatively lucky, says Russell. The country is already home to thousands of volunteer community groups that spend their free time setting and checking traps. People in the Wellington suburb of Crofton Downs, for example, think that the region is already free of predators after they managed to get a trap placed in every fifth

back yard. “We’re in a relatively unique position in New Zealand, where people are really, really willing to kill for conservation,” Russell says. “It’s kind of a national pastime.”

Nevertheless, some aspects of the project could test the limits of public support. Biocontrol techniques for mosquitoes, for example, have faced stiff opposition from residents in Florida and Brazil. New Zealanders may be heavily in favour of conservation, but they are generally suspicious of genetic engineering<sup>7</sup>. And gene-drive technologies are controversial throughout the world.

Then there’s the money. The government and philanthropic groups have committed to donate about NZ\$3 billion by the 2050 deadline — well short of the NZ\$9 billion that Russell estimates would be needed. But the government hopes that further scientific breakthroughs will bring the cost down.

Russell is sure those breakthroughs will come. He points out that the first rat eradication was achieved on a 1-hectare island off New Zealand in 1963, at a time when no one thought it would be possible. “We don’t know how we’ll do it in 2050, but back in 1960 we didn’t know we’d be doing what we were doing in 1980 or 2010,” he says.

In some ways, it is his experience with Razza that gives him hope. Although the rat was eventually caught in a decidedly low-tech way — a convenient penguin carcass proved to be irresistible bait — the hunt forced Russell’s team to refine cutting-edge techniques that are still in use. For example, biosecurity dogs can hunt down individual hold-outs, and genetic sequencing of faeces can identify remaining populations.

“I am proud to look back and see how far we’ve come in just ten years,” he says.

This article is reproduced with permission and was first published on January 12, 2017.

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## **MASSIVE MARIJUANA REPORT REVEALS DRUG'S MANY HEALTH EFFECTS**

John Anderson, January 13, 2017

<http://newatlas.com/report-marijuana-health-effects/47366/>

There's been no shortage of studies conducted over the years on the effects of marijuana use. But the focus of those studies can be as varied as their conclusions, making it a challenge to wade through the reams of information and get a full read on the drug. A new and lengthy report from the National Academies of Sciences, Engineering and Medicine seeks to remedy this by examining more than 10,000 scientific abstracts of cannabis studies published since 1999, reaching nearly 100 conclusions.

Like the many studies, the report issues a mixed bag of good, bad and inconclusive results. Some of the more significant conclusions are on the therapeutic effects of cannabis and its ability to considerably reduce chronic pain symptoms in adults. It also finds that marijuana use likely increases the risk of developing schizophrenia, various psychoses and social anxiety disorders. The scientists involved with the report point out areas where research is lacking, and suggest ways to improve such scientific efforts while enhancing data collection in support of this research.



**Cannabis and its many effects on users are described by a massive report that looks at 10,000 scientific studies(Credit: hanohiki/Depositphotos)**

**With the growing acceptance and legalization of both medical and recreational marijuana use, getting a clear view of the effects of the drug, both harmful and beneficial, has never been more needed from a public health standpoint. "The lack of any aggregated knowledge of cannabis-related health effects has led to uncertainty about what, if any, are the harms or benefits from its use," states Marie McCormick, chair of the report committee and professor of pediatrics at Harvard Medical School. "We conducted an in-depth and broad review of the most recent research to establish firmly what the science says and to highlight areas that still need further examination. As laws and policies continue to change, research must also."**

**A nationwide survey found that 22.2 million Americans age 12 and older used marijuana in the past 30 days. Ten percent of use is solely for medical purposes and 90 percent primarily recreational, with 36 percent using it for both. Since 2002, the number of regular users (citing use in the past month) has increased steadily from 6.2 to 8.3 percent.**

**Regarding medical benefits, the report finds that oral cannabinoids (tetrahydrocannabinol (THC) and other chemical compounds) helped to prevent and treat nausea and vomiting that typically results from chemotherapy. It also helped reduce back spasms in adults with multiple sclerosis.**

**As for negative outcomes, using marijuana before driving increases the risk of a car accident. The report also finds a greater risk of ingestion (and poisoning) by children in states that had legalized medical marijuana.**

**Some good news for marijuana users: there's no evidence that smoking cannabis increases your risk of lung, head or neck cancer, like tobacco use does. But smoking**

marijuana on a regular basis will lead to more respiratory issues, such as chronic bronchitis, cough and phlegm production. At the same time, regular exposure to marijuana smoke may promote anti-inflammatory activity within the immune system.

Marijuana use is generally not good for mental health – users are more likely to report thoughts of suicide, while it can increase symptoms for individuals with bipolar disorder. But a history of cannabis use can help those with schizophrenia and other psychoses perform better on learning and memory tasks.

There is moderate evidence to suggest that using marijuana can lead to substance abuse and dependence on other drugs. Additionally, the younger you start using marijuana, the greater the likelihood of developing problem cannabis use. It's also not surprising that learning, memory and attention are impaired immediately after using marijuana, though there's no evidence of any negative long-term effects in those cognitive functions after you stop smoking.

Source: National Academies of Science, Engineering and Medicine

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## **FAT CAN BE USED TO HELP WOUNDS HEAL WITHOUT SCARS, SKIN REGENERATION AND NOT SCARRING**

Reddit, January 13, 2017

<http://www.nextbigfuture.com/2017/01/fat-can-be-used-to-help-wounds-heal.html>

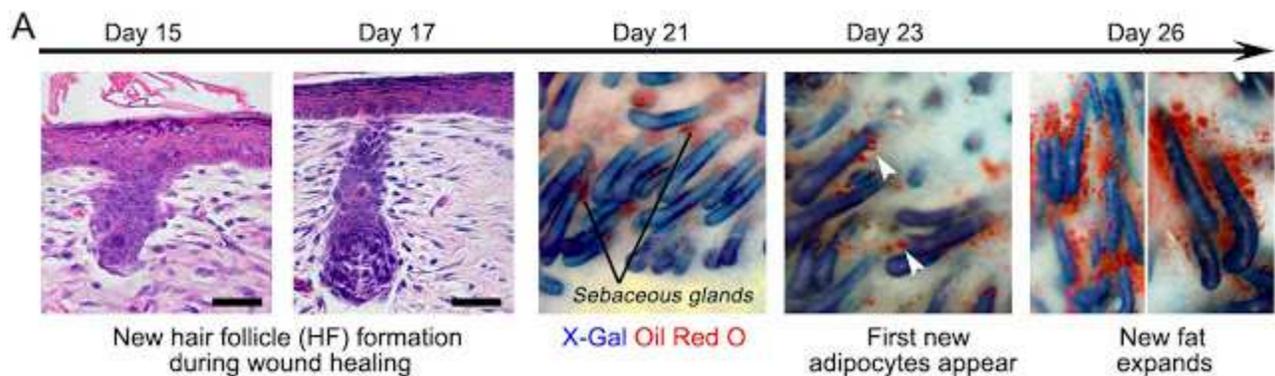
Doctors have found a way to manipulate wounds to heal as regenerated skin rather than scar tissue. The method involves transforming the most common type of cells found in wounds into fat cells – something that was previously thought to be impossible in humans. Researchers began this work at the Perelman School of Medicine at the University of Pennsylvania, which led to a large-scale, multi-year study in connection with the Plikus Laboratory for Developmental and Regenerative Biology at the University of California, Irvine. They published their findings online in the journal *Science* on Thursday, January 5th, 2017.

Fat cells called adipocytes are normally found in the skin, but they're lost when wounds heal as scars. The most common cells found in healing wounds are myofibroblasts, which were thought to only form a scar. Scar tissue also does not have any hair follicles associated with it, which is another factor that gives it an abnormal appearance from the rest of the skin. Researchers used these characteristics as the basis for their work – changing the already present myofibroblasts into fat cells that do not cause scarring.

“Essentially, we can manipulate wound healing so that it leads to skin regeneration rather than scarring,” said George Cotsarelis, MD, the chair of the Department of Dermatology and the Milton Bixler Hartzell Professor of Dermatology at Penn, and the principal investigator of the project. “The secret is to regenerate hair follicles first. After that, the fat will regenerate in response to the signals from those follicles.”



The study showed hair and fat develop separately but not independently. Hair follicles form first, and the Cotzarelis lab previously discovered factors necessary for their formation. Now they've discovered additional factors actually produced by the regenerating hair follicle to convert the surrounding myofibroblasts to regenerate as fat instead of forming a scar. That fat will not form without the new hairs, but once it does, the new cells are indistinguishable from the pre-existing fat cells, giving the healed wound a natural look instead of leaving a scar.



As they examined the question of what was sending the signal from the hair to the fat cells, researchers identified a factor called Bone Morphogenetic Protein (BMP). It instructs the

myofibroblasts to become fat. This signaling was groundbreaking on its own, as it changed what was previously known about myofibroblasts.

"Typically, myofibroblasts were thought to be incapable of becoming a different type of cell," Cotsarelis said. "But our work shows we have the ability to influence these cells, and that they can be efficiently and stably converted into adipocytes." This was shown in both the mouse and in human keloid cells grown in culture.

"The findings show we have a window of opportunity after wounding to influence the tissue to regenerate rather than scar," said the study's lead author Maksim Plikus, PhD, an assistant professor of Developmental and Cell Biology at the University of California, Irvine. Plikus began this research as a postdoctoral fellow in the Cotsarelis Laboratory at Penn, and the two institutions have continued to collaborate.

These discoveries have the potential to be revolutionary in the field of dermatology. The first and most obvious use would be to develop a therapy that signals myofibroblasts to convert into adipocytes – helping wounds heal without scarring.

"It's highly desirable from a clinical standpoint, but right now it's an unmet need," Cotsarelis said.

But the increase of fat cells in tissue can also be helpful for more than just wounds. Adipocyte loss is a common complication of other conditions, especially treatments for HIV, and right now there is no efficient strategy for treatment. The cells are also lost naturally because of the aging process, especially in the face, which leads to permanent, deep wrinkles, something anti-aging treatments can't fix in a cosmetically satisfactory way.

"Our findings can potentially move us toward a new strategy to regenerate adipocytes in wrinkled skin, which could lead us to brand new anti-aging treatments," Cotsarelis said.

The Cotsarelis Lab is now focusing on the mechanisms that promote skin regeneration, especially with respect to hair follicle regeneration.

The Plikus Laboratory is focusing on other aspects of cell reprogramming in skin wounds. Researchers there are examining the role of other signaling factory beyond BMP as well as conducting further studies using human cells and human scar tissue.

SOURCE- PennMedicine

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**NUSCALE SUBMITS FIRST-EVER SMALL MODULAR NUCLEAR REACTOR DESIGN TO NRC**

By Editors of Power Engineering, Jan 13, 2017

[http://www.power-eng.com/articles/2017/01/nuscale-power-submits-small-modular-nuclear-reactor-design-to-nrc.html?cmpid=enl\\_pe\\_powerengineeringe-newsletter\\_2017-01-17&email\\_address=tbolgeo@epbfi.com&eid=366256519&bid=1636901](http://www.power-eng.com/articles/2017/01/nuscale-power-submits-small-modular-nuclear-reactor-design-to-nrc.html?cmpid=enl_pe_powerengineeringe-newsletter_2017-01-17&email_address=tbolgeo@epbfi.com&eid=366256519&bid=1636901)



NuScale Power, which has Fluor Corporation as its majority investor, has completed its design for a small modular nuclear reactor within commercial power plants and has submitted it for approval to the Nuclear Regulatory Commission.

The application is the first-ever SMR to be submitted to the NRC for approval.

The [small modular reactors](#) include scalable plants that can incrementally increase output depending on demand. The technology can integrate with other energy sources such as wind and solar.

NuScale expects demand for their SMRs will create thousands of jobs, re-establish U.S. leadership in the nuclear field and pave the way for the development and approval of additional advanced nuclear technology.

“Fluor continues to be proud of its investment in NuScale and how the company has rapidly moved through the design certification application process, and we are eagerly awaiting NRC review and approval,” said David Seaton, Fluor’s chairman and CEO. “We believe that the future of the U.S. nuclear industry is in small modular reactor technology and that NuScale is uniquely positioned as the only U.S. company that offers it.”

As the application consists of nearly 12,000 pages, the NRC is expected to take two months to determine if any further information is necessary, and the certification process could take up to 40 months.

The first commercial power plant to use the NuScale SMRs will be a 12-module facility to be built on the site of the Idaho National Laboratory, which will be owned by the Utah Associated Municipal Power Systems and operated by Energy Northwest. It has an estimated operation date of 2026.

NuScale predicts approximately 55-75 GW of global electricity will come from SMRs by 2035.

Fluor has [invested in](#) NuScale since October 2011.

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MAZDA REPORTEDLY INTRODUCING SPARKLESS GAS ENGINE IN 2018

[FoxNews.com](http://www.foxnews.com), Published January 16, 2017

<http://www.foxnews.com/auto/2017/01/16/mazda-reportedly-introducing-sparkless-gas-engine-in-2018.html>



**Mazda MX-5 engine for illustration purposes only (Mazda)**

**Mazda may be losing its spark, and that's a good thing.**

The automaker is reportedly set to introduce the first modern gasoline automobile engine that works more like a diesel, using compression to ignite its fuel mixture, rather than an electronic spark.

The technology is known as Homogenous Charge Combustion Ignition (HCCI,) and it could deliver a 30 percent improvement in fuel economy, [according to Nikkei](#). The lean-running motors also deliver better emissions performance than conventional gasoline engines.

Several automakers and engineering outfits have been working on HCCI in recent years, but issues with cold starting and the precise timing of the combustion make it a difficult technology to engineer. One solution has been the incorporation of part-time spark plugs that kick in at certain temperatures or engine loads. Mazda hasn't publically revealed its plans, or exactly how its version works.

Interestingly, while the Nikkei report says the technology will debut in an all-new Mazda3 compact in 2018, which suggests it will be used in a four-cylinder engine, [a Mazda engineer recently implied to Cars Guide](#) that the company was working on an HCCI version of the company's signature rotary engine, which has been on hiatus since 2012.

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**INSIDE LOOK: VARIABLE-SPEED SUPERCHARGING TECHNOLOGY**

<http://www.turnology.com/news/inside-look-variable-speed-supercharging-technology/>

Considerable emphasis is placed on boost these days, not just in the performance market where it's a more practical power solution over increased displacement, but also on the OEM production side where it's a practical power necessity to offset the trend of decreasing engine displacement needed to meet tighter emissions and fuel economy mandates.

The Torotrak V-Charge supercharger can vary the boost over a wide range regardless of the engine speed.

Despite the promise of surging horsepower numbers, boost has its tradeoffs—whether it's generated by a



turbocharger or supercharger. That's why the concept of variable boost is drawing so much attention throughout the industry—and one of the latest campaigns down this road is the rather unique V-Charge from [Torotrak](#), demonstrated in the video above. Just like variable valve timing or even variable displacement oil pumps, variable boost will help the engine adjust to different needs at different rpm and load conditions. When all these variables are in tune at the right time and in the right amount, performance and efficiency will dramatically improve.

In conventional configurations, power adders such as turbos and superchargers generally have peak efficiency restricted at certain rpm range, depending on the setup and engine design. For superchargers, engine speed and the drive mechanism to turn the supercharger are the main controlling factors. While positive-displacement or Roots-style superchargers enjoy a genuine reputation for snappy low-end response and don't have to spin very fast compared to the engine speed, centrifugal superchargers—which are basically mechanically driven turbochargers and must spin seven or eight times faster than the engine—can be dull on the bottom end if set up for an emphasis on top-end power. That's acceptable in a racing situation, but for street performance a compromise must be made to achieve drivability.

Variable-speed or variable-boost superchargers designed to maximize both low- and top-end performance are not new concepts and several have been introduced throughout this

century. For example, transmission specialist Antonov introduced what was called the world's first 2-speed supercharger at the 2006 Global Powertrain Congress. It featured an automatic-shifting 2-speed drive system for centrifugal superchargers and was intended for the US tuner market but never broke ground.

A more interesting concept comes from [Eaton](#), which developed an electrically assisted variable speed Roots-style supercharger that could be applied to mild hybrid vehicles utilizing start-stop function. And we also know about a variable speed supercharger drive developed by [Fallbrook Technologies](#) that uses a continuously variable planetary drive that could be mated to a conventional centrifugal supercharger. So far, none of these options are in significant production.



From left, Antonov 2-speed supercharger, Eaton electrically assisted variable speed supercharger, and continuously variable planetary drive from Fallbrook Technologies designed for superchargers.

[ProCharger](#) stunned the performance aftermarket a few years ago when it [introduced the i-1 supercharger](#) at SEMA. Using a CVT or continuously variable transmission between the driven pulley and a centrifugal supercharger, the boost can be adjusted according to the rpm—either for all-out performance or fuel economy and drivability. The CVT features two adjustable-diameter pulleys connected by a high strength belt. An electric motor is used to alter the pulley sizes, effectively changing the drive ratio between the engine and supercharger.

The ProCharger is already built with an internal 8:1 step-up ratio, and the CVT allows 2:1 step up at low rpm to increase boost and improve throttle response, or falls back to a .5:1 at high rpm for the most efficient supercharger speed.

The system is electronically controlled and the user can select from three pre-programmed modes that offer a wider power band, depending on the application and driving situation. Although there is a custom program option, the boost levels are still preprogrammed for rpm. In other words, the boost isn't adjusted in real time by the engine's ECU as the computer evaluates a multitude of variables, such as throttle position, fuel delivery, gear selection and more in addition to the rpm.



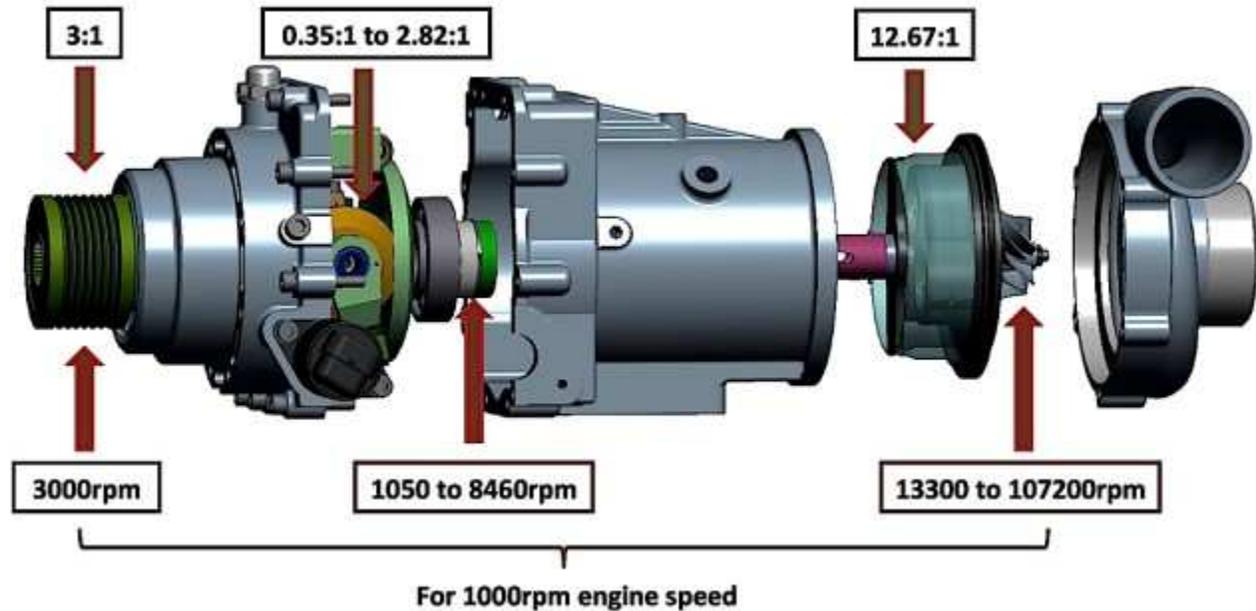
The ProCharger i-1 uses CVT technology to vary the drive speed to the centrifugal supercharger.

The Torotrak V-Charge, on the flip side, is designed for OEM applications where the ECU would have complete control over the supercharger with an extremely wide range of rpm and boost—all completely independent of engine speed. Instead of a CVT to vary the supercharger speed, the V-Charge leverages Torotrak’s expertise in gearless traction drives to develop a variable-speed drive that turns a supercharger. Company officials say the V-Charge “delivers from 0 to 95 percent of target torque in just 400 milliseconds and removes boost just as quickly when not required.”



Exploded view of the Torotrak V-Charge showing the traction drive variator and the

traction drive epicyclic that vary the speed to the centrifugal supercharger, according to the ratios shown below.



As noted in the illustration above, the traction drive variator can adjust the drive ratio from an underdrive at .35:1 up to an overdrive of 2.82:1. The unit receives a 3:1 overdrive from the engine, and also has a built-in planetary style traction drive epicyclic that produces a fixed 12:67:1 ratio speed increase. At 1,000 engine rpm, the V-Charge could spin the supercharger's centrifugal compressor from 13,300 up to 107,200 rpm in continuously variable amounts.

ToroTrak has posted videos with excellent graphics to help illustrate the technology behind its V-Charge supercharger. It's a rather unique solution to help automakers provide both performance and fuel economy as the industry is pressured to please the customer and reduce CO2 output.

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From: "Jim Woosley" [Jimwoosley@aol.com](mailto:Jimwoosley@aol.com)

**PRAVDA: "SCIENTISTS NOW WARN OF A NEW ICE AGE" AS TEMPERATURE PLUMMETS TO - 80°F IN RUSSIA!**

By P Gosselin on 10. January 2017

<http://notrickszone.com/2017/01/10/pravda-scientists-now-warn-of-a-new-ice-age-as-temperature-plummets-to-80f-in-russia/#sthash.K1JUryKZ.QyA4B0CM.dpuf>

Some impressive winter events have been taking place all across the northern hemisphere lately. Especially eastern and southeastern Europe have been pounded by massive snowfalls and tremendously cold temperatures. Turkey has been buried by heavy snows and extreme temperatures have gripped the entire USA and vast areas of Russia.

The global warming climate appears to have been hacked by natural factors.



Extreme cold and snow pound the northern hemisphere as some scientists warn of the potential for ice age conditions. Photo of Greenland by NASA (public domain)

In Russia Moscow celebrated the coldest orthodox Christmas in 125 years.

- \* Snowfall paralyzed the city of Istanbul, Turkey.
- \* Massive snow falls across the Balkans, Italy and Greece.
- \* Dozens of Europeans have since frozen to death.
- \* Northern Albania villages have been cut off by 120 cm of snow.
- \* A temperature of -62°C (-80°F) was recorded in Chanty-Mansijsk (Russia).

#### **ARCTIC CONDITIONS SPREAD DEEP INTO THE MEDITERRANEAN**

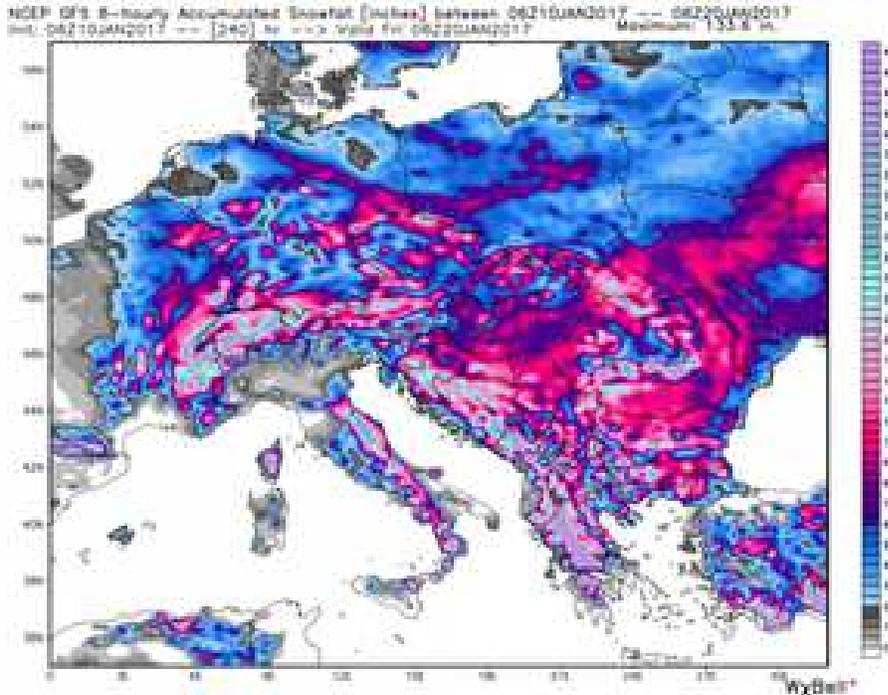
These are all odd events when considering the “consensus” forecasts made 15 years ago, which warned that snow and ice would become rare.

In fact many scientists warned that Mediterranean conditions would spread into northern Europe. Lately, however, just the opposite has happened: Arctic conditions have plunged down into the Mediterranean!

Even worse, there is no end in site for the harsh European winter conditions, German mass circulation daily Bild writes here.

**WARNING OF AN IMPENDING ICE AGE**

So in the face of all the earlier global warming predictions, it is now only ironic that yesterday the German-language Pravda TV site here published an article warning of an impending ice age. The article cites Yale scientist Wei Liu and a recent paper he published on the “overlooked possibility of a collapsed Atlantic Meridional Overturning Circulation“. Should the ocean heat conveyor collapse, then there would be “a prominent cooling over the northern North Atlantic and neighboring areas, sea ice increases over the Greenland-Iceland-Norwegian seas and to the south of Greenland.”



Note: Pravda is a rebel-type German site, and so could be viewed to be in similar ranks as climate alarmist sites, but with an opposite view. A collapsed AMOC is still speculative.

Useless models

The Pravda report summarizes Liu’s paper as follows:

CO2 has nothing to do with it, rather the influence of the sun is the dominant factor: less sunspots

(Climate: solar physicists project global cooling (video)), weakening of the earth’s magnetic field, impact on the jet stream are decisive factors that can quickly lead our climate into an ice age (Scientists: Consensus 2016: the climate models are useless (Video)).”

Pravda also describes how some experts say today’s climate models fail to take the known ocean and solar factors in account.

**UPDATE:**

Snow forecast for Europe for the next 10 days!:

Note how far south that snow cover reaches, all the way deep into the Mediterranean – covering Sicily, Greece, southwestern Turkey and North Africa.

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**A NEVADA WOMAN DIES OF A SUPERBUG RESISTANT TO EVERY AVAILABLE ANTIBIOTIC IN THE US**

By Helen Branswell, Published January 13, 2017

<http://www.foxnews.com/health/2017/01/13/nevada-woman-dies-superbug-resistant-to-every-available-antibiotic-in-us.html>

If it sometimes seems like the idea of antibiotic resistance, though unsettling, is more theoretical than real, please read on.

Public health officials from Nevada are reporting on a case of a woman who died in Reno in September from an incurable infection. Testing showed the superbug that had spread throughout her system could fend off 26 different antibiotics.

“It was tested against everything that’s available in the United States ... and was not effective,” said Dr. Alexander Kallen, a medical officer in the Centers for Disease Control and Prevention’s division of health care quality promotion.

Although this isn’t the first time someone in the US has been infected with pan-resistant bacteria, at this point, it is not common. It is, however, alarming.

“I think this is the harbinger of future badness to come,” said Dr. James Johnson, a professor of infectious diseases medicine at the University of Minnesota and a specialist at the Minnesota VA Medical Center.

Other scientists are saying this case is yet another sign that researchers and governments need to take antibiotic resistance seriously. It was reported Thursday in *Morbidity and Mortality Weekly Report*, a journal published by the CDC.

The authors of the report note this case underscores the need for hospitals to ask incoming patients about foreign travel and also about whether they had recently been hospitalized elsewhere.

The case involved a woman who had spent considerable time in India, where multi-drug-resistant bacteria are more common than they are in the US. She had broken her right femur — the big bone in the thigh — while in India a couple of years back. She later developed a bone infection in her femur and her hip and was hospitalized a number of times in India in the two years that followed. Her last admission to a hospital in India was in June of last year.

The unnamed woman — described as a resident of Washoe County who was in her 70s — went into hospital in Reno for care in mid-August, where it was discovered she was infected with what is called a CRE — carbapenem-resistant enterobacteriaceae. That’s a general name to describe bacteria that commonly live in the gut that have developed resistance to the class of antibiotics called carbapenems — an important last-line of defense used when other antibiotics fail. CDC Director Dr. Tom Frieden has called CREs “nightmare bacteria” because of the danger they pose for spreading antibiotic resistance.

In the woman’s case, the specific bacteria attacking her was called *Klebsiella pneumoniae*, a bug that often causes of urinary tract infections.

Testing at the hospital showed resistance to 14 drugs — all the drug options the hospital had, said Lei Chen, a senior epidemiologist with Washoe County Health District and an author of the report. “It was my first time to see a [resistance] pattern in our area,” she said.

A sample was sent to the CDC in Atlanta for further testing, which revealed that nothing available to US doctors would have cured this infection. Kallen admitted people in this field experience a sinking feeling when they're faced with a superbug like this one.

"I think it's concerning. We have relied for so long on just newer and newer antibiotics. But obviously the bugs can often [develop resistance] faster than we can make new ones," he said.

Doctors and scientists who track the spread of antibiotic resistance — the rapidly proliferating swarm superbugs — see this case as a big red flag.

"If we're waiting for some sort of major signal that we need to attack this internationally, we need an aggressive program, both domestically and internationally to attack this problem, here's one more signal that we need to do that," said Lance Price, who heads the Antibiotic Resistance Action Center at George Washington University.

There is international recognition of the threat, which an expert report published last year warned could kill 10 million a year by 2050 if left unchecked. In September, the UN General Assembly held a high-level meeting on antibiotic resistance, only the fourth time the body had addressed a health issue.

The woman in Nevada was cared for in isolation; the staff who treated her used infection control precautions to prevent spread of the superbug in the hospital. Chen and Randall Todd, a health department colleague, told STAT testing was done to look for additional infections, but so far none have been detected.

Johnson said it's likely, though, that other people in the US are carrying similar bacteria in their guts and could become sick at some point. "It's possible that this is the only person in the US and she had the bad luck to go to India, pick up the bad bug, come back and here it is, we found her and now that she's dead, it's gone from the US. That is highly improbable," he said.

"People have asked me many times 'How scared should we be?' ... 'How close are we to the edge of the cliff?' And I tell them: We're already falling off the cliff," Johnson said. "It's happening. It's just happening — so far — on a relatively small scale and mostly far away from us. People that we don't see ... so it doesn't have the same emotional impact."

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From: "Chris Cowan" [cowanc1028@earthlink.net](mailto:cowanc1028@earthlink.net)

## NEW WHITE HOUSE STRATEGY PREPS EARTH FOR ASTEROID HIT SCENARIOS

The Office of Science and Technology Policy has released a new plan for protecting Earth from hazardous space rocks

By Leonard David on January 13, 2017

[https://www.scientificamerican.com/article/new-white-house-strategy-preps-earth-for-asteroid-hit-scenarios/?WT.mc\\_id=SA\\_DD\\_20170113](https://www.scientificamerican.com/article/new-white-house-strategy-preps-earth-for-asteroid-hit-scenarios/?WT.mc_id=SA_DD_20170113)



There is no doubt big-time troublemakers lurk out there in the cosmos. We know that blitzkriegering asteroids and comets can make for a bad day here on Earth because our planet has been on the receiving end of many long-ago scurrilous intruders, and has the pockmarks to prove it. There was also the recent and loud wake-up call when an incoming space rock detonated in the skies near Chelyabinsk, Russia, in early 2013, causing significant injuries and property damage. The bottom line is that near-Earth objects (NEOs) have crosshairs on our world. But what to do about these cosmic demons from the deep is another matter.

In the waning days of Pres. Barack Obama's administration, the White House Office of Science and Technology Policy (OSTP) released a

“National Near-Earth Object Preparedness Strategy” last week. The strategy outlines major goals the country will have to tackle to prepare to meet the NEO threat, signaling that some leaders are taking the danger more seriously. Whether the U.S. government is willing to put significant funding behind such efforts, however, still remains to be seen. “This has been something that for years was more or less a laughing matter,” says William Ailor, an Aerospace Fellow of The Aerospace Corp. The White House report shows that there is high-level interest in the NEO threat, and that even if incoming NEOs are not among the most likely threats we face, the consequences of an impact could be dire. “It’s a good thing to keep your eye on,” Ailor says, and the new report “brings reality home.”

## **SKYFALL STRATEGY**

The 19-page report, the product of an interagency faction of experts convened in January 2016 dubbed the Detecting and Mitigating the Impact of Earth-Bound Near-Earth Objects (DAMIEN) working group, was released January 3. Overall, the group found the U.S. needs more tools to track space rocks, and that greater international cooperation is necessary. Specifically, the report outlines several goals, including increasing the ability both in the U.S. and in other countries to more rapidly detect NEOs, track their movements and characterize the objects more completely. It also says more research is needed to study how best to deflect and disrupt a space rock that might be on a collision course with Earth. Furthermore, the strategy calls for better and more integrated modeling of NEO trajectories to reduce uncertainties of their orbits and possible impact effects.

If indeed there is a NEO strike, the strategy also seeks to develop coherent national and international emergency procedures for different impact scenarios, be it an object hitting deep ocean, a coastal region or a major landmass. We must be prepared to respond as well as recover from such a blow in an orderly and timely manner, the report finds.

Lastly, the document's strategic goals underscore the need to get all nations to agree that the potential NEO Earth impact risk is a global challenge, one that demands planetary coordination and cooperation. Protocols and thresholds for taking action, not only in the U.S. but internationally, are necessary.

#### **NEW STEP FORWARD**

The working group represents an important advance in dealing with the NEO threat, says Lindley Johnson, NASA's planetary defense officer within the space agency's Science Mission Directorate who co-chaired the DAMIEN project. The effort was "really the first time we've sat down with an 'all of government' approach" that brought multiple federal agencies together, he says, "to do what needs to be done to be prepared to appropriately respond to discovery of a possible asteroid impact." Johnson says that having an approved strategy "is a major first step," but details of how to pursue these goals will be forthcoming via a yet-to-be-determined action plan. "Then the relevant departments and agencies will need to take the steps needed to accomplish that action plan," he says.

Scoping out the action plan is the next order of business for DAMIEN as soon as President-elect Donald Trump's new OSTP gets its feet on the ground, Johnson notes. "We have drafted a few things, but it is still to be written. That will take about another year, assuming we continue on this path."

On the one hand, NEO experts are heartened by the OSTP document. But as always, paper strategies need to be backed at some point by bucks. Ray Williamson, a faculty member of the International Space University in Strasbourg, France, salutes the White House OSTP report. As a former astronomer and a past member of the United Nations' Action Team 14 that focused for years on the NEO danger, he finds the document says "all the right things and calls for the right approaches" to mitigating the peril of an incoming asteroid. But, as is the case with most high-impact, low-probability events, "motivating the several federal agencies to follow through on the good advice in this report will be a major task," he adds. Making that job more daunting is that the White House strategy involves close cooperation with foreign entities. "Federal agencies, both here and abroad, generally feel that they have barely enough funding available to accomplish their primary mission and may well be reluctant to devote resources to such an effort," Williamson says. "Making this strategy work will require significant attention to supplying the necessary funding for implementation."

Case in point: earlier this month, NASA approved two new spacecraft missions to move forward out of a list of five candidates. A journey to Jupiter's retinue of Trojan asteroids and a probe to study a giant metal asteroid known as 16 Psyche won out over a proposed Near-Earth Object Camera (NEOCam). This space-based telescope would spot and survey uncatalogued Earth-threatening asteroids and comets. Although NEOCam was not selected, NASA did award further funding to continue studying the NEOCam concept for another year. But whether that mission will ever fly is anyone's guess. "I don't yet know what we will do now for NEOCam—but we are working it," NASA's Johnson says.

#### **INTERNATIONAL WORK AHEAD**

The push for international cooperation on the NEO threat is key, says Detlef Koschny, head of the NEO segment in the European Space Agency's (ESA) Space Situational Awareness

program. "Within ESA we are working on very similar steps to be prepared," Koschny says. "In particular, we will fully continue to support the international collaboration, which is already very well underway."

The 2017 International Academy of Astronautics meeting on planetary defense, to meet this May in Tokyo, will hold a "tabletop exercise" involving a make-believe asteroid strike on Earth. The rehearsal will help appraise leadership reactions, information requirements, threat corridors, emergency management responses—including evacuation route planning—in response to the hypothetical situation. Aerospace Corp.'s Ailor will chair that meeting and has coordinated similar exercises over the past few years with participants from NASA, the U.S. departments of Defense, State and Homeland Security (including its Federal Emergency Management Agency, or FEMA), along with the White House and others. The last such simulation was held October 25, 2016, in El Segundo, Calif. "A lot of work needs to be done at the international level," he says, "to have people worldwide understand that this is really an international issue."

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**ABSOLUTELY & TOTALLY POLITICALLY INCORRECT & AS FAR TO THE CENTER AS YOU CAN GO!**

From: "Jim Woosley" [Jimwoosley@aol.com](mailto:Jimwoosley@aol.com)

**TRUMPISM DEFINED AND OTHER MATTERS.**

By Jerry Pournelle, Jan 10, 2017 - 8:06 pm <https://www.jerrypournelle.com/chaosmanor/>

On matters of foreign policy, Trump is not a realist, isolationist, or neoconservative, although at times he can sound like all that and more. Instead, he is a Jacksonian who wants a huge club at the Department of Defense largely to ensure that he'll never have to use it. And if he is pushed to swing it, he wants to flatten any who would hurt the U.S.

Victor Davis Hanson

**IMMIGRATION WITHOUT ASSIMILATION IS INVASION.**

Phil Tharp calls attention to this article:

<http://www.nationalreview.com/article/443667/trumpism-tradition-populism-american-greatness-strong-military>

Although I was a subscriber to National Review from the 1950's, I have lately given up reading it; but this is by Victor Davis Hanson who is both a Professor of History and a Central California Valley farmer, and his insights are always worth paying attention to. This time he has exceeded himself: nothing original, but he patiently explains the meaning of Trump and his populism. How can a billionaire be a populist? Read Hanson's article. It explains it all very well. You must remember that populism is not equalitarianism, nor is it plebiscitary democracy. Populists expect to earn what they get; but they also expect to keep what they earn, and to play hard on a level playing field.

[snip] MAKING STUFF

Trumpism is a pragmatist in another way: his unapologetic deference to 19th-century muscular labor and those who employ and organize it. Though we are well into the 21st-century informational age, Trump apparently believes that the age-old industries — steel, drilling, construction, farming, mining, logging — are still noble and necessary pursuits. Using one’s hands or one’s mind to create something concrete and real is valuable in and of itself, and a much-needed antidote to the Pajama Boy–Ivy League culture of abstraction. Silicon Valley, the marquee universities, and progressive ideologues might dismiss these producers as polluting dinosaurs, but all of them also rely on forgotten others to fuel their Priuses, bring them their kitchen counters, their hardwood floors, and their evening cabernet and arugula and, 12 hours later, their morning yogurt and granola. The producers acknowledge the equal importance of Apple and Google in a way that is never quite reciprocated by Silicon Valley. In other words, expect Trumpism to champion fracking, logging, Keystone, “clean” coal, highway construction, the return of contracted irrigation water to its farmers, the retention of federal grazing lands for cattlemen — not just because in Trump’s view these industries are valuable sources of material wealth for the nation but also because they empower the sort of people who are the antidote to what American is becoming.[snip]

There’s more, and it’s all pretty clear; I might have written much of it. I mean that in the sense that I found little to disagree with; I don’t mean to take anything away from Professor Hanson. Read the article. You’ll understand Trump better, agree with Trumpism or not.

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