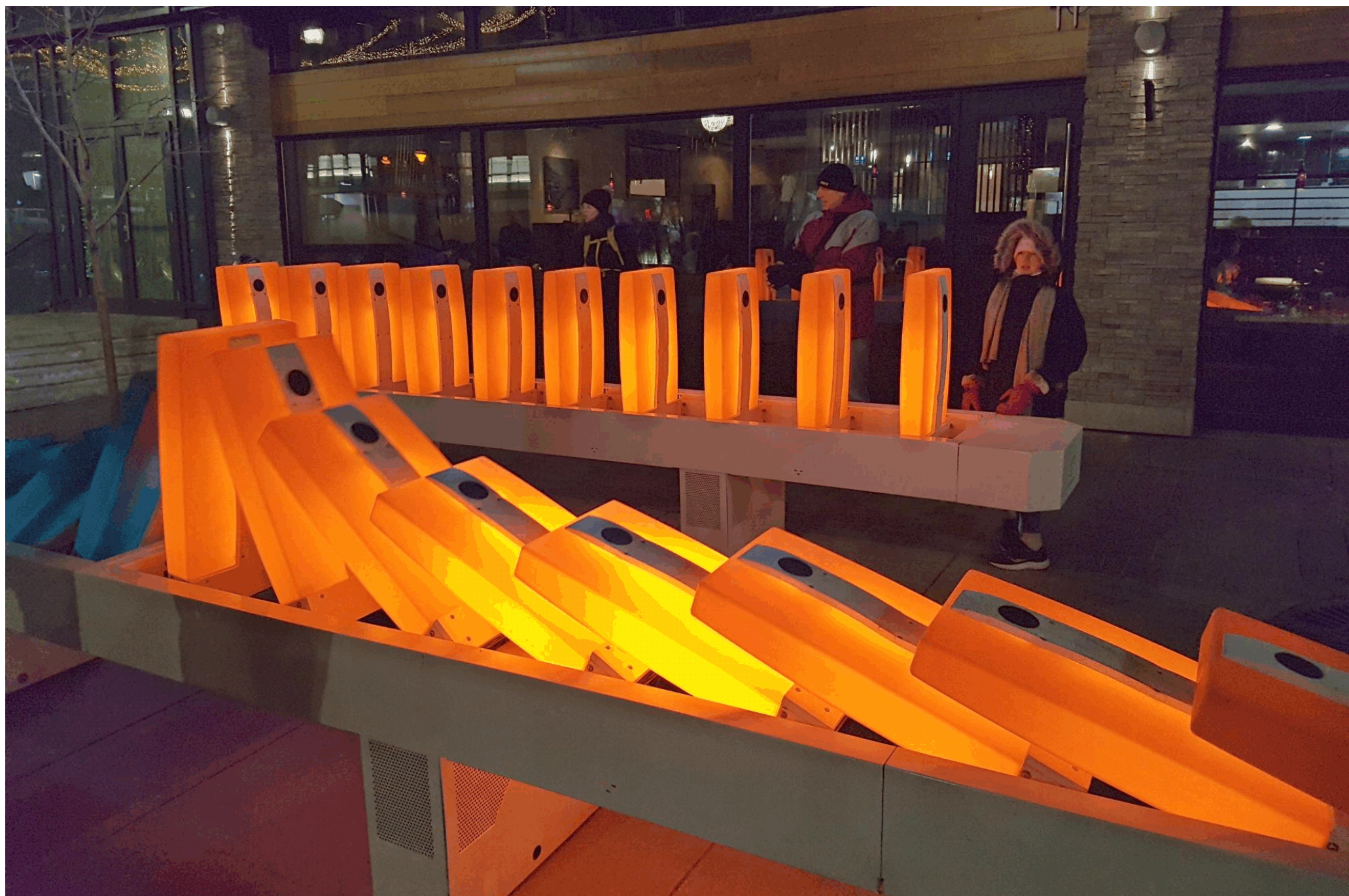


# OPUNTIA 519





**Middle February 2022**

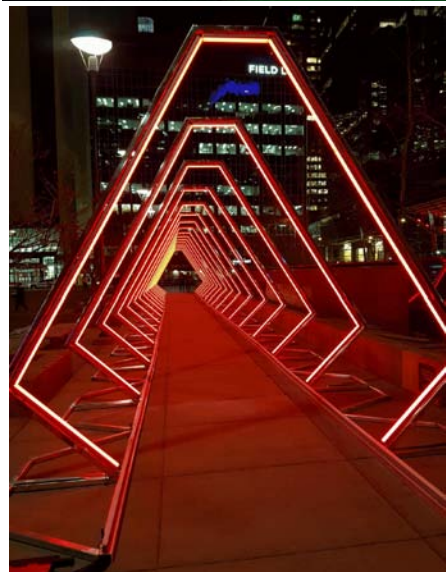
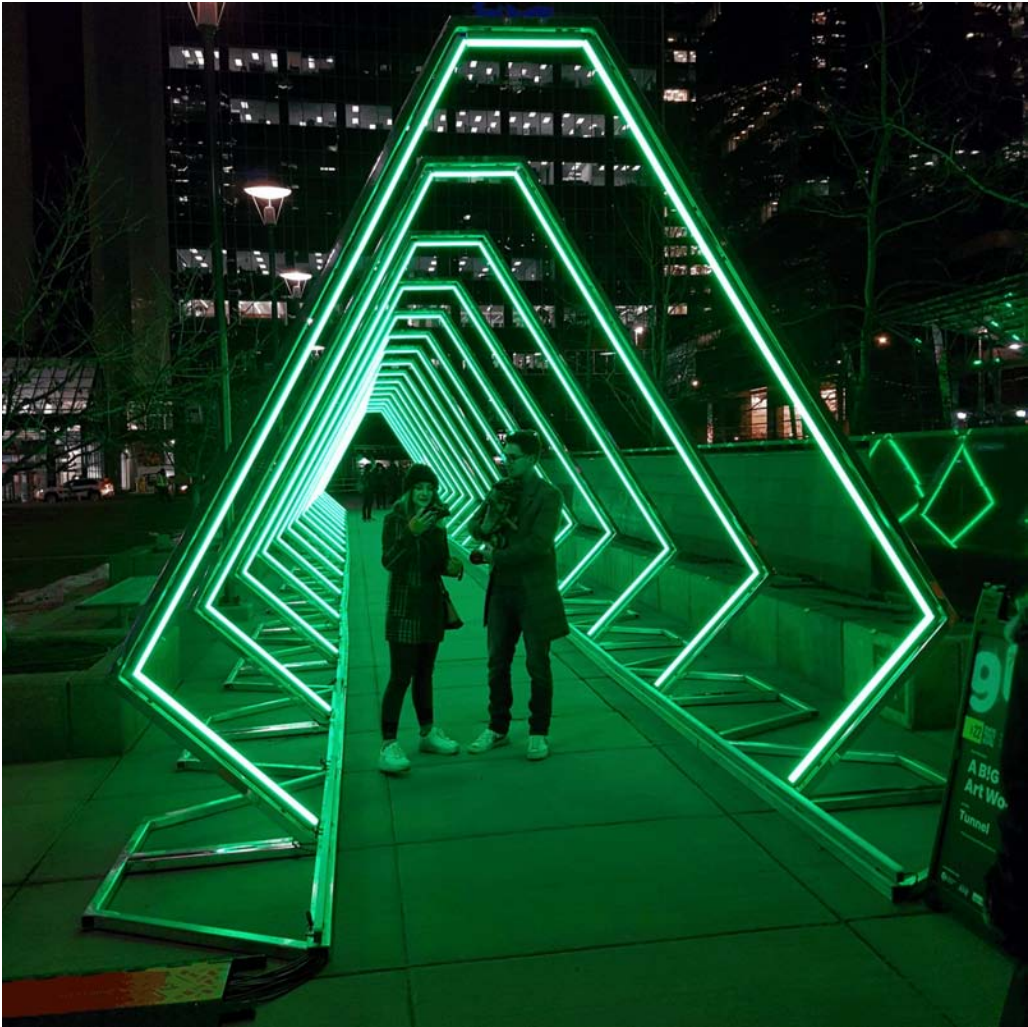
**Opuntia** is published by Dale Speirs, Calgary, Alberta. It is posted on [www.efanzines.com](http://www.efanzines.com) and [www.fanac.org](http://www.fanac.org). My e-mail address is: [opuntia57@hotmail.com](mailto:opuntia57@hotmail.com) When sending me an emailed letter of comment, please include your name and town in the message.

**CHINOOK BLAST 2022: PART 2**

photos by Dale Speirs

Continuing on from the last issue, here are more photos from the Chinook Blast winter festival, held every February in central Calgary. Good meteorological fortune continues to be with us, as the chinook winds have prevailed for the month of February to date and kept Calgary’s temperatures just at the freezing mark.

I went back downtown on the night of February 11. Not everything is shown here. Some of the light displays messed up my camera’s light meter, making it impossible to get decent photos because half the display was blinding bright and the other half was dark hues of colours.

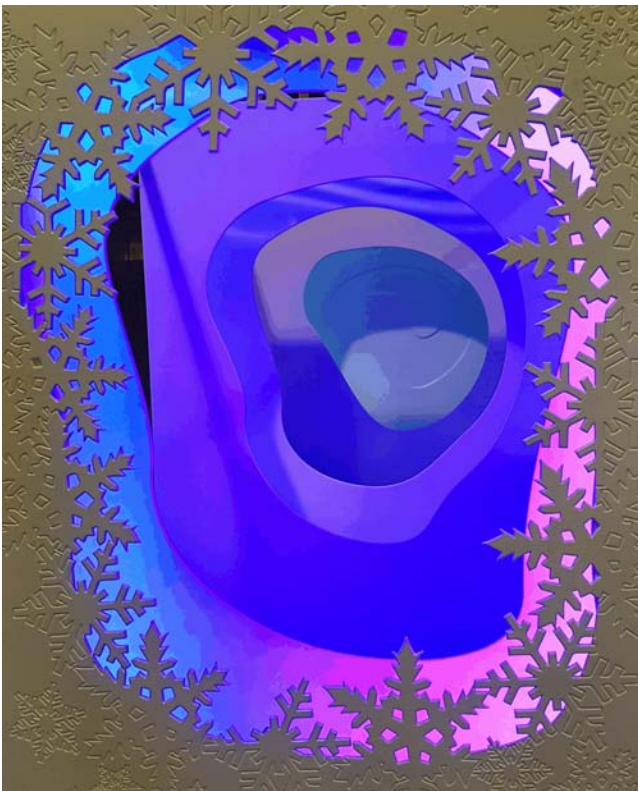


My first stop was Hotchkiss Gardens Park on 7 Avenue SW at 4 Street. These lights were activated by human movement.









At left: Not until I returned home and looked at these photos did I realize I made a mistake in not photographing this display from the side.

These are several panels spaced a metre apart, with large holes and the back one solid. The lights were on the back sides and illuminated the panels in changing patterns.



Top right: From Hotchkiss Gardens, I walked a block south to the Stephen Avenue Pedestrian mall, which is 8 Avenue South through the downtown core.

Bottom right: This musician had the coziest job, performing from inside a warm shop front.



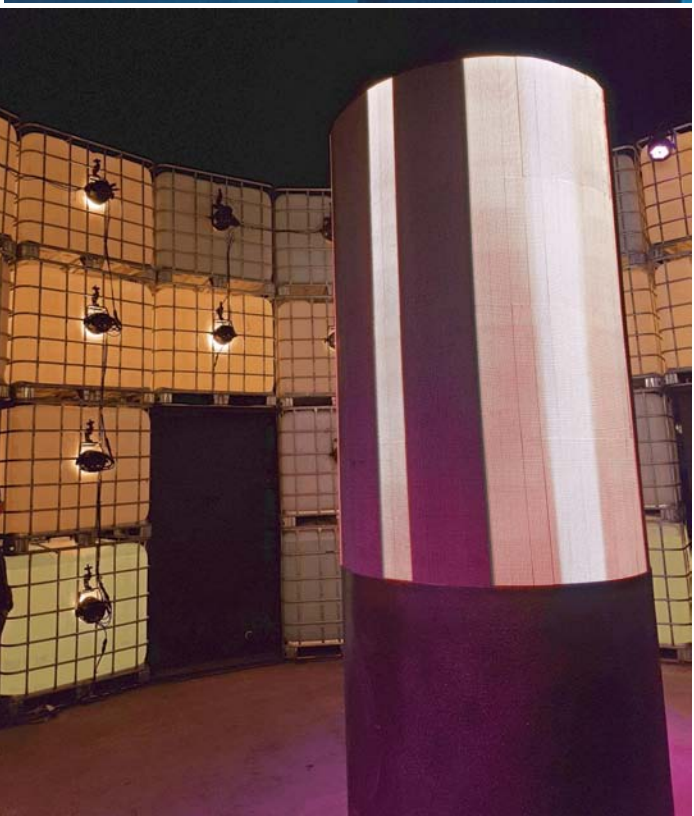




Each block along the mall had a fire pit for people to warm themselves.



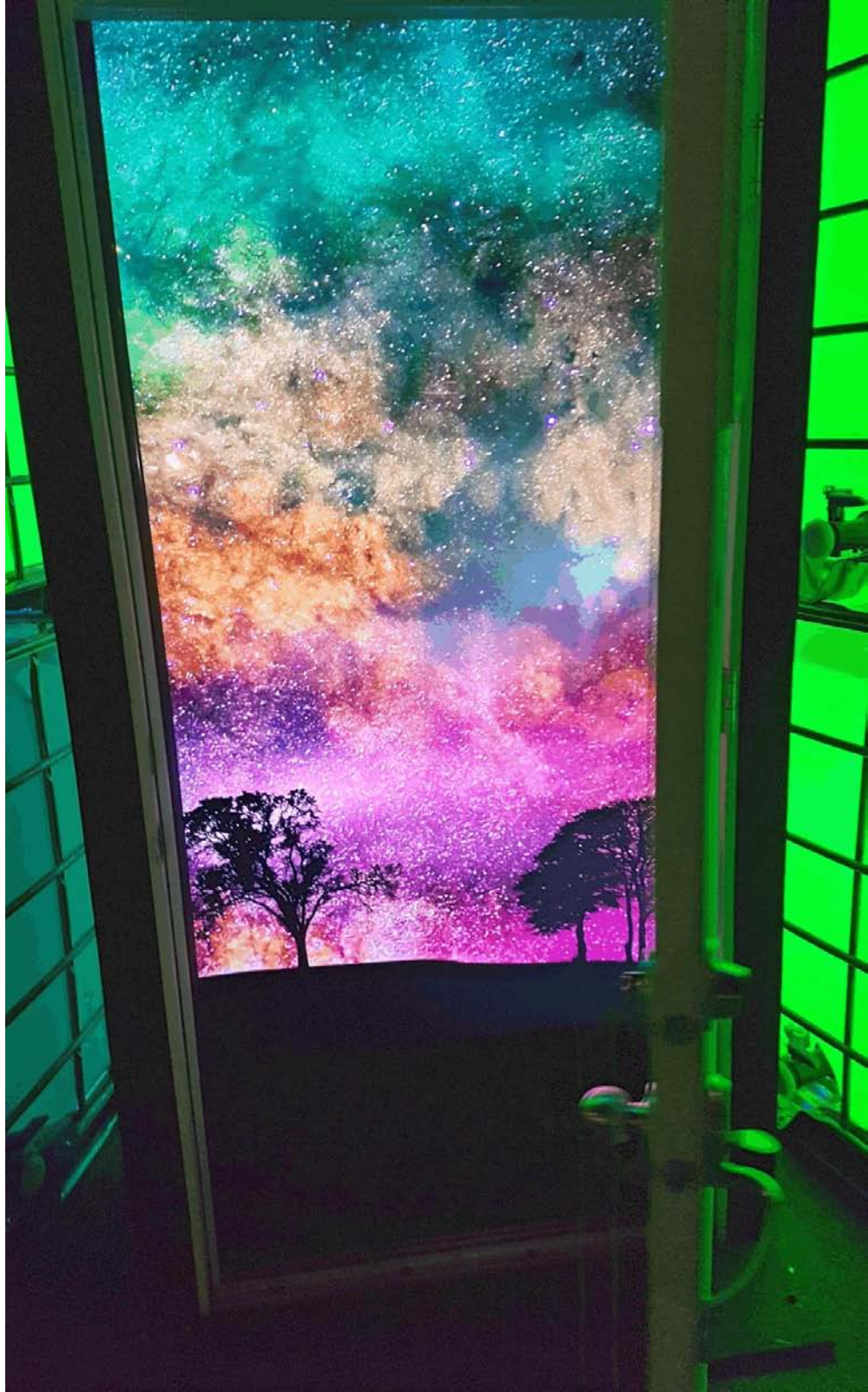
And so to Enoch Park, across the railroad tracks at 12 Avenue SE and Macleod Trail. “The Beacon” was a set of light boxes arranged in a circle, with about ten doors (I didn’t count) spaced around the circumference. Two of them opened into the interior, which had a warp drive tube in the centre. Each of the other doors opened onto a large screen.













**MAIL ART OF BETTY SPEIRS: PART 4**  
by Dale Speirs

[Parts 1 to 3 appeared in OPUNTIA's #511, 514, and 517.]

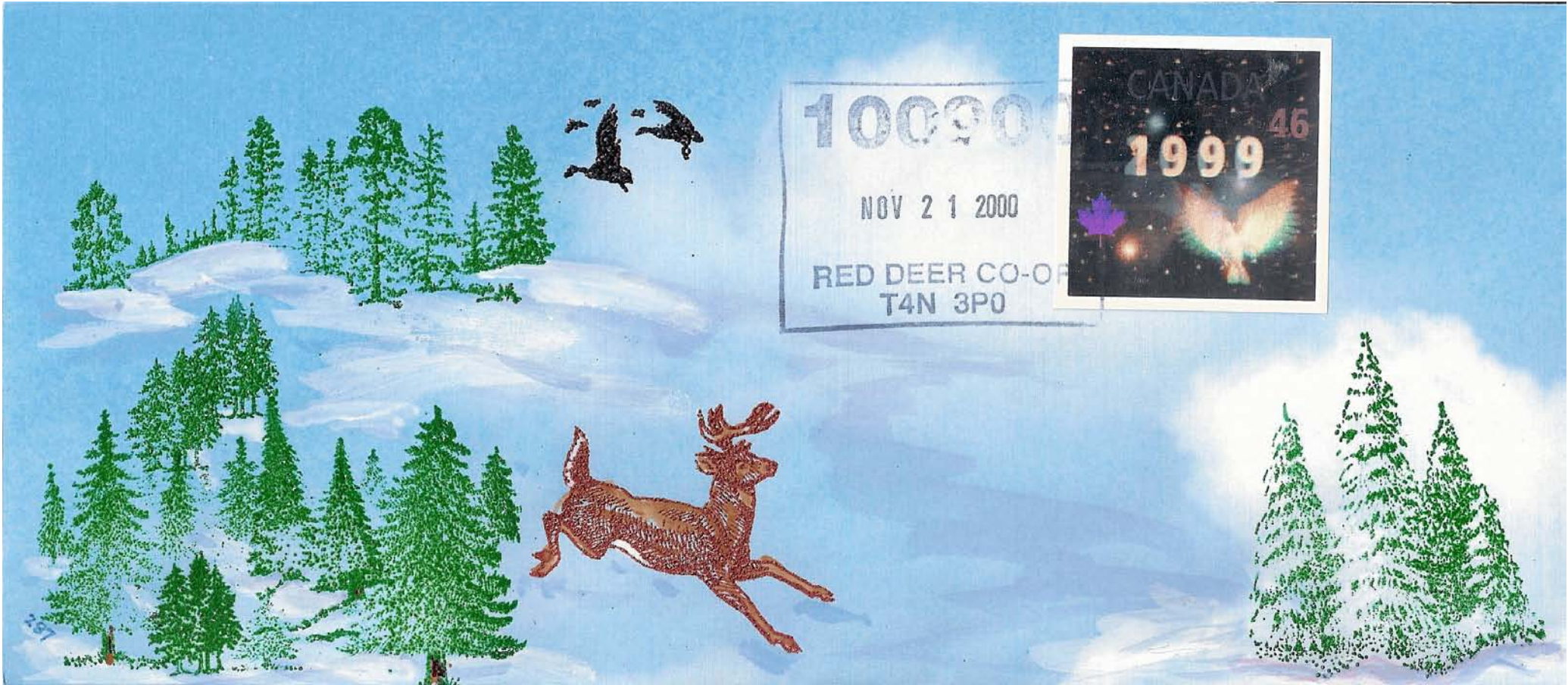
**Winter Wonderlands.**

Still scanning all the mail art my mother Betty produced between the late 1980s and her death in 2002. Red Deer is in the parkland belt of Alberta. Spruce trees and deer are never in short supply.

Betty made blank covers in batches and then used them over the years. The west-central district of Alberta is rolling hills, glacial meltwater valleys, and mixed farming.

White-tail deer are abundant and keep the coyotes well fed. I don't recall coyotes ever attacking our cattle or trying for the young calves in spring. They had lots of food elsewhere. Canada geese are everywhere and, like coyotes and deer, have adapted to human settlement.

We had some bush in the back forty of our ranch where the deer trimmed off all the branches to as high as they could stand on their hind feet and munch on the twigs and buds. Deer are browsers, so they seldom mixed with our herd.

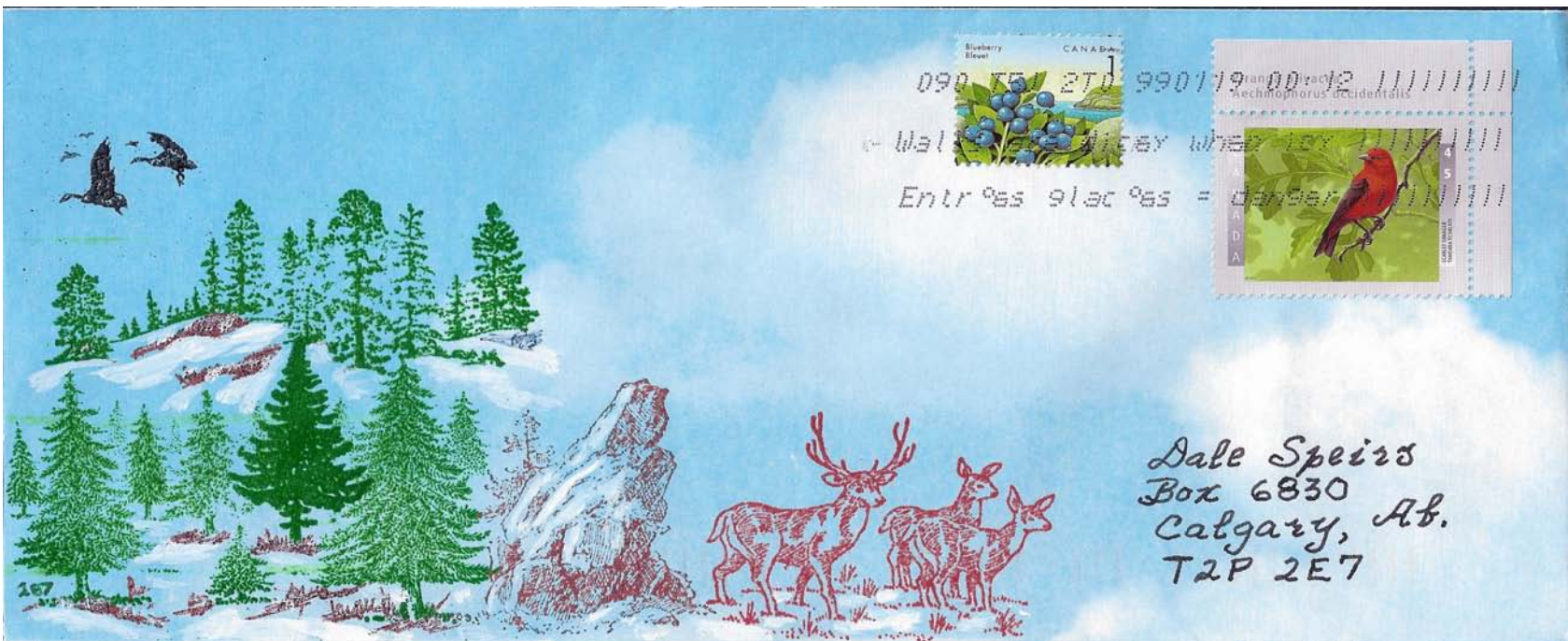




These winter landscape covers appear identical at first glance but vary because they are a mixture of rubber stamps, hand drawing, and hand colouring. See if you can spot the differences.



The bird stamps were issued on 1998-02-13.



The spray-on cancel is dated 1999-01-19. To decode the first line, the number 90 is the cancelling machine's number, then the postal code T5J 2T0.

T5 postal codes are Edmonton, about 150 km north of Red Deer. Calgary is 150 km south of Red Deer. The hub-and-spoke mail system meant this cover traveled 450 km to reach me.



## BOTANICAL FICTION: PART 15

by Dale Speirs

[Parts 1 to 14 appeared in OPUNTIA's #316, 317, 320, 323, 325, 334, 369, 380, 402, 412, 438, 459, 476, and 506.]

### Carnivorous Plants.



The carnivorophyte has always been popular in fiction, almost always as the man-eating tree of jungles. The vast majority of these plants are small herbs that snag insects.

However, in the jungles of southeast Asia there exists the genus *Nepenthes*, a clambering vine with dangling pitcher traps. The traps are generally small, but there are a few species whose traps are the size of milk cartons, capable of trapping small mammals.

These plants twine their way up trees. The first European explorers who saw them thought they were part of the tree. Word got back home and didn't take long to exaggerate them into man-eating trees. One jungle was the same as the next, so the man-eater tree made its way in fiction to Africa, Central and South America, and the South Pacific islands.

Man-eating trees were a standard of lost world stories. As the brave explorers ventured into those lost worlds, they inevitably came across a carnivorous plant which thinned out the supporting characters. That type of story faded away after World War Two because there were no more places where ancient civilizations could hide. Maybe a jungle tribe or two, but not city builders.

"Through The Crater's Rim" by A. Hyatt Verrill (1926 December, AMAZING, available as a free download from [www.gutenberg.org](http://www.gutenberg.org)) was a lost world story whose plot needs no summarizing. The explorers found a deep extinct volcanic crater with the standard type of unknown civilization, called the Kunas.

The usual excitements followed, and culminated with the destruction of the Kunas when the hero dropped a bomb onto the crater rim. That let in flood waters from the surrounding elevation and the crater became a lake, drowning all trace of the lost world folk.

As for the man-eating vegetation (shown at left), here are some extracts:

*The Kunas' cries were still ringing in my ears when a scream from Carlos drew my attention. Thinking him attacked by savages I rushed towards him, drawing my revolver as I ran.*

*With bulging, rolling eyes, blanched face and ghastly, terror stricken features he was struggling, fighting madly, with a writhing, coiling gray object which I took for a gigantic snake.*



*Already his body and legs were bound and helpless in the coils. With his machete he was raining blows upon the quivering awful thing which slowly, menacingly wavered back and forth before him, striving to throw another coil about his body.*

*And then, as I drew near, my senses reeled, I felt that I was in some awful nightmare. The object, so surely, relentlessly, silently encircling and crushing him was no serpent but a huge liana drooping from the lofty branches of a great tree!*

*It seemed absolutely incredible, impossible, unbelievable. But even as I gazed, transfixed with horror, paralyzed by the sight, the vine threw its last coil about the dying man and before my eyes drew the quivering body into the trees above. Then something touched my leg. With a wild yell of terror I leaped aside. A second vine was writhing and twisting over the ground towards me!*

*Crazed with unspeakable fear I struck at the thing with my machete. At the blow the vine drew sharply back while from the gash a thick, yellowish, stinking juice oozed forth. Turning, I started to rush from the accursed spot but as I passed the first tree another liana writhed forward in my path.*

*Utterly bereft of my senses, slashing madly as I ran, yelling like a madman, I dodged from tree to tree, seeking the open spaces, evading by a hair's breadth the fearful, menacing, serpent-like vines, until half-crazy, torn, panting and utterly spent I dashed forth into a clear grassy space.*

Out there it was every man for himself and the Devil takes the hindmost. But the hero wasn't free yet: *Ponderously, slowly, but steadily the trees were gliding noiselessly up the slope! Their great gnarled roots were creeping and undulating over the ground while the pendant vines writhed and swayed and darted forth in all directions as if feeling their way.*

*And then I saw what had before escaped me. The things were not lianas as I had thought. They were parts of the trees themselves, huge, lithe, flexible tentacles springing from a thick, fleshy livid hued crown of branches armed with stupendous thorns and which slowly opened and closed like hungry jaws above the huge trunks.*

Not to worry, as with a single bound he was free. When the crater was flooded, the waters also submerged the trees.

ADVENTURES BY MORSE was an action-adventure radio series that aired in the 1944-45 season, written by Carlton E. Morse. One of its serial stories was the 10-part "Land Of The Living Dead". Episode 4, which aired on 1944-10-28, was subtitled "The Tree That Eats Flesh".

The setting was Chile, which does not have jungles, but that didn't stop the hero Capt. Bart Friday and Prof. Julian English from finding one. They were guided by Carlos, a shifty native who tried to betray them to the evil priests of the jungle. He got his though, when he tripped into a patch of vegetation which proved to be a man-eater tree.

Typically such trees wrapped tentacles around the victims and strangled them. In this case, Friday specifically described the tree as swallowing the unfortunate Carlos. The visual image that comes to mind is the trunk opening up vertically and sucking in the poor man.

### **The Mad Scientist's Guide To Botany.**

"Dynasty Of The Small" by John Russell Fearn (1936 November, ASTOUNDING, available as a free pdf from [www.archive.org](http://www.archive.org)) began with not-entirely-mad scientist Dr Haddon Blair developing a cure for protoplasmic diseases. An airplane carrying a sample crashed into the sea.

Two years later, oceanic algae began disappearing. Then land plants developed gigantism. Wheat the height of a house, trees the size of skyscrapers, and bacteria the size of shrubbery. All very upsetting.

The planet was devastated as the giant plants and bacteria sucked all the water and nutrients out of the ground. Their population eventually crashed and all was well. Too much hand-waving both up the slope and back down.

"Niedbalski's Mutant" by Spencer Lane (1938 May, ASTOUNDING) was narrated by a laboratory plant that had developed consciousness and inadvertently gave itself away by communicating to the resident mad scientist.

The plant was developed using a superscience machine to convert a violet into a tall plant the size of an adult human. Niedbalski was frustrated that it hadn't flowered yet, but as the plant explained, it was too slow growing to reach that point just yet.



When the plant began talking to Niedbalski, he panicked and ran, never to be seen again. Not much of a mad scientist if he let a little thing like that bother him. Eventually someone else came along and moved the plant into a greenhouse. The plant, however, had learned its lesson and kept quiet.

Alas, when it bloomed, there were no other violas to pollinate the flower. The plant grew old in the greenhouse without progeny, and resigned itself to be the last and only one of its kind. As a professional horticulturist, what surprised me was that no one thought to take cuttings, which would be vegetative clones.



"It talks!" he shrieked. "I'm mad—mad—I!"

**The Good Doctor.**

I spotted this while browsing the multitude of science fiction magazines available at [www.archive.org](http://www.archive.org). This came from the 1957 December issue of WORLDS OF IF.

# hue AND cry

I just read Dave E. Fisher's amusing story entitled THE BIRDS AND THE BEES in a recent issue of IF and—see here, I'm tired of that stupid phrase, "the birds and the bees" which is supposed to represent "the facts of life" or the beginnings of the sex instruction of the young. There was a picture of the same title recently starring George Gobel and there are constant references to the birds and bees on TV and in print.

Well for heaven's sake, has anyone ever tried to explain sex by talking about the *birds* and the *bees*? What have the *birds* and the *bees* to do with it?

IT'S THE BEES AND THE FLOWERS. Will you get that through your head? IT'S THE BEES AND THE FLOWERS.

The bee travels to one flower and picks up pollen from the stamens. The pollen contains the male sex

cells of the plant. The bee then travels to another flower (of the same species) and the pollen brushes off onto the pistil, which contains the female sex cells of the plant. The pollen particle sends a process down the length of the pistil and eventually the male sex cell and the female sex cell unite to form a fertilized cell which develops into a seed and, eventually, into a new plant (of the same species).

Now in the human being the male cells must also be brought into contact with the female sex cell, but we don't rely on bees to do it for us. However, I will leave out the gory details, even though the poor simps who think the *birds* and the *bees* have something to do with it need the instruction badly.

And what's this about "Y's" article on guided missiles? For years now, the United States has been calling for international inspection on armaments and the Soviet Union has been refusing. Do you mean that the Soviet Union has been right all along and that we have been foolish or hypocritical or both? Good heavens, I find this unsettling.

—Isaac Asimov  
Boston, Mass.

*Neither fools nor hypocrites Isaac. "Y" points out that it's so darned easy to hide them and change them from peaceful to warlike purposes, that ostensibly we'd not have any proof that all armaments were being inspected, nor that the peaceful ones we were allowed to see wouldn't be turned against us.*



**Space Plants.**

Hydroponics and soil-grown plants will be a necessity on all long-voyage spacecraft, to purify the air and provide fresh food. There will be problems though.

“Growing Season” by F.L. Wallace (1959 July, WORLDS OF IF, available as a free pdf from [www.archive.org](http://www.archive.org)) was a different type of horticultural fiction. Every starship carried a plant cyborg to purify the air and provide fresh food. I don’t recall previous use of the concept of a cyborg made from a plant, basically extreme hydroponics.

Richel Alsint tended one such plant on a starship. Someone was trying to kill him and sabotage the plant. Clues piled up impossibly until the denouement revealed the entire crew didn’t like him. He was very, very annoying, wouldn’t take any hints, and the ship’s company hoped to replace him with a nicer behaved horticulturist.

**THE OTHER INVISIBLE MEN: PART 7**

by Dale Speirs

[Parts 1 to 6 appeared in OPUNTIA’s #262, 360, 379, 449, 473, and 498.]

“Spectral Adventurers” by Herbert C. McKay (1937 December, ASTOUNDING, available as a free pdf from [www.archive.org](http://www.archive.org)) was, as admitted in the blurb, a speculative science article about making things invisible yet still being able to see others.

This was mostly a lecture about the physics of light. The reader was kept in mystery about the actual method until the end of the story. Basically a giant infodump with a few paragraphs of science fiction tacked on the end. To cut to the meat of the story, here is the explanation by the narrator.

*I have devised a material which, in a vague way, is similar to the polarizing sheets now in common use. You might call my N-ray screen a hybrid of the polarizing screen and the X-ray fluorescent screen.*

*It passes light rays without distortion, being practically colorless and transparent; yet when objects are illuminated by ultra-violet light and viewed through this screen they become visible. The visibility is of the nature of fluorescence. The colors are extremely metallic in character, but there is a chromatic range which rivals that to which we are accustomed.*

*Such a screen hangs near the foot of my bed and ultra-violet lights play upon the room all night. When my robber friend visited me I could see him plainly, although the room was what you would call pitch dark.*

*Special fluorescent sights on my gun made aiming easy. I could have potted him in the dark. And that, gentlemen, may give you a hint as to why foreign governments are eager to know what I have done with that very familiar laboratory phenomenon: fluorescence.*

*You will understand it even more clearly when I tell you that we have almost perfected a high-powered unit in which battleships or airplanes may drop a vapor screen which hides our own forces from the enemy and at the same time provides a screen to make visible the ultra-violet radiation poured out by huge generators suspended by dirigibles over the enemy lines.*

*The cloak of invisibility has come to us. At present it is awkward and crude, but it is my hope to so refine it that within the next five years I may walk right into this room in the full glare of the lights and none of you can see me.*

*That is not a dream ; it is a possibility, a logical development in the light of what we now know. In fact, our scientists in 1937 have command of the fundamental facts which should have enabled them to do this.*

“Invisible One” by Neil R. Jones (1940 September, SUPER SCIENCE STORIES, available as a free pdf from [www.archive.org](http://www.archive.org)) was set in the 26<sup>th</sup> century when Earth was ruled by a coalition of space pirates and aliens. Ollon Presby’s wife Moira was kidnapped by pirates and he was prepared to go to any length to get her back.

That meant making a deal with aliens who had a process for turning humans invisible. The catch was that the operation could not be reversed and Ollon would be forever invisible. He went ahead with the deal and rescued Moira, who promised to be true no matter what he looked like or rather didn’t look like.



THE AVENGERS is a title which once meant a British television series that spanned the 1960s. Debonair MI-5 agent John Steed dealt with bizarre crimes and science fictional cases, assisted by beautiful women who were not screamers but agents who could disable opponents with judo. The most famous was Emma Peel.

“The See-Through Man” aired on 1967-02-04, written by Philip Levene. Someone had annoyed the Ministry of Defence by stealing files from the Special Section (Inventions).

Specifically, the files being stolen were an invisibility formula sent in by Ernest Quilby. No one believed his proposal, so the documents were filed and forgotten. But not, it seemed, by the Soviet embassy.

The opening scenes of the episode showed doors opening and closing by themselves, file cabinets sliding open without human agency, and a man killed by an invisible intruder.

A second intrusion elsewhere injured an agent as files were stolen. Obviously all the records on Quilby’s invisibility formula were being taken to prevent the British from developing their own invisible spies.

Steed and Peel were assigned the case. Quilby, like any good mad scientist, had his own laboratory in the dungeon of a manor house. Lots of distillation flasks with coloured fluids bubbling in them for no apparent reason. Quilby was a naive and comical fool, helped along in his laboratory by his assistant Ackroyd.

Over at the Soviet embassy, it became apparent that the ambassador’s wife Elena Brodny was the head schemer. She was working a scam to siphon millions from both governments for the invisibility formula, using trickery to make it look as if Quilby had actually succeeded. Ackroyd was in on the deal for a substantial commission. Instead he got an early funeral.

Steed and Peel, in between discovering dead bodies, eventually exposed the operation. Inside the embassy, the invisibility was done with hidden ropes, magnets, and other impedimenta to convince the Soviet officials that the process was real. What was never explained was how Elena set up the tricks inside the high-security Ministry operations. No matter, it was all a fraud.

## THE MAN FROM MONTENEGRO: PART 24

by Dale Speirs

[Parts 1 to 23 appeared in OPUNTIA’s #252, 253, 275, 278, 279, 289, 304, 307, 319, 332, 335, 337, 344, 355, 364, 365, 382, 415, 445, 473, 479, 503, and 513.]

The private detective Nero Wolfe was created by Rex Stout. There was a long-running successful series of novels and short stories from 1934 until Stout’s death in 1975. The original stories are referred to as the corpus, while stories by other authors are pastiches.

Nero Wolfe was a morbidly obese middle-aged man who had been a dashing young buck in his birthplace of Montenegro. The Balkan Wars, which were the prelude to World War One, had sent him adrift across Europe in the service of the Serbian army. After the war he made a fortune in unexplained dealings and emigrated to New York City in 1930.

Becoming a private investigator, he engaged Archie Goodwin as his legman. Wolfe seldom left his brownstone in Manhattan, which had a rooftop greenhouse filled with orchids. His experiences in the Balkan wars turned him into an agoraphobe. He disliked leaving the house and especially being in an automobile.

Wolfe had a gourmet cook named Fritz Brenner, who along with Goodwin lived in the house. His office was on the ground floor, where many a J’accuse! meeting was held. His nemesis was NYPD Homicide Inspector Cramer, the equivalent of Inspector Lestrade.

### Pastiches: Old-Time Radio.

Nero Wolfe was adapted for radio in three different series between 1943 and 1951. Stout got royalty cheques but farmed out the scripts to other writers.

Two of the series are only known from a single preserved episode each, but the third series survived as a complete run. It featured Sydney Greenstreet, who was considered to be the best at portraying Wolfe. He had a distinctive voice, which made a difference on radio.

“The Case Of The Careworn Cuff” was written by J. Donald Wilson and aired on 1950-10-27. The client was Charles Porter, who paid Wolfe \$1,000 in cash



to drop the Dorothy Spencer case. Since Wolfe never heard of her, he was happy to take the money.

Porter admitted there was blackmail involved but refused to say more. He said he was a musician currently appearing at the Windsor Hotel. After he departed, Wolfe noted that his right coat cuff was worn more than the other. Archie Goodwin commented that the man had noticeable perfume scent on his clothes.

Wolfe also used a music term that Porter misunderstood as no real pianist would. Porter lied; he was an office worker. After he departed, Goodwin telephoned the Windsor Hotel and learned that Charles Porter appeared nightly in the Moon Room.

The conclusion was that the man who paid them off was an imposter. Goodwin looked up Charles Porter in the telephone directory and called the number. Sgt. Purley Stebbins of NYPD Homicide answered. Porter was no more, having stopped several bullets with his face. He was not the man who had visited Wolfe but was the genuine, if defunct, Porter.

When Goodwin visited the scene of the crime, Spencer was there. She had been discreetly searching for something, which the police didn't notice but Goodwin did. He invited her to drop by the brownstone.

Once there, she said she was engaged to Porter. Wolfe didn't believe her because a pianist could not possibly afford the ring she was wearing. She finally admitted she was blackmailed by him into marriage.

The doorbell rang. Wolfe had Spencer hustled into hiding before Goodwin answered. Inspector Cramer was on the threshold but had no search warrant and was therefore rebuffed. The fake Porter then arrived, letting himself in through a back window.

The doorbell rang, again. The man hastily departed out the back, as Cramer came in the front with a search warrant. Goodwin had since removed Spencer, so the police found nothing.

Wolfe sent Goodwin out to buy one of every scented soap he could find. The two men sniffed through 37 kinds before identifying Fake Porter's scent. The brand was Orchid Oval, which annoyed Wolfe because orchids do not emit scent.

That identified where Fake Porter worked, since his clothes reeked of the stuff. Goodwin visited the factory. He learned from a chatterbox secretary that Willy Wheeler, as Fake Porter was, owed money hither and yon despite his income as office manager. He had booked off sick that morning.

Wolfe sent Goodwin to retrieve Spencer. Her apartment was a busy place. Wheeler was there waving a gun. He had killed Porter and was now trying to clean up the leftover details, such as the blackmail evidence. Shots were fired but Stebbins arrived in the proverbial nick of time.

In the denouement, Wolfe tied off the loose threads. Wheeler had offered the \$1,000 as a subtle way of directing Wolfe's attention to Spencer in preparation for the murder of Porter. Spencer would have become the prime suspect had Wheeler's plan worked.

"The Case Of The Dear Dead Lady" was written by Peter Barry and aired on 1950-11-03. Most episodes opened with Archie Goodwin answering the telephone but this one began with Nero Wolfe ordering an assortment of gourmet items from a local shopkeeper.

Unfortunately the great detective was running out of credit, and owed \$500 for past delicacies. This necessitated him to work for a living and take on a case. The client was Theodore Oilphant, head of the Seekers of the Inner Power. The retainer was \$7,000.

His problem was his love for a young woman named Ilsa Dana, a Park Avenue socialite. He had a competitor named Jack Hunter, a professional boxer, and wanted the man investigated.

Dana got wind of Oilphant's activities. She telephoned Wolfe to disavow any interest in Oilphant. She asked for a meeting, so Goodwin was sent over to her apartment. He never got to speak with her. He and the elevator operator found her dead body on the floor. She had bloody fingernails, indicating she had clawed her attacker.

The next day the brownstone had a caller Barstow Young, an actor. He also had intentions upon Dana and was unaware of her demise. He said Oilphant had threatened Dana and wanted Wolfe to forestall trouble. Too late, he was informed.



Hunter then got his first lines, after interrogation by the police. He resented Goodwin having named him, and came over to the brownstone to remonstrate. Hunter accused Young. Dana had refused to finance his latest Shakespeare performance. Hunter said Dana couldn't have married anyone but refused to say why.

The steady stream of visitors continued. Next in the door was the elevator operator. He had been snooping in Dana's apartment after the police had left and found a postcard they overlooked. The message read "*Have you prayed tonight?* [signed] *O*".

Wolfe sent Goodwin over to the apartment for a thorough going over. He found a pawn ticket and redeemed it for a locked steel box. Back at the office, he and Wolfe pried the box open and found a marriage certificate dated 1946. The names were Ilsa Dana and Johan Jaeger.

That prompted a J'accuse! meeting of all the suspects. Wolfe began by disposing of the postcard, a forgery by Young. "*Have you prayed tonight?*" was a line from Shakespeare, spoken by Othello just before he murdered Desdemona.

Wolfe suddenly began speaking in German to Hunter, who was caught off guard and started to answer in German before catching himself. The name Jaeger translates into English as Hunter. The rest was details.

**Pastiches: Short Stories.**

SHERLOCK HOLMES MYSTERY MAGAZINE #24 was published in 2018. It is available from [www.wildsidepress.com](http://www.wildsidepress.com) or from Amazon print-on-demand.

"Nero Wolfe, Pro Bono" by Marvin Kaye was about a murder charge against Inspector Cramer. The deceased was a prisoner he had been interrogating and ballistics proved the bullet came from Cramer's gun.

There were several suspects but as so often in detective fiction, the culprit was exposed by knowledge kept hidden from the reader. Nero Wolfe did question three people in his brownstone, demonstrating that all of them had motives.

Further, Wolfe was allowed to interrogate a witness in court a la Perry Mason. The culprit confessed, standing up in the witness box and sobbing the standard

"Yes! I did it! And I'd gladly do it again!". If you thought the Perry Mason stories were believable, then you'll like this one.

**Pastiches: Blogs.**

FOUR FOR QUARANTINE by Bob Byrne was a free daily blog at [www.blackgate.com](http://www.blackgate.com) which chronicles the tribulations of Nero Wolfe and Archie Goodwin as they dealt with COVID-19. Since Wolfe seldom left the brownstone, the lockdown wasn't much change for him, but Goodwin was irked.

Byrne covered a day or a few at a time in each installment. The first chapter began 2020-04-06 as the lockdown started in New York City. Wolfe, Goodwin, Fritz Brenner the cook, and Theodore Horstmann the gardener were the four occupants of the brownstone.

The opening sentence was a good one from Goodwin (pardon the pun): "*I've decided to daily update my notebook with thoughts on Stay at Home. We'll see which happens first: life returns to normal, or I kill Nero Wolfe in his office.*"

The problem was lack of income. Wolfe couldn't solve cases, assuming there were clients, because Goodwin couldn't do the legwork visiting people and places around town.

Goodwin was also separated from his girlfriend Lily Rowan. She was a wealthy heiress who could work from home at her terrace penthouse. Fritz the cook could visit grocery stores and the brownstone larder was well stocked against contingencies. Presumably they had sufficient toilet paper and missed that panic.

The days went by and the trivial annoyances piled up. You, dear reader, remember the lockdown where you lived, unless of course you're reading this a century hence.

For those born long after the pandemic was over, and who never heard the stories from parents or grandparents, consider this. Imagine a wet rainy Sunday, with nothing worth watching on television (or whatever you watch a century into the future). Now imagine 90 consecutive Sundays like that. Welcome to the pandemic lockdown.



Goodwin was a baseball fan but none of the sports leagues were functioning. He and Wolfe had some philosophical discussions, such as the lack of leadership in the initial stages of the pandemic.

There were other matters. Skip over the mask controversy, but while income was zero, expenses continued. The four residents couldn't get away from each other, and had to work hard to keep tensions in check.

Wolfe had a long-time interest in a gourmet restaurant called Rusterman's. It was trying to survive on delivery and take-out, not an easy task for a dine-in restaurant catering to high-end customers. He and the staff had to devote much thought to financial survival.

Inspector Cramer called, about an elderly man who died in a nursing home. No, not the virus, but murdered by a fellow patient who held a grudge. He thought cutting off the victim's oxygen supply for a few hours would be the perfect crime. Alas, nurses notice such things.

Goodwin and his pals played poker weekly before the pandemic. They tried it out on Zoom, which didn't quite work.

Other cases came through. A man was murdered on the front steps of the brownstone, and not for the first time either. Considering the number of murders outside or inside Wolfe's house, I have to wonder about his neighbours. They must be awfully fed up with the frequent police cordons and paramedics hauling away corpses.

A modern crime was theft and racketeering of medical PPE such as masks and disposable gloves. 100,000 N95 masks went missing from a hospital, so that wasn't just an employee pilfering a box for the family at home.

Another detective agency hired Goodwin as a freelancer to investigate the theft. The two cases turned out to be related. The thief was a hospital administrator. The dead man worked on the staff and came over to hire Wolfe to investigate the mask theft. The thief followed him and silenced him on the doorstep.

Wolfe had more serious problems. The pandemic was shutting down slaughterhouses and food wholesalers, which in turn meant shortages of gourmet items. He might have to eat ordinary food, shudder.

## The Corpus.

Before the mp3 era began, I found some Nero Wolfe cassettes in bookstores, all produced by Durkin Hayes Publishing. Some were full-cast productions aired in 1981 and 1982 on Canadian Broadcasting Corporation Radio 1. Others were audio books read by David Elias, produced in 1998. These were all adapted from the corpus and fairly close to the original stories.





**CURRENT EVENTS: PART 35**  
by Dale Speirs

[Parts 1 to 34 appeared in OPUNTIA's #474, 475, 479, 480, 483, 484, 488 to 503, and 507 to 518.]

**The Footprints Of COVID-19.**

Below: The Calgary Philatelic Society resumed live meetings on February 16 at the Kerby Centre downtown, subject to masks and other protocols.

These stickers were in the hallway outside the meeting room. A good way to make people read the bulletin boards, but I think the person putting them down didn't fully understand the concept.

At right: Outside a Kentucky Fried Chicken outlet in the Westhills district.





**Seen In The COVID-19 Literature.**

As of February 16, there were 3,213,187 cases of COVID-19 reported in Canada, which has a population of 38,000,000. That count has been low for several months because the provinces have stopped counting non-hospitalization cases. 35,788 Canadians have died, and 79.8% have been vaccinated.

Hale, V.L., et al (2022) **SARS-CoV-2 infection in free-ranging white-tailed deer**. NATURE 602:doi.org/10.1038/s41586-021-04353-x (available as a free pdf)

Authors’ abstract: *Humans have infected a wide range of animals with SARS-CoV-2, but the establishment of a new natural animal reservoir has not been observed.*

*Here we document that free-ranging white-tailed deer (Odocoileus virginianus) are highly susceptible to infection with SARS-CoV-2, are exposed to multiple SARS-CoV-2 variants from humans, and are capable of sustaining transmission in nature.*

*Using real-time PCR with reverse transcription, we detected SARS-CoV-2 in more than one-third (129 out of 360, 35.8%) of nasal swabs obtained from O. virginianus in northeast Ohio in the USA during January to March 2021. Deer in six locations were infected with three SARS-CoV-2 lineages (B.1.2, B.1.582 and B.1.596).*

*The B.1.2 viruses, dominant in humans in Ohio at the time, infected deer in four locations. We detected probable deer-to-deer transmission of B.1.2, B.1.582 and B.1.596 viruses, enabling the virus to acquire amino acid substitutions in the spike protein (including the receptor-binding domain) and ORF1 that are observed infrequently in humans.*

*No spillback to humans was observed, but these findings demonstrate that SARS-CoV-2 viruses have been transmitted in wildlife in the USA, potentially opening new pathways for evolution. There is an urgent need to establish comprehensive ‘One Health’ programmes to monitor the environment, deer and other wildlife hosts globally.*

*As of 9 November 2021, SARS-CoV-2, the virus responsible for coronavirus disease 2019 (COVID-19), has caused more than 5 million deaths globally. The*

*zoonotic origins of SARS-CoV-2 are not fully resolved, exposing large gaps in our knowledge of susceptible host species and potential new reservoirs.*

*Natural infections of SARS-CoV-2 linked to human exposure have been reported in domestic animals such as cats, dogs and ferrets, and in wildlife under human care, including several species of big cats, Asian small-clawed otters, western lowland gorillas and mink.*

*Detection of SARS-CoV-2 by PCR in free-ranging wildlife has been limited to small numbers of mink in Spain and in Utah in the USA, which were thought to have escaped from nearby farms. An in silico study modelling SARS-CoV-2 binding sites on the angiotensin-converting enzyme 2 (ACE2) receptor across host species predicted that cetaceans, rodents, primates and several species of deer are at high risk of infection.*

*Experimental infections have identified additional animal species susceptible to SARS-CoV-2, including hamsters, North American raccoons, striped skunks, white-tailed deer, raccoon dogs, fruit bats, deer mice, domestic European rabbits, bushy-tailed woodrats, tree shrews and multiple non-human primate species.*

*Moreover, several species are capable of intraspecies SARS-CoV-2 transmission, including cats, ferrets, fruit bats, hamsters, raccoon dogs, deer mice and white-tailed deer. Vertical transmission has also been documented in experimentally infected white-tailed deer.*

*In July 2021, antibodies for SARS-CoV-2 were reported in 152 free-ranging white-tailed deer (seroprevalence 40%) sampled across Michigan, Pennsylvania, Illinois, and New York in the USA<sup>24</sup>, raising the possibility that SARS-CoV-2 has infected deer in the Midwest and northeast regions.*

Ssentongo, P., et al (2022) **Gun violence incidence during the COVID-19 pandemic is higher than before the pandemic in the United States**. SCIENTIFIC REPORTS 11:doi.org/10.1038/s41598-021-98813-z (available as a free pdf)

Authors’ abstract: *During the coronavirus disease 2019 (COVID-19) pandemic, gun violence (GV) in the United States was postulated to increase strain on already taxed healthcare resources, such as blood products, intensive*



care beds, personal protective equipment, and even hospital staff. This report aims to estimate the relative risk of GV in the U.S. during the pandemic compared to before the pandemic.

Daily police reports corresponding to gun-related injuries and deaths in the 50 states and the District of Columbia from February 1st, 2019, to March 31st, 2021 were obtained from the GV Archive. Generalized linear mixed-effects models in the form of Poisson regression analysis were utilized to estimate the state-specific rates of GV.

Nationally, GV rates were 30% higher between March 01, 2020, and March 31, 2021 (during the pandemic), compared to the same period in 2019 (before the pandemic). The risk of GV was significantly higher in 28 states and significantly lower in only one state.

National and state-specific rates of GV were higher during the COVID-19 pandemic compared to the same time frame 1 year prior. State specific steps to mitigate violence, or at a minimum adequately prepare for its toll during the COVID-19 pandemic, should be taken.

Milkman, K.L., et al (2022) **A 680,000-person megastudy of nudges to encourage vaccination in pharmacies.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 119:doi.org/10.1073/pnas.2115126119 (available as a free pdf)

Authors’ abstract: *Encouraging vaccination is a pressing policy problem. Our megastudy with 689,693 Walmart pharmacy customers demonstrates that text-based reminders can encourage pharmacy vaccination and establishes what kinds of messages work best.*

*We tested 22 different text reminders using a variety of different behavioral science principles to nudge flu vaccination. Reminder texts increased vaccination rates by an average of 2.0 percentage points (6.8%) over a business-as-usual control condition.*

*The most-effective messages reminded patients that a flu shot was waiting for them and delivered reminders on multiple days. The top-performing intervention included two texts 3 days apart and stated that a vaccine was “waiting for you”.*

*Forecasters failed to anticipate that this would be the best-performing treatment, underscoring the value of testing.*

Yu, Y., et al (2022) **mRNA vaccine-induced antibodies more effective than natural immunity in neutralizing SARS-CoV-2 and its high affinity variants.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-06629-2 (available as a free pdf)

Authors’ abstract: *Several variants of SARS-CoV-2 have emerged. Those with mutations in the angiotensin-converting enzyme (ACE2) receptor binding domain (RBD) are associated with increased transmission and severity.*

*In this study, we developed both antibody quantification and functional neutralization assays. Analyses of both COVID-19 convalescent and diagnostic cohorts strongly support the use of RBD antibody levels as an excellent surrogate to biochemical neutralization activities.*

*Data further revealed that the samples from mRNA vaccinated individuals had a median of 17 times higher RBD antibody levels and a similar degree of increased neutralization activities against RBD-ACE2 binding than those from natural infections.*

*Our data showed that N501Y RBD had fivefold higher ACE2 binding than the original variant. While some antisera from naturally infected subjects had substantially reduced neutralization ability against N501Y RBD, all blood samples from vaccinated individuals were highly effective in neutralizing it.*

*Thus, our data indicates that mRNA vaccination may generate more neutralizing RBD antibodies than natural immunity. It further suggests a potential need to maintain high RBD antibody levels to control the more infectious SARS-CoV-2 variants.*

Speirs: I have my three vaccinations, a Pfizer and two Moderna. I had to drill deep into this paper until I found a sentence that said the vaccinated test subjects had two doses of either Pfizer or Moderna. Note that well. As I have written before, the virus will eventually take care of the anti-vaxxers.



SEEN IN THE LITERATURE

Astronomy.

Miyawaki, R., et al (2022) **Star burst in W49N presumably induced by cloud-cloud collision.** PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 74:doi.org/10.1093/pasj/psab113 (available as a free pdf)

Authors’ abstract: *We present high-resolution observations of CS and SiO lines, together with the 49 GHz and 86 GHz continuum emissions, toward W49N carried out with the Nobeyama Millimeter Array. We identified 11 CS, eight H<sup>13</sup>CO+, and six SiO clumps with radii of 0.1–0.5 parsecs.*

*The CS and H<sup>13</sup>CO+ clumps are mainly divided into two velocity components, one at 4 km s<sup>-1</sup> and the other at 12 km s<sup>-1</sup>, while the SiO clumps have velocities between the two components. The SiO emission is distributed toward the ultracompact HII (UCHII) ring, where the 4 km s<sup>-1</sup> component clumps of CS and H<sup>13</sup>CO+ also exist. The 12 km s<sup>-1</sup> component clumps of CS are detected at the east and west of the UCHII ring with an apparent hole toward the ring.*

*The observed clumps are, if they are undergoing free-fall, capable of producing dozens of massive stars in the next 10<sup>5</sup> yr. We propose a view that two pre-existing clouds with radial velocities of 4 km s<sup>-1</sup> and 12 km s<sup>-1</sup> collided with each other almost face-on to produce the observed clumps with intermediate velocities and triggered the burst of massive star formation in W49 N.*

Planets.

Fukui, A., et al (2022) **TOI-2285b: A 1.7 Earth-radius planet near the habitable zone around a nearby M dwarf.** PUBLICATIONS OF THE ASTRONOMICAL SOCIETY OF JAPAN 74:doi.org/10.1093/pasj/psab106 (available as a free pdf)

Authors’ abstract: *We report the discovery of TOI-2285b, a sub-Neptune-sized planet transiting a nearby (42 pc) Mdwarf with a period of 27.3 d. We identified the transit signal from the Transiting Exoplanet Survey Satellite photometric data, which we confirmed with ground-based photometric observations using the multiband imagers MuSCAT2 and MuSCAT3.*

*Combining these data with other follow-up observations including high-resolution spectroscopy with the Tillinghast Reflector Echelle Spectrograph, high-resolution imaging with the SPeckle Polarimeter, and radial velocity (RV) measurements with the InfraRed Doppler instrument, we find that the planet has a radius of  $1.74 \pm 0.08 R_{\oplus}$ , a mass of  $<19.5 M_{\oplus}$  (95% c.l.), and an insolation flux of  $1.54 \pm 0.14$  times that of the Earth.*

*Although the planet resides just outside the habitable zone for a rocky planet, if the planet harbors an H<sub>2</sub>O layer under a hydrogen-rich atmosphere, then liquid water could exist on the surface of the H<sub>2</sub>O layer depending on the planetary mass and water mass fraction.*

*The bright host star in the near-infrared (K<sub>s</sub> = 9.0) makes this planet an excellent target for further RV and atmospheric observations to improve our understanding of the composition, formation, and habitability of sub-Neptune-sized planets.*

Origin Of Life.

Cohen, P.A., and R.B. Kodner (2022) **The earliest history of eukaryotic life: uncovering an evolutionary story through the integration of biological and geological data.** TRENDS IN ECOLOGY AND EVOLUTION 37:doi.org/10.1016/j.tree.2021.11.005

[Eukaryotes are cells with a nucleus that encloses its chromosomes inside a membrane. Prokaryotes are primitive cells with no nuclei. Aerobic cells use oxygen, as opposed to anaerobic cells which use other chemical reactions for energy but are less efficient.]

[The Proterozoic era was 2,500 to 1,000 megayears ago. Multicellular life did not develop until about 600 megayears ago.]

Authors’ abstract: *While there is significant data on eukaryogenesis and the early development of the eukaryotic lineage, major uncertainties regarding their origins and evolution remain, including questions of taxonomy, timing, and paleoecology.*

*Here we examine the origin and diversification of the eukaryotes in the Proterozoic Eon as viewed through fossils, organic biomarkers, molecular*

*clocks, phylogenies, and redox proxies. Our interpretation of the integration of these data suggest that eukaryotes were likely aerobic and established in Proterozoic ecosystems.*

Wang, C., et al (2022) **Strong evidence for a weakly oxygenated ocean-atmosphere system during the Proterozoic.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 119:doi.org/10.1073/pnas.2116101119

Authors’ abstract: *Earth’s transition from anoxic oceans and atmosphere to a well-oxygenated state led to major changes in nearly every surficial system. However, estimates of surface oxygen levels in the billion years preceding this shift span two orders of magnitude, suggesting a poor understanding of the evolution of the oxygen cycle.*

*We use the isotopic record of iron oxides deposited in ancient shallow marine environments to show that oxygen remained at extremely low levels in the ocean-atmosphere system for most of Earth’s history, and that a rise in oxygen occurred in step with the expansion of complex, eukaryotic ecosystems.*

*These results indicate that Earth is capable of stabilizing at low atmospheric oxygen levels, with important implications for exploration of exoplanet biosignatures.*

*Earth’s surface has undergone a protracted oxygenation, which is commonly assumed to have profoundly affected the biosphere. However, basic aspects of this history are still debated, foremost oxygen (O<sub>2</sub>) levels in the oceans and atmosphere during the billion years leading up to the rise of algae and animals.*

*Here we use isotope ratios of iron (Fe) in ironstones-Fe-rich sedimentary rocks deposited in nearshore marine settings as a proxy for O<sub>2</sub> levels in shallow seawater. We show that partial oxidation of dissolved Fe(II) was characteristic of Proterozoic shallow marine environments, whereas younger ironstones formed via complete oxidation of Fe(II).*

*Regardless of the Fe(II) source, partial Fe(II) oxidation requires low O<sub>2</sub> in the shallow oceans, settings crucial to eukaryotic evolution. Low O<sub>2</sub> in surface waters can be linked to markedly low atmospheric O<sub>2</sub>, likely requiring less than 1% of modern levels.*

*Based on our records, these conditions persisted (at least periodically) until a shift toward higher surface O<sub>2</sub> levels between ca. 900 and 750 megayears ago, coincident with an apparent rise in eukaryotic ecosystem complexity.*

*This supports the case that a first-order shift in surface O<sub>2</sub> levels during this interval may have selected for life modes adapted to more oxygenated habitats.*

**Palaeobiology.**

Kimmig, J., and B.R. Pratt (2022) **Evidence for microbially mediated silver enrichment in a middle Cambrian Burgess Shale-type deposit, Mackenzie Mountains, northwestern Canada.** CANADIAN JOURNAL OF EARTH SCIENCES 59:123-133

Authors’ abstract: *The Selwyn basin and Mackenzie platform of northwestern Canada house an array of mineral deposits and prospects that are rich in silver [Ag], including Neoproterozoic red-bed or Kupferschiefer-type Cu [copper] and lower Paleozoic sedimentary exhalative (SEDEX) and Zn-Pb [zinc-lead] deposits.*

*Within this overall metallogenic setting, the middle Cambrian (Drumian) Rockslide Formation was deposited under a largely oxic water column on the platform-to-basin slope along the eastern side of the Selwyn basin.*

*The formation includes an interval termed the Ravens Throat River Lagerstätte, which is a localized Burgess Shale-type calcareous mudstone about 2 metres thick that preserves soft-bodied fossils.*

*The mudstone contains comparatively large amounts of organic carbon preserved as thin carbonaceous laminae and discontinuous seams, representing benthic microbial mats, the remains of cyanobacteria and algae that were living in the water column, fecal pellets, large coprolites, and degraded animal tissues.*

*The upper part of the Rockslide Formation, including the fossiliferous interval, contains elevated concentrations of Ag, up to 0.47 ppm. Some of the Ag in the mudstone occurs as aggregates of elemental particles ~10 µm in size, preferentially on the carbonaceous material comprising the coprolites.*



*This localized enrichment suggests bioaccumulation of Ag nanoparticles or Ag+ from the water column by microorganisms on the coprolites or degrading organic matter in them. The source of the Ag may have been from penecontemporaneous SEDEX metallogeny or from broadly related subsurface fluids in the Selwyn Basin that enriched the overlying seawater.*

Pates, S., et al (2022) **New opabiniid diversifies the weirdest wonders of the euarthropod stem group.** PROCEEDINGS OF THE ROYAL SOCIETY OF LONDON 289B:doi.org/10.1098/rspb.2021.2093 (available as a free pdf)

Authors’ abstract: *Once considered ‘weird wonders’ of the Cambrian, the emblematic Burgess Shale animals Anomalocaris and Opabinia are now recognized as lower stem group euarthropods and have provided crucial data for constraining the polarity of key morphological characters in the group.*

*Anomalocaris and its relatives (radiodonts) had worldwide distribution and survived until at least the Devonian. However, despite intense study, Opabinia remains the only formally described opabiniid to date.*

*Here we reinterpret a fossil from the Wheeler Formation of Utah as a new opabiniid, Utaurora comosa nov. gen. et sp. Our phylogenetic evidence expands opabiniids to multiple Cambrian stages.*

[Image is from this paper.]



Lamsdell, J.C. (2022) **One name to rule them all: *Belinurus trilobitoides* (Buckland, 1837) is senior synonym to fourteen named species.** JOURNAL OF PALEONTOLOGY 96:doi.org/10.1017/jpa.2021.84 (available as a free pdf)

[Esoteric perhaps, but to anyone familiar with scientific taxonomy, this paper reads as humour.]

Author’s extracts: *One of the oldest fossil horseshoe crabs figured in the literature is Entomolithus lunatus Martin, 1809, a Carboniferous species included in his Petrificata Derbiensia.*

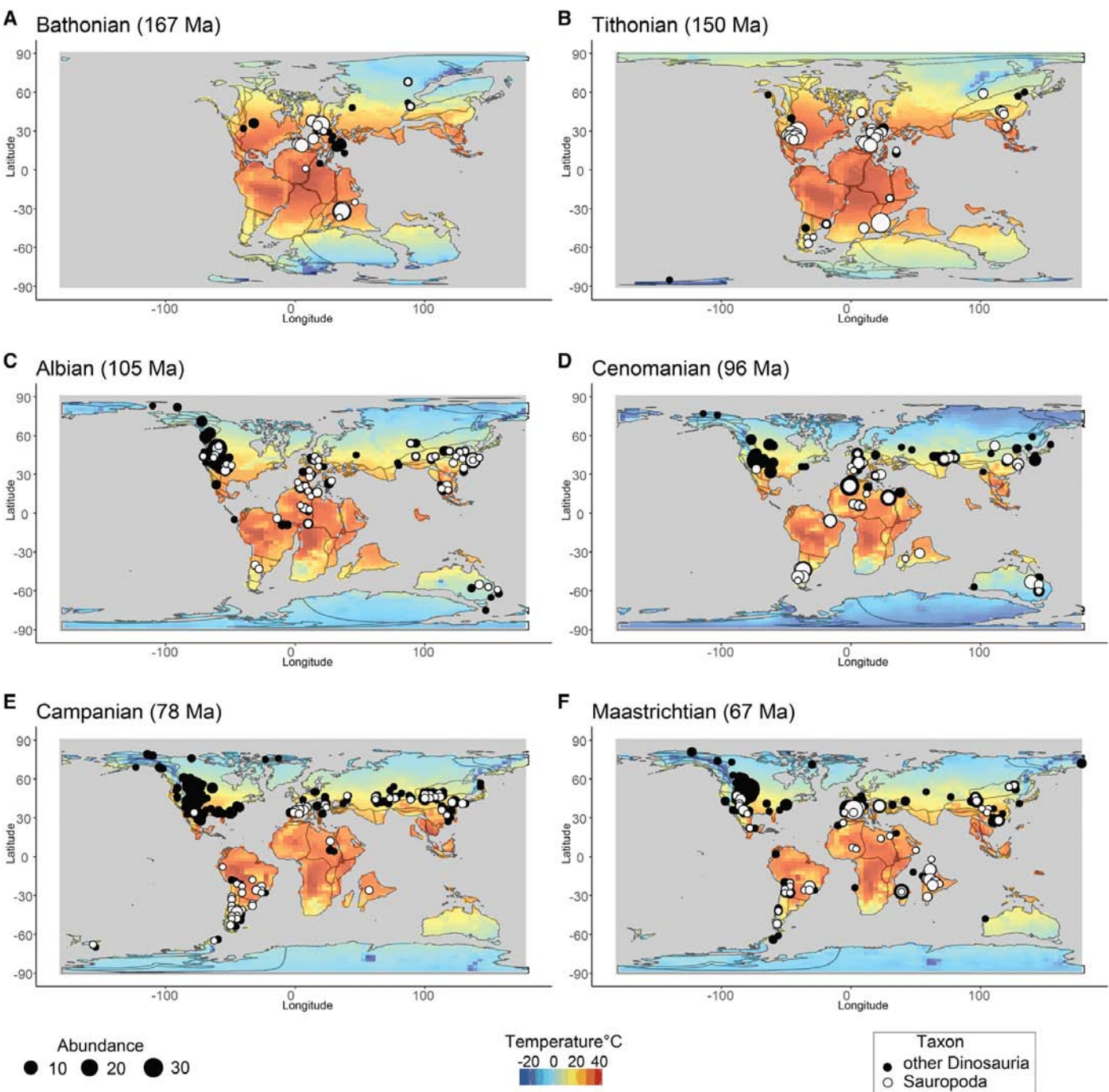
*However, recent investigation as to the appropriate authority for Belinurus revealed that all the names in Petrificata Derbiensia were suppressed in Opinion 231 of the International Commission on Zoological Nomenclature (1954) for being consistently nonbinomial under Article 11.4 of the International Code of Zoological Nomenclature (ICZN) (International Commission on Zoological Nomenclature, 1999).*

*Most of the 14 junior synonyms of B. trilobitoides were diagnosed on the basis of dubious morphological criteria that are now known to be the result of taphonomic or ontogenetic processes, a conclusion supported by recent increases in our understanding of horseshoe crab decay and development.*

Dinosaurs.

Chiarenza, A.A., et al (2022) **Climatic constraints on the biogeographic history of Mesozoic dinosaurs.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2021.11.061 (available as a free pdf)

Authors’ abstract: *Dinosaurs dominated Mesozoic terrestrial ecosystems globally. However, whereas a pole-to-pole geographic distribution characterized ornithischians and theropods, sauropods were restricted to lower latitudes.*



*Here, we evaluate the role of climate in shaping these biogeographic patterns through the Jurassic-Cretaceous (201 to 66 megayears ago), combining dinosaur fossil occurrences, past climate data from Earth System models, and habitat suitability modeling.*

*Results show that, uniquely among dinosaurs, sauropods occupied climatic niches characterized by high temperatures and strongly bounded by minimum cold temperatures.*

*This constrained the distribution and dispersal pathways of sauropods to tropical areas, excluding them from latitudinal extremes, especially in the Northern Hemisphere.*

*The greater availability of suitable habitat in the southern continents, particularly in the Late Cretaceous, might be key to explaining the high diversity of sauropods there, relative to northern landmasses.*

*Given that ornithischians and theropods show a flattened or bimodal latitudinal biodiversity gradient, with peaks at higher latitudes, the closer correspondence of sauropods to a subtropical concentration could hint at fundamental thermophysiological differences to the other two clades.*

[Tectonic maps are from this paper.]



Woodruff, D.C., et al (2022) **The first occurrence of an avian-style respiratory infection in a non-avian dinosaur.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-05761-3 (available as a free pdf)

Authors’ abstract: *Other than repaired fractures, osteoarthritis, and periosteal reaction, the vertebrate fossil record has limited evidence of non-osseous diseases.*

*This difficulty in paleontological diagnoses stems from (1) the inability to conduct medical testing, (2) soft-tissue pathologic structures are less likely to be preserved, and (3) many osseous lesions are not diagnostically specific.*

*However, here reported for the first time is an avian-style respiratory disorder in a non-avian dinosaur. This sauropod presents irregular bony pathologic structures stemming from the pneumatic features in the cervical vertebrae.*

*As sauropods show well-understood osteological correlates indicating that respiratory tissues were incorporated into the post-cranial skeleton, and thus likely had an ‘avian-style’ form of respiration, it is most parsimonious to identify these pathologic structures as stemming from a respiratory infection.*

*Although several extant avian infections produce comparable symptoms, the most parsimonious is airsacculitis with associated osteomyelitis. From actinobacterial to fungal in origin, airsacculitis is an extremely prevalent respiratory disorder in birds today.*

*While we cannot pinpoint the specific infectious agent that caused the airsacculitis, this diagnosis establishes the first fossil record of this disease. Additionally, it allows us increased insight into the medical disorders of dinosaurs from a phylogenetic perspective and understanding what maladies plagued the “fearfully great lizards”.*

Ma, W., et al (2022) **Macroevolutionary trends in theropod dinosaur feeding mechanics.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2021.11.060

[The mandible is the lower jaw and is movable. The maxilla is the upper jaw and is fused to the skull.]

Authors’ abstract: *Theropod dinosaurs underwent some of the most remarkable dietary changes in vertebrate evolutionary history, shifting from ancestral carnivory to hypercarnivory and omnivory/herbivory, with some taxa eventually reverting to carnivory.*

*The mandible is an important tool for food acquisition in vertebrates and reflects adaptations to feeding modes and diets.*

*The morphofunctional modifications accompanying the dietary changes in theropod dinosaurs are not well understood because most of the previous studies focused solely on the cranium and/or were phylogenetically limited in scope, while studies that include multiple clades are usually based on linear measurements and/or discrete osteological characters.*

*Given the potential relationship between macroevolutionary change and ontogenetic pattern, we explore whether functional morphological patterns observed in theropod mandibular evolution show similarities to the ontogenetic trajectory.*

*Here, we use finite element analysis to study the mandibles of non-avian coelurosaurian theropods and demonstrate how feeding mechanics vary between dietary groups and major clades.*

*We reveal an overall reduction in feeding-induced stresses along all theropod lineages through time. This is facilitated by a post-dentary expansion and the development of a downturned dentary in herbivores and an upturned dentary in carnivores likely via the curved bone effect.*

*We also observed the same reduction in feeding-induced stress in an ontogenetic series of jaws of the tyrannosaurids *Tarbosaurus* and *Tyrannosaurus*, which is best attributed to bone functional adaptation.*

*This suggests that this common tendency for structural strengthening of the theropod mandible through time, irrespective of diet, is linked to “functional peramorphosis” of bone functional adaptations acquired during ontogeny.*

**Zoology.**

Doran, C., et al (2022) **Fish waves as emergent collective antipredator behavior.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2021.11.068

Authors’ abstract: *Here we present a field study that investigated the anti-predator benefits of waves produced by fish at the water surface when diving down collectively in response to attacks of avian predators. Fish engaged in surface waves that were highly conspicuous, repetitive, and rhythmic involving many thousands of individuals for up to 2 minutes.*

*Experimentally induced fish waves doubled the time birds waited until their next attack, therefore substantially reducing attack frequency. In one avian predator, capture probability, too, decreased with wave number and birds switched perches in response to wave displays more often than in control treatments, suggesting that they directed their attacks elsewhere.*

*Taken together, these results support an anti-predator function of fish waves. The attack delay could be a result of a confusion effect or a consequence of waves acting as a perception advertisement, which requires further exploration.*

Mascaro, A., et al (2022) **Application of insects to wounds of self and others by chimpanzees in the wild.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2021.12.045. (available as a free pdf)

Authors’ abstract: *Over a period of 15 months (November 2019 to February 2021), we observed a total of 76 open wounds on 22 different chimpanzees. In 19 events, individuals applied an insect to one of their own wounds using the following behavioural sequence.*

*First, they caught an insect; second, they immobilised it by placing and/or squeezing the insect between their lips; third, they placed the insect to an exposed surface of the wound and moved the insect on the surface using their fingertips or lips; fourth, they extracted the insect from the wound with the mouth or their fingers.*

*Steps three and four are often repeated multiple times during each event. Though the insect species utilised have not yet been identified, there are several consistencies across all our observations.*

*They appear to be winged, flying insects, given the fast motion used to catch them; the insects are caught from under a leaf or branch; they are ~5 mm in size and usually dark in colour and there was no observation of insect ingestion.*

*In three other events, we observed different chimpanzees applying or moving an insect not to their own wound, but to the wound of another chimpanzee.*

**Botany.**

Gatti, R.C., et al (2022) **The number of tree species on Earth.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 119:doi.org/10.1073/pnas.2115329119 (available as a free pdf)

Authors’ abstract: *Here, based on global ground-sourced data, we estimate the total tree species richness at global, continental, and biome levels. Our results indicate that there are ~73,000 tree species globally, among which ~9,000 tree species are yet to be discovered.*

*Roughly 40% of undiscovered tree species are in South America. Moreover, almost one-third of all tree species to be discovered may be rare, with very low populations and limited spatial distribution (likely in remote tropical lowlands and mountains).*

*These findings highlight the vulnerability of global forest biodiversity to anthropogenic changes in land use and climate, which disproportionately threaten rare species and thus, global tree richness.*

Allaby, R.G., et al (2022) **Emerging evidence of plant domestication as a landscape-level process.** TRENDS IN ECOLOGY AND EVOLUTION 37:doi.org/10.1016/j.tree.2021.11.002 (available as a free pdf)

Authors’ abstract: *The emergence of crops has been viewed as a technologically progressive process in which single or multiple localized populations adapt to human environments in response to cultivation. By contrast, new genetic and archaeological evidence reveals a slow process that involved large populations over wide areas with unexpectedly sustained cultural connections in deep time.*

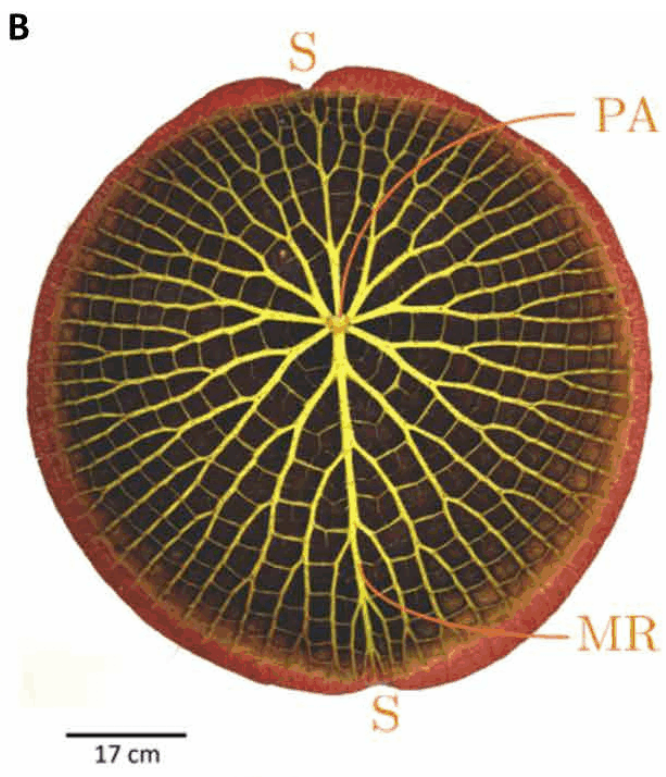
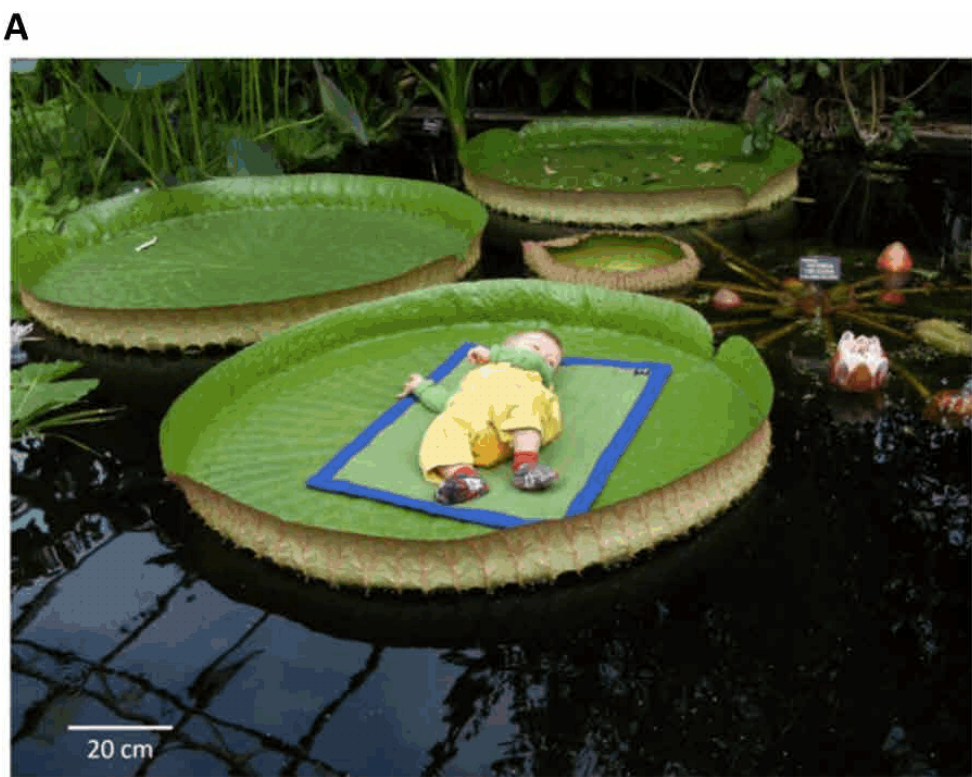


We review evidence that calls for a new landscape framework of crop origins. Evolutionary processes operate across vast distances of landscape and time, and the origins of domesticates are complex. The domestication bottleneck is a redundant concept and the progressive nature of domestication is in doubt.

We present a framework in which the process of domestication evolved as a landscape-level process involving large populations connected through sustained long-term human contact over large distances from which domesticate forms emerged in a complex manner as an adaptive reaction to long-term exploitation that did not necessarily provide immediate benefits.

Box, F., et al (2022) **Gigantic floating leaves occupy a large surface area at an economical material cost.** SCIENCE ADVANCES 8:doi.org/10.1126/sciadv.abg3790 (available as a free pdf)

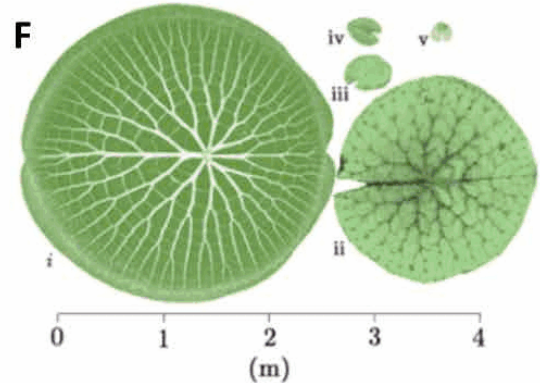
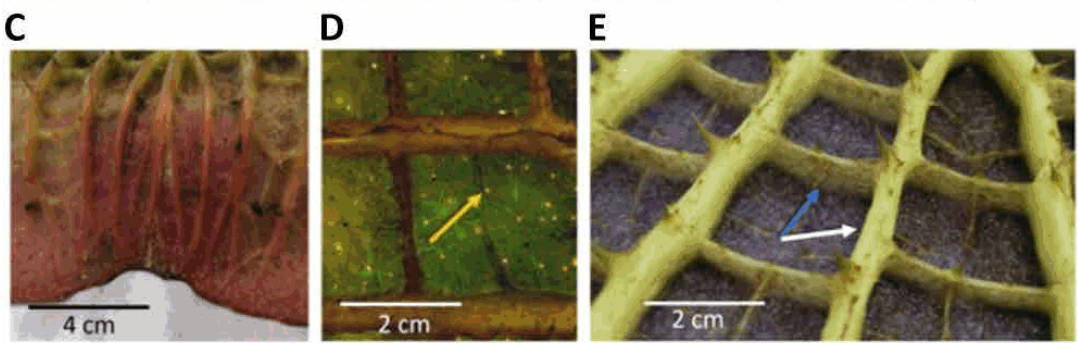
Authors' abstract: *The giant Amazonian waterlily (genus Victoria) produces the largest floating leaves in the plant kingdom. The leaves' notable vasculature has inspired artists, engineers, and architects for centuries. Despite the aesthetic appeal and scale of this botanical enigma, little is known about the mechanics of these extraordinary leaves. For example, how do these leaves achieve gigantic proportions?*



We show that the geometric form of the leaf is structurally more efficient than those of other smaller species of waterlily.

In particular, the spatially varying thickness and regular branching of the primary veins ensures the structural integrity necessary for extensive coverage of the water surface, enabling optimal light capture despite a relatively low leaf biomass.

Leaf gigantism in waterlilies may have been driven by selection pressures favoring a large surface area at an economical material cost, for outcompeting other plants in fast-drying ephemeral pools.



[Images are from this paper.]



Serpell, E., and J. Chaves-Campos (2022) **Memory and habituation to harmful and non-harmful stimuli in a field population of the sensitive plant, *Mimosa pudica*.** JOURNAL OF TROPICAL ECOLOGY 38:doi.org/10.1017/S0266467421000559

Authors’ abstract: *Mimosa pudica* is a Neotropical legume that closes its leaves rapidly in response to touch stimulation, hypothetically as herbivory defence. Habituation to non-harmful stimuli and long-term memory of past events have been demonstrated in this species, the former with relatively heavy objects and the latter under laboratory conditions.

*This species should not habituate to harmful stimuli if leaf movement is a response to herbivore damage. We tested in Monteverde, Costa Rica, whether (1) memory occurs in wild plants, (2) whether habituation occurs under harmful stimuli: simulated herbivory, and (3) whether wild plants can habituate to light non-harmful stimuli.*

*The degree of closing of the leaflets and time until reopening was measured in response to repeated harmful and non-harmful stimuli. The results showed habituation to repeated non-harmful very light stimuli and showed lack of habituation to simulated leaf damage.*



*Wild plants also showed faster rehabilitation to repeated non-harmful stimuli when they had been exposed 15 days previously, suggesting possible long-term memory.*

*These results indicate that wild plants are capable of (1) distinguishing between harmful and non-harmful stimuli (only habituating to the latter), (2) memorizing previous events, and (3) habituating very light tactile stimuli commonly experienced in the field.*

[Image is from Wikipedia.]

Reeves, G., et al (2022) **Monocotyledonous plants graft at the embryonic root-shoot interface.** NATURE 602:280-286

[There are two types of flowering plants, the dicotyledons and the monocotyledons. Dicots have branched veins in broad leaves, while monocots have parallel veins in narrow leaves. The vascular system of dicots is in bundles of veins (phloem carrying sap and xylem carrying water) which form a ring inside the stem. Monocot veins are scattered throughout the stem in a semi-random pattern.]

[I have a BSc in Horticulture, and among other things studied grafting, which is widely used in dicots such as fruit trees and shrubs. Grafting requires that the cutting’s veins match up with the host plant’s veins, not a major problem in dicots where the rings can be lined up with each other. Because monocot veins are scattered at random, cuttings thereof cannot be grafted because it is impossible to match up the veins.]

[Monocots supply the human race with most of its food, particularly the grasses, which include corn, wheat, oats, barley, rye, bamboo, and rice. Pasture grasses are indirectly important for feeding livestock.]

Authors’ abstract: *Grafting is possible in both animals and plants. Although in animals the process requires surgery and is often associated with rejection of non-self, in plants grafting is widespread, and has been used since antiquity for crop improvement.*



*However, in the monocotyledons, which represent the second largest group of terrestrial plants and include many staple crops, the absence of vascular cambium is thought to preclude grafting. Here we show that the embryonic hypocotyl allows intra- and interspecific grafting in all three monocotyledon groups: the commelinids, lilioids and alismatids.*

*Fusion of susceptible wheat scions to oat rootstocks confers resistance to the soil-borne pathogen *Gaeumannomyces graminis*. Collectively, these data overturn the consensus that monocotyledons cannot form graft unions, and identify the hypocotyl (mesocotyl in grasses) as a meristematic tissue that allows this process. We conclude that graft compatibility is a shared ability among seed-bearing plants.*

**Ecology.**

Hui, A. (2021) **Listening to extinction: Early conservation radio sounds and the silences of species.** AMERICAN HISTORICAL REVIEW 126:doi.org/10.1093/ahr/rhab533

*Authors abstract: In the first decades of the twentieth century, American radio producers used both artificial and wild recorded sounds of nature to promote principles of environmental conservation and wildlife management. These techniques were shaped by established listening practices, especially those of birders, and also fostered new ones.*

*Specifically, conservation radio programs like those produced by the American Wildlife Institute and the Cornell Lab of Ornithology, made it possible for listeners to experience silence in a new way; as indicative of absence, potentially even extinction, both locally and globally.*

Lynggaard, C., et al (2022) **Airborne environmental DNA for terrestrial vertebrate community monitoring.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2021.12.014 (available as a free pdf)

*Authors’ abstract: Terrestrial vertebrate monitoring using existing methods is generally costly and laborious, and although environmental DNA (eDNA) is becoming the tool of choice to assess biodiversity, few sample types effectively capture terrestrial vertebrate diversity.*

*We hypothesized that eDNA captured from air could allow straightforward collection and characterization of terrestrial vertebrate communities. We filtered air at three localities in the Copenhagen Zoo: a stable, outside between the outdoor enclosures, and in the Rainforest House.*

*Through metabarcoding of airborne eDNA, we detected 49 vertebrate species spanning 26 orders and 37 families: 30 mammal, 13 bird, 4 fish, 1 amphibian, and 1 reptile species.*

*These spanned animals kept at the zoo, species occurring in the zoo surroundings, and species used as feed in the zoo. The detected species comprise a range of taxonomic orders and families, sizes, behaviors, and abundances.*

*We found shorter distance to the air sampling device and higher animal biomass to increase the probability of detection. We hereby show that airborne eDNA can offer a fundamentally new way of studying and monitoring terrestrial communities.*

**Human Evolution And Prehistory.**

Hölzchen, E., and I.J.Timm (2022) **Estimating crossing success of human agents across sea straits out of Africa in the Late Pleistocene.** PALAEOGEOGRAPHY, PALAEOCLIMATOLOGY, PALAEOECOLOGY 590:doi.org/10.1016/j.palaeo.2022.110845

*Authors’ abstract: According to the Out-of-Africa theory, humans originated in Africa and from there expanded into Eurasia. Besides entering Eurasia via a terrestrial route, humans may have used sea straits. These routes would have shaped the subsequent expansions in Eurasia.*

*Sea straits, in particular, are an additional option for entering Eurasia. However, the chances of sea crossings into Eurasia have not yet been quantified. Here, we apply an agent-based model for human water crossing to quantify the crossing success for the Gibraltar Strait, the Sicily Strait, and the Bab-al-Mandab Strait during the Late Pleistocene.*

*The environment of the model consists of geographic explicit reconstructions of the sea straits, including water temperature, current speed and direction,*

*along with terrestrial data of resource distribution and topography. We tested five behavioral scenarios of water movement skills of Late Pleistocene modern humans in a cold phase, represented by the Last Glacial Maximum, and a warm phase, represented by the Last Interglacial.*

*We quantified the impact of water movement skills and climate on the crossing success by the crossing success rate. Our results show that Africa could be left via the Bab-al-Mandab Strait without specific rafting technology. At low sea level, even passive drifting was sufficient to cross the strait. In contrast, the Gibraltar and Sicily Straits were barriers to humans without rafting technology.*

Zhang, P., et al (2022) **Denisovans and *Homo sapiens* on the Tibetan Plateau: dispersals and adaptations.** TRENDS IN ECOLOGY AND EVOLUTION 37:doi.org/10.1016/j.tree.2021.11.004

Authors' abstract: *The peopling of the Tibetan Plateau is a spectacular example of human adaptation to high altitudes as Tibetan populations have thrived for generations under strong selective pressures of the hypoxic environment.*

*Recent discoveries are leading to paradigmatic changes in our understanding of the population history of the Tibetan Plateau, involving *H. sapiens* and the archaic hominin known as Denisovan.*

*Archaeological and genetic studies provide essential insights into behavioral and biological human adaptations to high elevations but there is a lack of models integrating data from the two fields. Here, we propose two testable models for the peopling process on the plateau leveraging evidence from archaeology and genetics.*

*Recent archaeological discoveries suggest that both archaic Denisovans and *Homo sapiens* occupied the Tibetan Plateau earlier than expected. Genetic studies show that a pulse of Denisovan introgression was involved in the adaptation of Tibetan populations to high-altitude hypoxia.*

*These findings challenge the traditional view that the plateau was one of the last places on earth colonized by *H. sapiens* and warrant a reappraisal of the population history of this highland.*

**Modern Humans.**

Frank, H.E.R., et al (2022) **The evolution of sour taste.** PROCEEDINGS OF THE ROYAL SOCIETY OF LONDON 289B:doi.org/10.1098/rspb.2021.1918 (available as a free pdf)

Authors' abstract: *We reconstruct sour taste as having evolved in ancient fish. By contrast to other tastes, sour taste does not appear to have been lost in any major vertebrate taxa.*

*For most species, sour taste is aversive. Animals, including humans, that enjoy the sour taste triggered by acidic foods are exceptional. Sour taste is one of five major taste qualities perceived by humans, along with salty, sweet, umami (savoury) and bitter.*

*Nearly all (or perhaps even all) modern human cultures employ microbes in ways that make foods that are not sour become more sour, and the preparation of such sour ferments pre-dates the origins of agriculture. Human babies are born able to recognize sour tastes (they pucker their lips).*

*It is possible that ancient human preference-aversion functions for acidic foods evolved so as to make our ancestors more likely to be able to appreciate certain ripe or rotting fruits that contained acids that inhibit harmful microbes or even fruits that have been intentionally fermented.*

*But it is also possible that our preference-aversion functions simply shifted to guide us to vitamin C and was, thus, preadapted for ancient humans to love fermenting foods.*

Perez-Lasierra, J.L., et al (2022) **A cross-sectional analysis of the association between physical activity, depression, and all-cause mortality in Americans over 50 years old.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-05563-7 (available as a free pdf)

Authors' abstract: *Depression is estimated to be the second leading cause of disability in the United States and is associated with a 52% increased risk of death. Lifestyle components may have an important role in depression pathogenesis. The aims of this study were to analyze the association of meeting the physical activity (PA) recommendation guidelines and depression, and to*



*analyze the all-cause mortality risk of the joint association of PA and depression.*

*This cross-sectional study included 7,201 participants from the 2007-2014 National Health and Nutrition Examination Survey aged =50 years and linked to National Death Index records through December 31, 2015. Depression was defined as a score =10 using the Patient Health Questionnaire.*

*PA was self-reported, and total PA was used to classify participants as more active or less active. The odds ratios for depression were examined according to be more active or less active. The hazard ratios (HR) for the association of PA level and depression status with all-cause mortality were examined.*

*Being more active was associated with reduced odds for depression. Compared with less active participants with depression, those who were more active and having depression had HR 0.45 for all-cause mortality. Being more active is associated with lower odds for depression and seems to be a protective factor against the increased all-cause mortality risk due to depression.*

**Bromham, L., et al (2022) Global predictors of language endangerment and the future of linguistic diversity. NATURE ECOLOGY AND EVOLUTION 6:doi.org/10.1038/s41559-021-01604-y (available as a free pdf)**

*Authors' abstract: As with global biodiversity, the world's language diversity is under threat. Of the approximately 7,000 documented languages, nearly half are considered endangered. In comparison, around 40% of amphibian species, 25% of mammals and 14% of birds are currently threatened with extinction.*

*The processes of endangerment are ongoing, with rates of loss estimated as equivalent to a language lost every one to three months, and the most pessimistic predictions suggesting that 90% of the world's languages will be lost within a century. However, unlike biodiversity loss, predictions of language loss have not been based on statistically rigorous analysis.*

*While language change and shift are natural processes of human cultural evolution, the loss of global language diversity has been massively accelerated by colonization and globalization. Many factors contribute to language endangerment, some of which are specific to particular regions, language groups or languages.*

*The historical context of each language, such as patterns of colonial expansion, and particular political climates, such as support for bilingual education, are expected to have substantial impacts on language endangerment patterns.*

*In addition to specific historical and local influences, there may also be widespread general factors that contribute to language endangerment, which can be used to identify languages that may come under increasing threat in the future.*

*For a dataset containing 6,511 languages (over 90% of the world's spoken languages), we analysed 51 predictor variables that target different aspects of language maintenance, including language transmission (for example, whether a language is actively learned by children or used in education), language shift (for example, connectivity, urbanization, world languages) and language policy (for example, provision for minority language education, official language status).*

*However, greater road density, which may encourage population movement, is associated with increased endangerment. Higher average years of schooling is also associated with greater endangerment, evidence that formal education can contribute to loss of language diversity.*

*Without intervention, language loss could triple within 40 years, with at least one language lost per month. To avoid the loss of over 1,500 languages by the end of the century, urgent investment is needed in language documentation, bilingual education programmes and other community-based programmes.*

**Technology.**

**Wurman, P.R., et al (2022) Outracing champion Gran Turismo drivers with deep reinforcement learning. NATURE 602:223-228**

*Authors abstract: Many potential applications of artificial intelligence involve making real-time decisions in physical systems while interacting with humans.*

*Automobile racing represents an extreme example of these conditions;. Drivers must execute complex tactical manoeuvres to pass or block opponents while operating their vehicles at their traction limits.*

Racing simulations, such as the PlayStation game Gran Turismo, faithfully reproduce the non-linear control challenges of real race cars while also encapsulating the complex multi-agent interactions. Here we describe how we trained agents for Gran Turismo that can compete with the world’s best e-sports drivers.

We combine state-of-the-art, model-free, deep reinforcement learning algorithms with mixed-scenario training to learn an integrated control policy that combines exceptional speed with impressive tactics. In addition, we construct a reward function that enables the agent to be competitive while adhering to racing’s important, but under-specified, sportsmanship rules.

We demonstrate the capabilities of our agent, Gran Turismo Sophy, by winning a head-to-head competition against four of the world’s best Gran Turismo drivers.

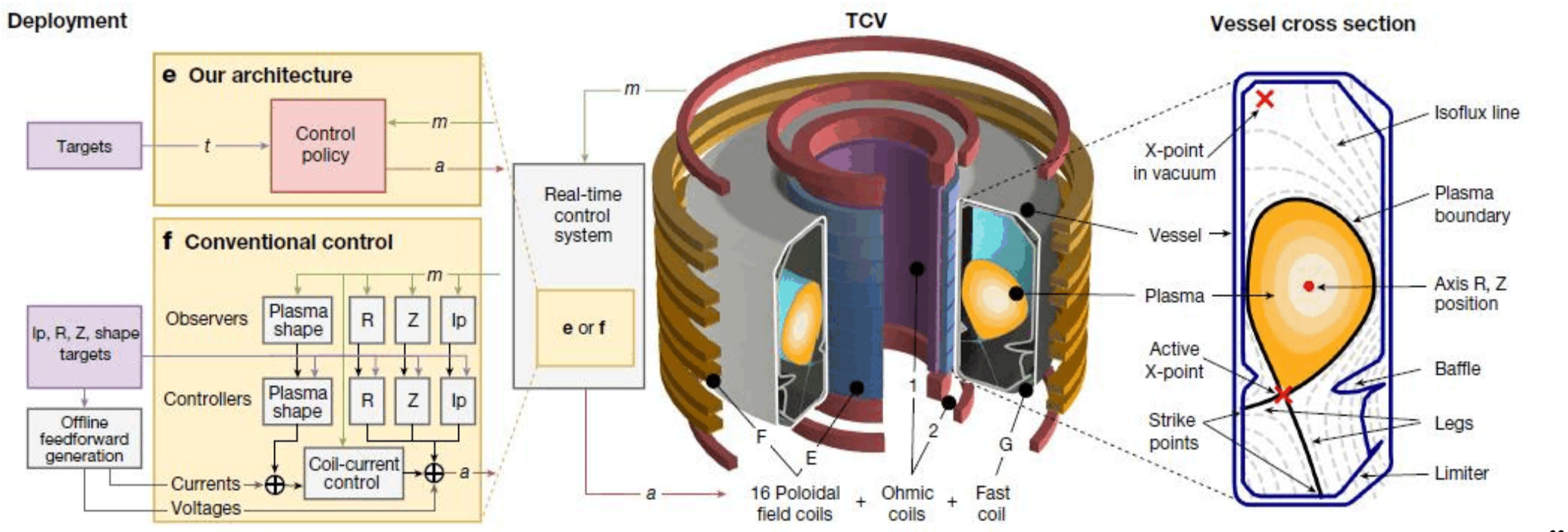
By describing how we trained championship-level racers, we demonstrate the possibilities and challenges of using these techniques to control complex dynamical systems in domains where agents must respect imprecisely defined human norms.

Degrave, J., et al (2022) **Magnetic control of tokamak plasmas through deep reinforcement learning.** NATURE 602:doi.org/10.1038/s41586-021-04301-9 (available as a free pdf)

Authors’ abstract: Nuclear fusion using magnetic confinement, in particular in the tokamak configuration, is a promising path towards sustainable energy. A core challenge is to shape and maintain a high-temperature plasma within the tokamak vessel.

This requires high-dimensional, high-frequency, closed-loop control using magnetic actuator coils, further complicated by the diverse requirements across a wide range of plasma configurations. In this work, we introduce a previously undescribed architecture for tokamak magnetic controller design that autonomously learns to command the full set of control coils.

This architecture meets control objectives specified at a high level, at the same time satisfying physical and operational constraints. This approach has unprecedented flexibility and generality in problem specification and yields a notable reduction in design effort to produce new plasma configurations.





*We successfully produce and control a diverse set of plasma configurations on the Tokamak à Configuration Variable, including elongated, conventional shapes, as well as advanced configurations, such as negative triangularity and ‘snowflake’ configurations.*

*Our approach achieves accurate tracking of the location, current and shape for these configurations. We also demonstrate sustained ‘droplets’ on TCV, in which two separate plasmas are maintained simultaneously within the vessel.*

*This represents a notable advance for tokamak feedback control, showing the potential of reinforcement learning to accelerate research in the fusion domain, and is one of the most challenging real-world systems to which reinforcement learning has been applied.*

*Tokamaks are torus-shaped devices for nuclear fusion research and are a leading candidate for the generation of sustainable electric power. A main direction of research is to study the effects of shaping the distribution of the plasma into different configurations to optimize the stability, confinement and energy exhaust, and, in particular, to inform the first burning-plasma experiment, ITER.*

[Image is from this paper.]

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**WHEN WORDS COLLIDE 2022**

by the WWC Committee  
[www.whenwordscollide.org](http://www.whenwordscollide.org)

[When Words Collide is Calgary's annual readercon.]

After delaying as long as we could, last month we decided to hold the 2022 festival online and began planning. This month, various governments have begun to loosen pandemic restrictions. Regardless, we will stay the course as there is still uncertainty whether a large in-person festival in August will be allowed or safe.

Our 2022 online festival will offer one weekend track of programming that includes appearances by our festival guests: Terry Brooks, Edward Willett, Susanna Kearsley, and Hank Phillippi Ryan.

It will also include the Thursday night readings, Friday night Keynotes, and Saturday night 2022 Aurora Awards. In addition to our scheduled track of programming, several of our affiliates have begun developing a concurrent program track so each hour will offer several choices of content to enjoy.

Like the last two online festivals, WWC 2022 will be free to attend. Like 2021, we will require registration via Eventbrite which should begin in the April time frame. For those who have prepaid for either the 2020 or 2021 cancelled in-person festivals, passes and banquet tickets will again be rolled forward to 2023. Stay tuned for more information as it becomes available.

**LIFE AT CHEZ OPUNTIA**

2022-02-12

photo by Dale Speirs

I keep a bag of peanuts in the front hallway and whenever I leave the house I scatter a few peanuts across the front yard. There are four squirrels around the house, three black and one brown. (Same species, just different colour morphs.) The black squirrels won't come near me but the brown one runs up the steps and begs for peanuts. Consequently it is double the size of the other squirrels. Here it is in the big spruce in my front yard, enjoying a peanut.

