
OPUNTIA
587

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Opuntia is published by Dale Speirs, Calgary, Alberta. It is posted on www.efanzines.com and www.fanac.org. There is also an cumulative subject index to all issues available at those sites. My e-mail address is: opuntia57@hotmail.com When sending me an emailed letter of comment, please include your name and town in the message.

ABOUT THE COVER: The cover photo shows part of the wild rose hedge along the front yard of Chez Opuntia. We had a couple of brief flurries of snow in October that quickly melted away.

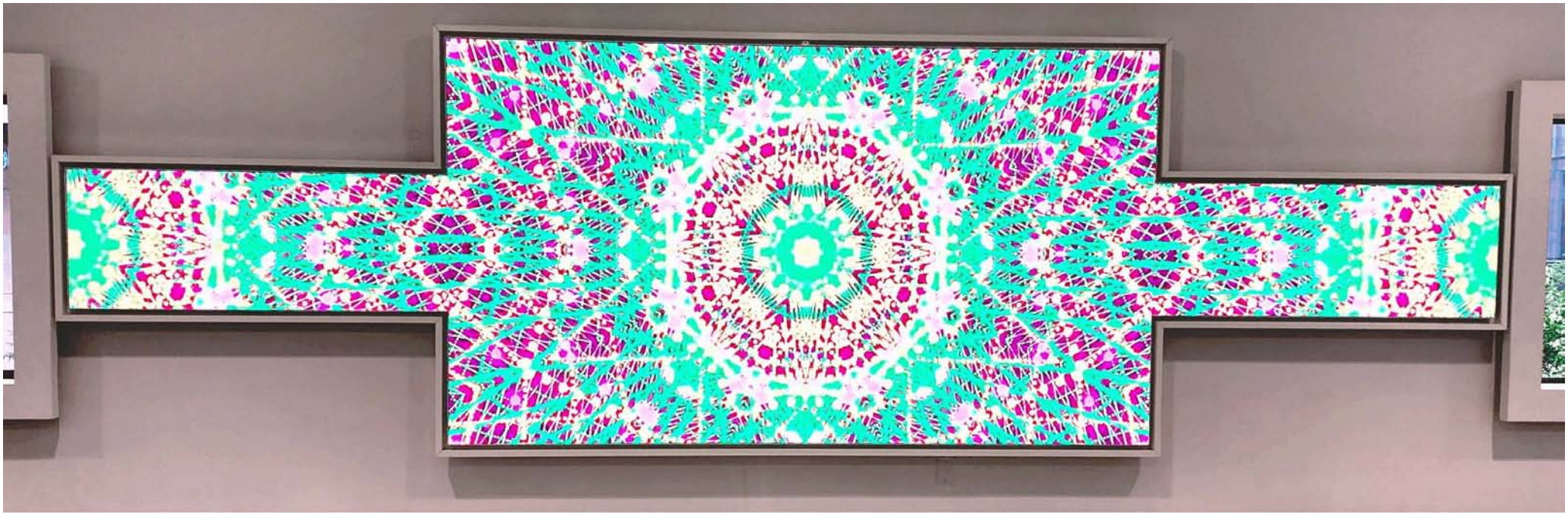
Our first permanent snow came during the third week of November with daily amounts of 10 cm over three days. At right is 30 cm of snow sitting on the big spruce in the front yard. Below are my Nanking cherries.

BOW VALLEY SQUARE ELECTRONIC ART: PART 9
photos by Dale Speirs

[Parts 1 to 8 appeared in OPUNTIA #487, 490, 516, 527, 536, 549, 561, and 564.]

Bow Valley Square is a cluster of skyscrapers in downtown Calgary linked into the Plus-15 pedestrian system which connects about half the downtown skyscrapers at the second floor with an enclosed pedestrian network.

Along the south side, connecting to the Brookfield Place tower across the street is this wall of electronic art. The displays were originally by local artists and constantly rotated. Alas, in the past year they were converted to advertising. This installment will therefore be the last in the series.



FELINE FICTION: PART 5
by Dale Speirs

[Parts 1 to 4 appeared in OPUNTIAs #537, 543, 558, and 570 under the title "Feline Cozies". I have altered this to include non-cozy fiction.]

When I was a boy back on the ranch, we had all kinds of barn cats but none of them ever investigated crimes. The only time they meowed at us was when their food dishes were empty, not to draw attention to clues. Mostly they just ate, slept, or went out hunting mice in the fields.

Carolina Cats.

The Cats In Trouble Mysteries was a cozy series written by Leann Sweeney. The protagonist and Miss Marple was Jillian Hart of Mercy, South Carolina. Recently widowed, she had a shop specializing in quilts for cats, adhering to the proclivity of Miss Marples to have ridiculous businesses.

To be fair, the novels mentioned she toured frequently to cat shows. Presumably she also sold on the Internet. They also mentioned her using smartphones and laptops, so unlike many cozy heroines in the 2010s, she actually acknowledged the real world economics.

Jillian sleuthed with the help of her three cats Merlot, Chablis, and Syrah. Her best friend was Deputy Sheriff Candace Carson, who helped with the Marpleing, or vice versa depending on viewpoint.

THE CAT, THE COLLECTOR, AND THE KILLER (2016) opened with Jillian Hart newly married to Tom Stewart. Their marital bliss was interrupted when a cat lady named Minnie was found to have a house full of felines plus the body of a dead man.

Minnie's family were obstructive and combative after learning she had two dozen cats in the house. The police made sympathetic noises but the concern was to catch the murderer.

One of the culprits was a dirty cop who messed up the investigation. The killer went after Jillian but she got the drop on him and knocked him unconscious. He did a face plant into the cats' litter box. Eeewww!

Cat Cafés.

Cate Conte (pseudonym of Liz Mugavero) had a cozy series about Madalyn 'Maddie' James of Daybreak Island, Massachusetts. She operated a cat café where customers could have a coffee and adopt a cat in one convenient stop. Apparently it's a real thing, although one wonders how the local health board reacted. Maddie found a stray cat and took it in, naming him J.J.

CLAWS FOR ALARM (2021) brought national attention to J.J.'s House of Purrs. A major humane society sent Jillian Allen to arrange and publicize a big-time fundraiser. A different kind of publicity resulted when Maddie James' sister Val found Allen's body, strangled with a fancy cat leash.

Subsequent Fletchering revealed the humane society staff had a blackmailer within them. The final struggle took place on a yacht after the murderer explained all the details at length. The fundraiser was a success. There's no such thing as bad publicity, as the saying goes. The cats would rest easy.

GONE BUT NOT FURGOTTEN (2022) began with Maddie James and her friend Cass Hendricks going to check on a cat hoarder. They found 72 cats and one dead hoarder. The death was suspicious and Hendricks had the honour of being the prime suspect.

So away went Maddie, turning over stones and revealing secrets of the village folk. The cast of characters expanded considerably. You may want to use a notepad to keep track. The complications included two separate criminal operations. A stolen-goods ring was working in the village, breaking into vacant cottages. There was a compulsive gambler who needed cash and didn't care who she killed to get it.

The criminals were dealt with and so were the 72 cats. All found good homes in the village, which amazed me. Even in a big city, unloading 72 cats would be quite a task.

Traveling Cats.

THE CRIME THAT BINDS (2022) by Laurie Cass (pseudonym of Janet Koch) was the fourth novel in a cozy series about Minnie Hamilton of Chilson, Michigan. She was the bookmobile librarian, making her appointed rounds with her cat Eddie and solving murders en route.

The action began at one stop when a regular patron Ryan Anderson suddenly fled in his car. The police wanted to question him about a bank robbery and two murders. His flight only convinced them that he was the culprit. Not initially related but soon part of the plot was the theft of a sculpture from a family cottage.

Miss Marple, pardon me, Minnie, decided that Ryan was innocent and so the sleuthing began. Every so often Eddie would meow a clue or knock a book off the shelf that just happened to provide vital information. Our barn cats back on the ranch were illiterate.

There was a four-way confrontation out in a park, which Minnie survived because she was the heroine. Eddie did his part by climbing up a tree and knocking off a loose branch to distract the bad guy. Smart cat.

Extreme Cats.

Shirley Rousseau Murphy extended the idea of cat cozies to the extreme, with cats conducting their own investigations. Set in Molina Point, California, the protagonist was Joe Grey, a cat named for his colour. His friend was a female tabby named Dulcie.

Both cats had been transformed by unexplained fantasy and lots of handwaving into felines who could understand human speech and read English text. Oh, and the cats could speak to their owner Clyde Damen.

CAT SHOUT FOR JOY (2016) began with Joe Grey and Dulcie expecting their first litter of kittens. An elderly cat Misto prophesied they would have a calico who would be the reincarnation of a cat spirit from antiquity.

In the human world, a mugger was preying on elderly pedestrians. When one of the victims died, the case became murder. The police had nothing to go on because hit-and-run muggers leave few or no traces. The cats tried to trace the mugger by scent but only got as far as the spot where he jumped into a car and drove away.

In an apparently unrelated case, a couple were promoting fraud and vexing local contractors. The threads of the plot wove together into a story of revenge and obsessive anger. The perpetrator got a bullet, thereby saving the state the cost of a trial.

On a more cheerful note, Dulcie had three kittens. They were named Buffin, Courtney, and Striker, for reasons explained in the denouement.

CAT SHINING BRIGHT (2018) was the next novel in the series. The kittens were old enough to be constantly in mischief, which worried their parents. The humans had their own worries, a car theft ring, an escaped prisoner on the lam, and the murder of a beautician and one of her customers.

The kittens were curious and poking their noses where they shouldn't have. More alarmingly, a human overheard the cats talking. They were fearful that he would blab the secret, although why any human would believe him was the question.

The denouement was complicated, with a full chapter to explain who did what to whom and how all the criminals were interconnected. As they did before, the cats kept the plot moving along by making anonymous telephone calls to the Deppity Dawgs.

CAT CHASE THE MOON (2019) had three interrelated threads. Joe Grey and Dulcie were missing one of their kittens. The humans found a badly beaten woman on the beach. The police were having trouble with a family of white trash constantly disturbing the peace with their loud arguments.

Most of the denouement tied everything together but there was a sad ending for Joe Grey and Dulcie as one of their kittens left the nest and went out on her own.

This was a bloodier story than usual as the three subplots tangled together in the midst of a crime wave. Is there such a thing as a noir cozy? Don't read this book on a rainy day when you are feeling depressed.

Avast, Ye Kitties!

SWASHBUCKLING CATS (2020) by Rhonda Parrish was an anthology of 14 stories. Not just anthropic cats but pirate anthropic cats. Aarr, meow.

"The Pride" by Megan Fennell was set in a medieval world with humans and various anthropic cats. The protagonist Kit was an involuntarily retired pirate. He found himself back on his old ship as it fought a battle with another pirate ship.

The feline inhabitants were shapeshifters. They normally went about as cat people, vaguely humanoid but with distinctive feline features. When the enemy boarded their ship, they reverted to big cats. Instead of hand-to-hand combat there was claw-to-claw combat.

"The Comeback Kitty" by S.G. Wong was a ghost story set in a steampunk world. Airships had mechanical Roomba vacuum cleaners. That sort of thing. The protagonist was a ghost barn cat, again named Kit. She was on a quest to redeem herself to the Queen. I didn't quite understand the resolution of the story.

"The Motley Crew" by Rebecca Brae illustrated one problem with this sub-genre, what Disney fans call the Goofy and Pluto problem. In this story the cat pirates looted a prize ship and took its cargo onboard.

One of the crates broke open and released a panther. The expected havoc materialized as the jungle cat terrorized the cat people crew. The captain finally tamed the leopard and made the animal into a pet.

"Whiti Te Ra (Let The Sun Shine)" by Grace Bridges was set on a New Zealand lake. Some humans, one of which could walk on water, and a cat Sunshine, also able to walk on water, were fishing.

Two monsters arose from underwater and began fighting. The anglers were collateral damage and Sunshine struggled to survive. In the frenzy, she managed to morph into a humanoid, at which point the story ended. This story reads as the first chapter in a novel in progress.

"The Growing Of The Green" by Lizz Donnelly was a space opera about a planet where the green meant catnip. Lots of action-adventure as the brave denizens tried to stop pirates stealing the stuff.

"The Cat And The Cook" by Blake Liddell began with a human pirate ship taking on a new cat. The beast caused some problems, then began talking. The captain's maps went missing and the cat held him to ransom. The feline wanted off the ship with a bit of treasure, and succeeded.

"Pirates Only Love Treasure" by Frances Pauli was about a tired old pirate cat gone ashore on a tropical island to live out his remaining days. Instead he found three kittens struggling to survive, who kept him too busy to feel sorry for himself. A bit maudlin.

"Buccaneer's Revenge" by J.B. Riley was humour about the making of a Hollywood pirate movie in a world of cats. All the pretension, egotism, vanity, and arrogance but with four legs. It's funny because it's true.

"The Furgeldt Collector" by Joseph Halden was about a law cat who had lost eight lives and was now on its ninth and final life. No resurrection again, meaning he had to take especial care in his duties.

"Cat Out Of Hell" by Leslie Van Zwol was about a cat pirate crew exploring an Egyptian tomb for loot. The narrator was a cowardly wimp, failing his colleagues in every crisis. No reader sympathy for him.

Bad as that was, the ending was even worse. It was only a dream. Normally I'm opposed to the death penalty but I would be willing to make an exception for only-a-dream writers.

"The Perfect Kibble" by Krista D. Ball was a humourous story in the form of a courtroom transcript. A mining spaceship pilot was on trial because his ship accidently damaged several other ships with its cutting lasers. His excuse was that his pet cat walked across a computer keyboard. Any cat owner will understand. There but for the grace of God.

"All Cats Go To Valhalla" by Chadwick Ginther had a title that sums up the story. A group of cats face their end on a sailing ship after all the humans suddenly died. A vicious storm was about to swamp the ship and only Freyja could save them. A sentimental story of sadness and hope.

"Cat At The Helm" by Rose Strickman was an interesting story about feuding wizards who cast spells locking each other into a video game about pirates. A cat was accidently trapped in the game as well, so that ticked off the boxes for both cats and pirates.

"A Royal Saber's Work Is Never Done" by Beth Cato was the final story. Two cat kingdoms were at war. A cat pirate ship kidnapped the young of a village, while an underground resistance fought on. Aarr, tis that.

SERIES DETECTIVES: PART 19
by Dale Speirs

[Parts 1 to 18 appeared in OPUNTIAs #402, 406, 425, 448, 459, 467, 472, 477, 485, 491, 497, 500, 509, 517, 528, 541, 551, and 568.]

The old-time radio series mentioned here are available as free downloads from the Old Time Radio Researchers at www.otrr.org/OTRRLibrary

Dyke Easter Is Not A Real Name, Even In Fiction.

DYKE EASTER, DETECTIVE was an unsuccessful audition record for a proposed radio series. It aired once on 1939-03-19. The only episode was "This Time For Creeps". Available as a free download from the Old Time Radio Researchers at www.otrr.org/OTRRLibrary.

There were a lot of silly character names in the business but Dyke Easter was in the Top Five. Even the actor playing the part tripped up and introduced himself as Dick Easter on one occasion (at 18m41s).

Every cliché was trotted out. "*Murder is my business*" intoned Dyke in a stern voice during both the intro and the outro. He had a cheap office in a cheap part of town and worked for $25 per day, cash only. His client was James Taber, who thought he had killed a man named Max Arlach.

Taber waved a handgun about, which Dyke took away and looked up in a drawer. Dyke went out to the site and found Arlach hale and hearty. Returning to his office, he found the police rummaging about.

They found the gun. Arlach had been just been murdered and the police wanted Taber. Ballistics showed the gun killed Arlach. Dyke went hither and yon collecting plot coupons. He found Taber's ex-wife Harriet. She was now a widow. James had six bullets put in him by the police but his body was retrieved with seven. Harriet filled in the details.

James and Arlach were business partners. There was a silent partner named Vern Tollard. James was caught embezzling by Arlach, who forced him out of the company. James settled their differences with a gun before the police settled him.

Dyke kept surveillance over Harriet. Eventually he saw her get into a car whose driver appeared to be James. A car chase ensued and the police joined them. The driver was Tollard, who had been in cahoots with Harriet to kill her husband and Arlach, thereby collecting the business.

The plot was convoluted and the acting was pedestrian. The episode plodded to a conclusion. The listener can understand why this never became a series.

George Raft.

THE CASES OF MR ACE aired on old-time radio in 1947. George Raft was the star, a private detective named Edward Ace. "The Man Named Judas" aka "The Lost Package" was the pilot episode and aired on 1947-06-25. Everyone was credited except the writer. Other references report the writer was Joe Eisinger.

Edward Ace was hired by art dealer Richard Doran to deliver a package from New York City to Colonel Andler in Chicago. Doran was willing to pay Ace $1,500 for safe delivery, about $15,000 in today's depreciated currency. Doran declined to say what was in the package but said Andler had paid $150,000 for the item.

Ace was to deliver the package and return with the cash. On the train Ace was accosted by a gunman who wanted the package. A little man with a bad Peter Lorre imitation. Ace dealt with the would-be thief but a second person slugged Ace unconscious and stole the package.

Returning to New York City, Ace visited the Doran shop and found it crawling with NYPD Homicide staff. Doran had been shot dead by an intruder. When Ace saw the body, he realized the dead man wasn't the same as the one who hired him.

From there to his office, where pseudo-Lorre confronted him again. At gunpoint Ace was invited to visit the big boss, who proved to be an even worse imitation, this time of Sydney Greenstreet. The listener will realize wherefrom the scriptwriter was getting the plot.

The package was revealed to contain a rare coin. The big boss was Andler, who had hoped to pull a switchero. The coin was the only verified survivor of the thirty pieces of silver Judas Iscariot had received.

Doran's daughter Elsie was inserted into the plot. People trailed each other back and forth, shots were fired, and various other alarums ensued. The coin was the MacGuffin everyone was chasing. The grand finale was a meeting of all concerned, most of whom were shot dead. Elsie decided to melt the coin and cast it as a crucifix.

"The Murder Of Frederick Miller" aired sometime in 1947. No writer was credited although everyone else was. Dr Gale was the client, a psychologist who wanted Eddie Ace to talk to her about his cases. She was writing a book on criminal psychology.

This was a set-up for Ace to segue into his past cases. Frederick Miller was a corporation lawyer recently murdered. Pierre Forray, who spoke with Hollywood's idea of a French accent, confessed having done the murder. He offered Ace $500 to look after a key.

A stage-Irish lawyer named Hogan showed up, claiming to represent Forray. He suggested the murder was a crime of passion and that Miller had been diddling Forray's wife Sally. From there, Ace went on a series of excursions, then back to his office.

Someone was waiting there and took the key at gunpoint. Ace didn't resist, let the gunman depart, and then followed him at a distance to a locker room. The gunman opened the package, which went ka-boom! He and three innocent bystanders were eliminated from the cast.

The police attended the scene, as well they might. They told Ace that Forray had hanged himself in his cell two hours before the blast. More excursions ensued, including the traditional rendering of the hero unconscious by bad guys.

After having his face pulped, Ace dropped by to seduce Sally, who had low standards. She took him down to Forray's bank to check her late husband's safe-deposit box. Another package, this time with $50,000 in cash and a written confession by Hogan that he had murdered Miller.

More twists, such as Sally never having met Miller. She was actually canoodling with Hogan. A final confrontation, shots fired, the police arriving in the nick of time, etcetera. Sally being the last culprit alive, the police started to take her away but she dived out a skyscraper window. The state was saved the cost of a trial.

Martin Kane.

MARTIN KANE was broadcast simultaneously on both radio (1949 to 1952) and television (1949 to 1954). This was a detective show of which only one mp3 seems to be circulating. Ted Hediger wrote and directed.

Strangely, the only available episode on mp3 is titled "Starring Mark Stevens"and dated 1953-10-29, after the radio version went off the air. Stevens only appeared in the television version, never the radio series. My conclusion, although no radio fan website noticed it, was that this episode was an audio aircheck of a television episode.

The story was dull and not worth listening to more than once. I only mention the show out of a sense of completeness. Martin Kane, private investigator, assisted Albert Thompson, who was falsely accused of murder by a stubborn but unmovable eyewitness.

Kane slogged through the plot collecting coupons. The real culprit was finally located and taken in with a hearty round of fisticuffs, plus the gun he used in the killing. For the listener the trick will be to stay awake until the final five minutes.

Barrie Craig.

BARRIE CRAIG, CONFIDENTIAL INVESTIGATOR was the only private detective series whose star had actually been a private detective in real life. William Gargan had worked in an investigator's office as a young man. He professed amusement at how script writers depicted private detectives, at variance with the real ones he knew and had been.

This series aired from 1951 to 1955. Craig narrated most of each episode. The plots often tangled up, but there were several summations during each episode so the listener wouldn't get lost. The episodes are worth listening to, and the series grows on the listener.

A regular character was Jake the elevator operator. He was from a Vermont farm. In each episode he gave Craig a different reason why he left the farm and moved to New York City. My favourite was "*Too close to New Hampshire*".

"Tennis Anyone?", also circulating as "Two Dead Men", aired on 1955-06-23, written by John Roeburt. The episode opened at a tennis tournament on a hot day. Barrie Craig was the guest of aging actress Hilda Hobson, now a society queen.

Bobby Blaine was competing against Curt Kenney in the final round of the championship. Kenney was Hobson's husband, a dashing young man half her age. Craig was there as a bodyguard because Hobson was wearing $250,000 in jewels. Because she could. She was rooting for Blaine, strangely.

A timeout was called so the players could gulp down some cold beverages in the heat and take a few energy pills. When they returned to the court, Blaine looked wobbly and collapsed. Everyone thought the heat killed him. Craig recognized the symptoms as poisoning, soon confirmed by the medical examiner.

Harry Benton, the public relations man for the tournament, asked Craig for help. The old saying that any publicity is good publicity wasn't something the tennis association agreed with. Craig told Benton to have faith in the police investigation, but he wanted to hire him anyway.

Kenney was the obvious suspect in more ways than one. There was the championship match, plus he was aware of his wife's interest in Blaine. Pepe Zeredé was introduced as Hobson's chauffeur and, very strangely, her ex-husband, also once a tennis champion. Hobson had a thing for tennis players, as long as they were winning.

Zeredé said Blaine had run out of energy pills for the match, so Kenney gave some of his pills to him. This of course raised the question of who had been the target of the poison. Benton threw some gasoline on the fire when he told Craig that he had since learned Kenney had $5,000 bet on the match.

Polly Blair was added to the by-now lengthy list of characters. She told Craig she was Kenney's girlfriend. Another tennis match, and some more poisoned pills, but Craig intercepted them in time. Hobson was cleaning house, but instead she was bound to another big house.

Johnny Dollar.

YOURS TRULY, JOHNNY DOLLAR was the second-last of the old-time radio series, airing from 1949 to 1962. (The final episode of SUSPENSE aired immediately after the final episode of YTJD.) Almost all the OTR shows had died off by 1955.

The episodes were standard half-hour weekly shows except for a year starting in 1955 October, when the series aired as daily 15-minute installments comprising one complete episode each week, or in other words, 75-minute episodes.

Johnny Dollar was an insurance investigator based in Hartford, Connecticut. Each episode began with a claims adjustor from an insurance company ringing him up and asking him to take on a case.

The running joke of this series was that Dollar shamelessly padded his expense account. Each scene was introduced by Dollar reciting a line item from his expense report, followed by a segue to the action.

"Expiring Nickels And The Egyptian Jacket" was written by Paul Dudley and Gil Doud and aired on 1949-09-04. Johnny Dollar was called on a trip around the world from his home in Hartford, Connecticut, to visit his old army chaplain in Calcutta.

He mentioned the airline ticket cost $2,200, which would be about $28,600 in today's depreciated currency. I Googled the price of a ticket in our times from New York City to Kolkata (as it now is), which seemed to average $1,200.

The expiring nickel was Lionel Brook-Nichols, about to be executed for murder in Cairo. Dollar was to get evidence to Cairo to prove him innocent. Along the way, a leper and a beautiful woman joined the flight.

Upon arrival, Dollar discovered the police chief was the culprit. Assorted alarums and excursions followed, culminating in a fight using fire hoses. The chief was washed to death off a roof and justice was served. Final expense account was $5,350.40. Whew!

"The Amy Bradshaw Matter" was written by Robert Ryf and aired in late November 1955. She was a Broadway actress who had received threatening

letters. The company which had a $25,000 life insurance policy on her was concerned. (Call it $2,500,000 in today's depreciated currency.)

The police figured she was staging a publicity stunt. Johnny Dollar wined Bradshaw (no dining) to elucidate her background. She said she feared someone was out to get her.

Potential suspects were her agent Mike Pomeroy, her estranged husband William York, her biggest fan Porter Kane, producer Emery Taylor, and director Dave Coleman.

Fellow actor Shirley Mitchell was young and a potential replacement for Bradshaw, who was a woman of a certain age. York was the beneficiary of the insurance policy. Kane told Dollar he was planning to add her to his collection. Pomeroy told Dollar to mind his own business. Dollar replied he was minding his own business.

Alarums abounded. Dollar traveled about collecting plot coupons. All the suspects were intertwined with each other. The old "drop a sandbag" trick was used on Bradshaw but missed her by that much.

However it was Pomeroy who departed this world, not Bradshaw. He was killed in her dressing room. She said she only saw a hand holding a gun reach in through the door as she was talking to Pomeroy. He dived to slam the door shut and thus took the bullet.

A large signet ring fell off the hand as its owner dropped the gun and fled. The ring that Kane wore. An open-and-shut case until the police got the forensics report. No fingerprints on the gun, an impossible situation.

Dollar accused Bradshaw of staging the entire show in order to frame Kane for the murder. She immediately confessed all. No real proof but she blabbed everything. She and Pomeroy had been lovers but now he threw her over for Mitchell. Total expense account was $185.20

As I listened to this episode, I had a nagging feeling that I had heard this plot before. This is why I keep a detailed index to OPUNTIA, and was eventually able to locate the previous version. (The index is available as a free pdf from either www.efanzines.com or www.fanac.org)

The script was in fact the same one used in "The Case Of The Left-Handed Fan", aired on 1948-10-16 as part of THE NEW ADVENTURES OF MICHAEL SHAYNE. That episode was reviewed in issue #497 of this zine. Everyone had been credited in that episode except the writer, who we now know was Robert Ryf.

In those days, it was not a sin to re-use scripts after a number of years had passed. There were no home recording devices back then, so listeners only heard an episode once. The odds of someone at the end of 1955 remembering a show from 1948 were very slim.

The Shadow: Introduction.

THE SHADOW, as the opening blurb put it, was in reality Lamont Cranston, wealthy young man about town. He had traveled to Tibet where he learned how to cloud minds so that people could not see him, only hear him. His voice also changed when he became invisible, courtesy of switching to a crystal microphone. He always announced himself as The Shadow with maniacal laughter, the original bwah-ha!-ha!.

The radio series had a complicated genealogy that began in 1930 and didn't evolve the familiar version of The Shadow until 1933. Several dozen episodes are available free from www.otrr.org/OTRRLibrary The series lasted until 1954.

Lamont Cranston and The Shadow both dealt with Police Commissioner Weston but not simultaneously of course. Weston was usually the arresting officer and frequently worked without any uniformed officers present. Not tenable in a genuine police department, where a real commissioner is a desk-bound bureaucrat and does not involve himself in individual cases.

The lovely Margo Lane was the only one who knew his real identity. Her main functions were to scream every time she saw a corpse, be frequently kidnapped or trapped with a killer, and to have the loose threads explained to her in the denouement.

What was interesting for those days was that she and Cranston were supposedly single and living in different apartments, but they commonly had scenes where they ate breakfast or stayed in hotels together. The sponsors of those times weren't as prudish as often thought, or else never noticed.

The Shadow began as a narrator on a radio show. He then became a character in his own right and spawned a monthly magazine, followed by books and movies.

There was no continuity between his appearances in different media. In the movies, for example, he was a middle-aged radio reporter who used The Shadow name as the title of his show but was known to his coworkers by his real name.

Like the print stories, credit was seldom given to writers. Sometimes a house name was credited, but usually nothing was said in the closing credits about who the writer was. In the late 1940s, credits were often given, but rarely before or after. Never expect logical plots.

The opening musical theme for the episodes was "Le Rouet d'Omphale" ("Omphale's Spinning Wheel"), composed in 1871 by Camille Saint-Saens. It was beautifully played on the organ and provided an ominous note, in both senses of that word, to introduce the show.

The Shadow: The 1940s.

"Etched With Acid" was written by Frank Kane and aired on 1946-03-17. The casino owner of the Hi-Ho Club was preying on women gamblers. He dealt with defaulters by throwing acid on their faces. The others were encouraged by that example to hand over jewelry, then claim they were stolen and collect the insurance money.

Lamont Cranston and Margo Lane were at the Hi-Ho Club one night when they saw a jewelry snatch, unaware it was arranged. He intervened but the victim Mrs Perry vouched for the thief Mattie, leaving Cranston embarrassed. Cranston had his doubts, so the next day he called on her. The gangster Ritchie had his men watching her, so she was in serious peril.

So were Cranston and Lane, who were attacked at her home. They got her in the face with ammonia to temporarily blind her and left a note warning that next time she would get acid. That sent The Shadow to Perry to interrogate her to find out the name of the gangster.

Having done so, The Shadow went calling. One of the underlings Hanson wanted to branch out on his own but was stymied by The Shadow. The jewelry was recovered by him, who left Hanson behind. Mattie and Ritchie arrived. The three men took each other out, two by gunfire and one by acid. The episode wrapped up with a stern warning by Cranston for women to stay out of gambling clubs.

"The Gorilla Man" was written by Joe Bates Smith and aired on 1946-04-21. After the opening blurb about how crime does not pay, the announcer immediately segued into a commercial urging listeners to buy payroll savings bonds.

The episode opened with narration by an animal trainer named Smitty who owned a large gorilla named Big Boy. The man was big and ugly and resented people comparing him to his animal. Smitty took the remarks too personally and thought he was transforming into a gorilla.

He ran away, leaving the gorilla at the mercy of circus roustabout Blinky, who was cruel to the animals. Using the regular narrator, Lamont Cranston and Margo Lane were out one night, driven by Shrevie, when they saw a badly injured Blinky. He died at the scene. That brought them to the circus where they talked to the owner.

They began sleuthing and first talked to Blinky's widow Jean, a woman who owned a black panther named Beauty. She had glowing green eyes and long black hair. Jean, that is, although the panther looked much the same. She didn't mourn his death.

Cranston and Lane managed to be trapped in a small room with the panther. The episode paused to remind listeners that they could avoid dark clouds in their future with payroll savings bonds. Back at the panther, Cranston and Lane escaped. Clutching their savings bonds, no, scratch that.

He suspected the gorilla man, so The Shadow visited Jean. She denied killing Blinky and put the blame on Smitty. At this point the narration changed to Smitty as he explained his moves. Cranston and Smitty began stalking each other.

Out at a deserted farmhouse there was a lot of screaming, not just Lane. Shots were fired and the gorilla died, the real one. The Shadow pursued Smitty up onto the roof. One of them came down the hard way. The one who wasn't booked for the series.

The Avenger.

THE AVENGER was a carbon-copy of The Shadow, produced by the same people. The market for such heroes was saturated and the show never succeeded. The first series aired during the 1941-42 season and has since vanished into the mists of time. The network did not transcribe the series and no air checks are known.

The second version aired during the 1945-46 season, written by Ruth and Gilbert Braun. This series was syndicated on transcribed disks and thus survived. Those disks were later converted to mp3s.

Jim Brandon, a superscience biochemist, was the alter-ego of The Avenger or perhaps vice versa. His lovely companion was Fern Collier, who was the only person who knew the true identity of The Avenger. Brandon didn't learn any strange and mysterious powers in the Orient but instead relied on superscience devices.

His two main gizmos were the Telepathic Indicator, a mind-reading device, and the Secret Diffusion Capsule, which made him invisible. The capsule was always heralded by a popping sound followed by the hissing of gas.

"The Thoroughbred Murder" aired on 1945-09-07. The venue was George Feldon's country estate, big enough to have its own private race track. Jim Brandon and Fern Collier were among the weekend guests.

Besides horse races, events included a stagecoach race with women drivers. The guests assembled to watch Rosalind Burt take a coach once around the track for testing. Then everyone congregated in the barn, which was where they found the body of Rosalind's husband William. He was supposedly kicked to death by a horse.

William was experienced around horses, so Brandon was puzzled. He therefore called a J'accuse! meeting, announced the death was murder, and anyone attempting to leave the estate would be arrested.

Setting aside the obvious point of law, Brandon and Collier left everyone on the terrace to blow off steam while he burgled their rooms in search of clues. He found nothing.

Deciding to force the issue, Brandon had Collier announce to the guests that he had found the murderer. While she was doing that, he searched the servant quarters. Still nothing.

In the library, Brandon discovered a supposed confession written by Feldon that he did the crime. Trouble was, it was a blatant fake. Brandon went to Feldon's room and warned him there was a plot against his life.

As they sat there, Feldon suddenly noticed a drink had been prepared on the sideboard for his nightcap. The listener will immediately realize what was in that drink. Fortunately so did Brandon, who stopped Feldon in time.

Brandon arranged with the sheriff for a fake arrest of Feldon for the murder, then promptly went into town to his laboratory. Rosalind rushed to the library, saying she would call a lawyer for Feldon.

Instead she tried to dispose of the poison. Waiting for her was The Avenger, who accused her of murder and attempted murder. The sheriff was lurking behind a curtain and ran her in on the charges.

In the epilogue, Brandon and Collier took a coach out for a drive while he explained the loose threads. Rosalind was hoping for life insurance from her husband's death so she could lead the life she wanted.

The main clue was that a horse kicks upward, but William's wounds were struck downward. Rosalind had nailed a horseshoe to a piece of wood and battered William by repeatedly swinging it down on his head.

Sam Spade.

THE ADVENTURES OF SAM SPADE, based on the character created by Dashiell Hammett, aired from 1946 to 1951. It went off the air shortly after both Hammett and Howard Duff, the actor who played Sam Spade, were named as Communist sympathizers during the Red Scare.

Unlike the movie, where Spade was a serious man, the radio series played him as a happy-go-lucky fellow, sometimes swerving into slapstick. After Duff left, the series struggled on for a few more episodes as a sustained show with no advertisers. No corporation dared to be associated with it. The replacement actor Steven Dunne couldn't live up to Duff's characterization.

Spade worked in San Francisco. His secretary was Effie Perrine, a scatterbrained young woman who took down his narration in the form of a report. Each episode began with Spade telephoning Effie and telling her to rush down to the office to meet him there and transcribe a report on the case he had just solved.

The report was a letter to a local police officer keeping him informed of criminal matters, or occasionally addressed to the client. On one occasion, he told Effie to bring a pencil and $20,000 in cash. "*But Sam, where am I going to find a pencil at this time of night?*"

"The Hot Hundred Grand Caper" aired on 1948-09-19 and was written by Robert Tallman and Gil Doud. The client was Lorraine Kilcourse, from big money. Her husband Leonard had been withdrawing large sums from his bank account. She thought he was paying blackmail and wanted Spade to follow him.

Spade tracked Leonard to a nightclub casino run by Ernie Nogalis. Leonard quickly blew through $100,000 in three bets, deliberately it seemed. Nothing else happened, so the Wildroot Cream Oil hair tonic commercial ran, with no more interesting results either.

Lorraine had mentioned to Spade that she kept a small apartment elsewhere. Spade reported there and found her with her brother Tommy Lane. (Really? Her maiden name was Lorraine Lane?) Tommy answered "yeah" to anything Spade said.

Lorraine kept changing her story but ultimately consolidated it into a complex plan to protect Tommy from Nogalis via a payoff from her husband through the roulette wheel. She proposed another plan to put Nogalis out of business.

Spade played the roulette wheel and couldn't lose. He made $100,000. Leaving the casino, he evaded gunsels, then went back inside for another complicated explanation, this time from Nogalis.

This was the kind of plot where a serious listener would have to take notes and draw flow charts to keep up. I didn't bother and just let the verbiage wash over me. My computer technician friends use the term "spaghetti logic".

Lorraine, Leonard, and Tommy all showed up to complicate the plot even further. At that point, the story ended. The writers wrote themselves into such a tangled mess that they just went to a Wildroot commercial and never came back.

"The Red Star Caper" aired on 1951-01-12 and was written by John Michael Hayes. This episode must be understood in the context of its time. Howard Duff had been playing Sam Spade with great success when he was run off by the Red Scare. Steven Dunne replaced him but was never as good.

More importantly, sponsors were scared to be associated with the show because the character originated with Dashiell Hammett. He had nothing to do with the writing or production but his name was prominently featured in every episode's intro as the creator.

When Hammett was hauled in by the House Un-American Activities Committee, that panicked network executives and advertisers. Duff was also named as a fellow traveler and sent off. The series was sustained, that is, had no commercials other than public service announcements and network house ads for their own shows. The series died later in the year.

Now to the plot. Sam Spade, played by Steve Dunne, attended a political meeting whose keynote speaker was foreign correspondent Silas Manning. He began by telling the audience that he had just returned from southeast Asia, where he had visited Korea and made two secret trips into China.

Before he could continue, the auditorium lights went out, two shots were fired, and Manning fell dead. Spade got involved because he was supposed to be Manning's bodyguard. The threat was Reds, probably from eastern Europe or the Soviet Union.

The story flashed back to the first meeting between Spade and Manning. He said he was going to name names at his speech. The Commies were going to try to stop him.

Then a jump forward to the incompetent police detective Kelsey, who attended the crime scene with Spade. The backstage doorman said the killer had a red star tattoo on the back of his hand. He got the licence plate of the getaway car.

Spade went to Manning's hotel room, only to find the body of a reporter, his head bludgeoned. The episode then paused for a network house ad for the Tallulah Bankhead show.

Returning to the plot, Spade talked to the elevator operator, who provided him with several suspects seen coming or going to Manning's room. One of them had a red star on his hand. From there to the waterfront to talk to an informant. Spade wanted to know if anyone was shipping goods to China.

He didn't get an answer due to a few alarums. He went back and forth across town, hither and yon. Spade learned a woman connected with Manning was the daughter of a freighter captain.

From her he got the story. She was Manning's secret wife but her father was illegally shipping essential materials to China. She also got the information for her husband. During the final fight, she shot her father dead.

At that point, the story ended. Not too many of the guest characters had survived. The listener will wonder if the plot was an attempt to get back in the good graces of HUAC by serving up some anti-Communist propaganda.

LET GEORGE DO IT aired on radio from 1946 to 1954, sponsored by Standard Oil for its Chevron stations. The series was about George Valentine, a private investigator.

He solicited clients with a running newspaper classified advertisement in the Personals column that he cited in the opening credits: *Danger's my stock in trade. If the job's too tough for you to handle, you've got a job for me. Write full details.*

Valentine's secretary/girlfriend was Claire Brooks, whom everyone called Brooksie. Her main function was to act as a sounding bound for Valentine and have the plot explained to her at intervals.

"Cause For Thanksgiving" was written by David Victor and Jackson Gillis. It aired on 1950-11-20, three days before the American Thanksgiving.

NYPD Lieutenant Riley asked George Valentine and Claire Brooks to come down to the police station where a 10-year-old boy was being held. The youngster was a street urchin picked up on the waterfront at 03h00. He was mute and wouldn't talk.

Police doctors said his vocal cords were normal. Riley asked Valentine and Brooks to find the boy's parents. They took him down to the waterfront to look for clues. They found a merchant freighter who told them about a fight on the dock. Other unsavoury characters contributed fragments of information.

A body was fished out of the water off the pier, a knife in the man's back. As Riley remarked, the victims around there don't get shot, they get cut. The deceased was identified as a small-time thief. Some broken glass and white powder were found.

The conclusion was the boy was an eyewitness to murder. The concern was he might be the next victim. There were only three suspects, so Riley and Valentine came down hard on them. They bluffed them using the kid as bait. Shots were fired, contrary to Riley's assertion. The smuggler was caught, the boy talked, and turkey was served.

"Angel's Grotto" aired on 1950-11-30 and was written by David Victor and Jackson Gillis. The sound quality was muddy, particularly one guest actress whose words were often inaudible.

An unusual opening. The letter writer Emily Blunt was a nurse who wrote George Valentine to fire him because he hadn't found a solution to her problem nor any clues. Then the flashback to the case.

A wealthy man named John Moroca, confined to a wheelchair, had fallen to his death in a gorge known as Angel's Grotto. He had been married a week to Emily. The police said his death was accidental but lots of people wondered if he fell or whether he was pushed.

The deceased complained of parasitic relatives sponging off him. He was going to cut them off without a penny. The family were justifiably suspicious of Emily. They hadn't known about the marriage until after John's death.

Valentine and Claire Brooks had trouble finding evidence. No sign of a struggle. Valentine lowered himself into the gorge while Brooks had conniptions that he might fall. He did find evidence that John struggled to break his fall.

After hoisting himself back up, Valentine and Brooks scurried into the shadows when they saw Emily and John's brother approaching. There was a cliff top struggle between those two, which Valentine interrupted before someone else went off the cliff.

The ruckus brought everyone else running. Valentine convened a J'accuse! meeting on the edge of the grotto. He yanked the plot sideways by accusing Jake the hired hand and Mary the cook of the murder. They feared being laid off by John.

With that, on to the end credits. I had my doubts. No physical evidence was there, and the suppositions Valentine made wouldn't be admitted in court. If anything, Jake and Mary could sue Valentine for slander. No wonder Emily didn't want to pay him.

Bulldog Drummond.

Bulldog Drummond was based on the novels by H.C. McNeile. There was little continuity between the books, the movies, and the radio series. The novels and movies were set in Britain where Hugh Drummond was some sort of police detective.

In the books, he was a married man, in the movies he was forever affianced, and in the radio series he was a loner. The movies were played as comedy and the radio series as grim action-adventure.

The radio series soon moved Drummond to the USA. He roamed the country as a paladin with no visible source of income and unspecified police powers, assisted by his valet Denny, a blithering idiot. The radio series aired from 1941 to 1954.

The episodes were mediocre, worth listening to once and then forgotten. They did have a distinct opening, the sound of foghorns and slow deliberate steps.

"The Case Of The Double Death" aired on 1945-04-16. Hugh Drummond and Denny were dining out. As they left, Denny discovered his hat and umbrella were gone.

Drummond was in a rush because he had an appointment to witness the execution of a criminal named Peavy Lido that he and Denny helped convict. Denny was to accompany him but insisted on going to a haberdashery to buy a new hat. A gentleman, he said, is never seen in public without a hat. Those were the days.

Denny never made it. He said he fell asleep on the commuter train and woke up at the end of the line. The police summoned them. They had found the hat and umbrella, as well as a knife with Denny's fingerprints. Denny was arrested for murder.

He had been framed. Possibly by Lido's gang in revenge, with Drummond intended to be the next victim. Denny made bail and they went back to the restaurant.

The waiter who had served them was Dan Morris. They interrogated him. He admitted accepting $2,000 for delivering the knife from the restaurant and doping Denny's coffee so that he would fall asleep.

Morris was shot through an open window before he could name the person who hired him. The killer got away when they pursued, although they found some footprints of a woman's high-heeled shoe. When they returned to Morris's apartment, his body had disappeared.

Instead of informing police, Drummond and Denny went back to their place. Upon entering, they found Morris's body on the living room floor. Acting quickly, they moved the body back to his apartment before the police arrived, undoubtedly tipped off by the killer.

They suspected Lido's widow. Drummond imitated Morris's voice and telephoned her for $20,000 in blackmail money. When she arrived, Drummond called police and staged a charade until they got there. She shot Morris again. This time the frame-up was against her.

Mr Monk.

There are several mystery television series long since discontinued but still existing as book series. Jessica Fletcher in MURDER, SHE WROTE immediately comes to mind but another series was MONK, which aired from 2002 until 2009.

This was a comedy drama series about private investigator Adrian Monk, who worked mainly as a consultant to the San Francisco Police Department. He had previously been a police officer but became unhinged after his wife Trudy was murdered. He was given a medical discharge but occasionally hired by SFPD as a consultant.

Adrian Monk developed severe obsessive-compulsive disorder and was a germophobe. He could and did take scattered seemingly irrelevant clues at a crime scene and link them in logical order to identify the culprit.

The novels were mostly original stories, but occasionally novelizations of television episodes. Lee Goldberg wrote most of them but the later novels were written by Hy Conrad. The two both worked on the television series as writers and producers, so the hand-off was a natural one.

MR MONK AND THE DIRTY COP (2009) by Lee Goldberg began with Adrian Monk laid off as a consultant to the SFPD due to budget cuts after the Panic of 2008. Captain Leland Stottlemeyer was Monk's main contact with Homicide. When the captain was arrested for the murder of another police office, Monk came back to the job.

A clichéd plot. But before that, this. Stottlemeyer and Monk appeared on a panel at a convention of detectives. Monk, paralyzed by his obsessions, had to drink from his glass of water on the table every time Stottlemeyer did, just to keep the water levels the same.

Then off to another case, where one of the characters name-checked Hy Conrad as an in-joke. Monk and Teeger received an offer from Intertect, an upscale private detective agency. A very generous offer, and well deserved too, as Monk cleaned up numerous cold cases for them.

Then on to the murder of two judges, who were successively in line to hear the case of Salvatore Lucarelli. The mobster hired Intertect to prove him innocent. Finally, two-thirds of the way through the novel, Stottlemeyer got into a fistfight with another cop, who was murdered the following day.

That was eventually sorted out as the reader expected it would be, since Stottlemeyer was a continuing character who would appear in future novels. He couldn't be sent off. The final confrontation was with the owner of Intertect and his ex-girlfriend, both of whom had done unrelated murders.

MR MONK IS CLEANED OUT (2010) by Lee Goldberg put Adrian Monk and Natalie Teeger in dire straits. The City of San Francisco was still in a budget crisis. Monk was still laid off as a consultant.

He was going to live off his savings but they were gone, having been sunk into the now-bankrupt Reinier Investments. The owner of the company Bob Sebes was arrested for fraud and placed under house arrest.

The key witnesses against Sebes began dying off. Since Monk had no job, he devoted his full time to the case. That plus a greater crisis, finding a replacement for the bottled water he drank, the producer of which had gone out of business.

Monk and Natalie got cashier jobs at a supermarket but he got them fired after one day because of his obsessive compulsive disorder. He kept rounding up customer bills to an even number. Then a pizzeria, but Monk considered them too messy and asymmetrical. (The toppings were scattered over the pizza instead of rigid geometric patterns.)

Between losing jobs and a parade of witnesses being murdered, Monk was kept busy. The end came for Sebes and his wife Anna when Monk brought out one of his tomato surprises and proved they committed the murders. Not a satisfying ending.

Matthew Slade.

MATTHEW SLADE, PRIVATE INVESTIGATOR was a short series of mp3s downloaded from the Old Time Radio Researchers at www.otrr.org/OTRRLibrary. They were dated 1949 but the title was not listed in John Dunning's encyclopedic work about old-time radio shows.

All the online references said the series was produced in 1964 by the Pacifica Players. (Still in existence today as the Pacifica Spindrift Players of Pacifica, California.) The original broadcasts were semi-random at times in the second half of 1964, which didn't help build an audience.

The episodes were staged as part of the Starlight Mystery Theater and so announced in the opening credits. Scriptwriters were Robert Frederick and Brian Adams. The preserved episodes were transcriptions on disks made for the Armed Forces Radio Service.

Slade was a San Francisco private investigator. His secretary/girlfriend was Loretta "Jonesy" Jones, who almost never made an appearance in the episodes. No cliché from hard-boiled detective stories was overlooked.

"The Incredible Dr Lintz" began one night when Matthew Slade stopped to help a woman whose car had run out of gas. He offered her a ride to the next town. She had a German accent and said her name was Erika Lintz.

She pulled out a handgun and directed Slade to drive down a side road to a field where a helicopter awaited. They flew off to Lake Tahoe. Her husband Carl met them and Slade was taken to a mansion. Carl's son had been executed in San Quentin, a case which Slade had worked on. Now the father wanted revenge.

Slade's car had been found abandoned by police. They and Jonesy began tracing his movements. Meanwhile Lintz was bwah-ha!-ha!-ing at Slade. The police eventually tracked Slade to the lake.

Erika couldn't take her husband's insane behaviour anymore and switched sides. Carl had a superscience weapon called a laser gun. This was 1964, remember, so the device was still science fictional.

Didn't help him though. Everyone converged at the mansion where assorted alarums played out. Old-fashioned bullets still trumped the ray gun because the police were better at aiming than Lintz.

"The Case Of Murder" began with the sudden departure from this world of Miles Reagan, a numismatist. His wife Marian called Matthew Slade first instead of the police. She said it was an accident.

Miles had embezzled $250,000 of company funds and was being blackmailed by David Corby, a director of the company. Marian said she told her husband that she would go to the police. He pulled out a handgun, she jumped at him, and in the struggle he was accidently shot dead.

Marian wanted to Slade to disappear the body. He explained the illegality of her idea. Only then did she reveal that Corby had been her first husband. Slade left but never called the police, which would therefore make him an accessory after the fact.

Later he went to visit Corby and found Marian there. They chatted at length as Slade summarized all the evidence against them. To no listener's surprise, Corby pulled a gun. He had murdered Miles. Unfortunately for him, Slade had indeed notified police and set up the confrontation.

Summing up in the epilogue, Slade said that Corby was going to the electric chair, Marian got life with no parole, and no one knew what happened to the missing cash.

"Finding Julie Rayton" began with Matthew Slade hired to find said person, having gone missing for a week. Her car was found abandoned in the parking lot of the building where she worked.

Her boss mentioned Dr Carl Gavin, a dentist in the building, had lost his wife in a car accident the same day Julie went missing. Slade hypothesized it wasn't Ellie Gavin who died but Julie. Trouble was, the body had been cremated.

Julie's roommate mentioned she had been to her dentist the day she disappeared, name of Gavin. That took Slade out to Gavin's house, with a police officer following a bit later.

Posing as an insurance investigator, since he had learned Gavin had a $100,000 life policy on his wife, Slade gained entry. (About $1 million in today's depreciated currency.) He bluffed Carl into revealing that Julie was dead.

Ellie came out of a back room where she had been listening. Insurance fraud it was. She waved a gun and detailed her plan to dispose of Slade. The couple took Slade on a boat out into the bay.

She bwah-ha!-ha!-ed that the sharks would take care of Slade. At this point, her husband did some bwah-ha!-ha!-ing of his own, telling his wife she was a millstone around his neck. He was going to keep the insurance money for himself and enjoy life without her.

They killed each other simultaneously, as he stabbed her and she shot him, then both fell overboard. Ellie wasn't wrong about the sharks, who quickly disposed of the remains.

Scotland Yard.

PURSUIT was a police procedural which aired on radio from 1949 until 1952. The production history was complicated, including airing the show as a subtitled series within an anthology series called THEATER OF THE MIND. Scotland Yard Inspector Peter Black was the chief investigator, assisted by Sergeant Moffet. Their boss was Chief Inspector Harkness.

“Pursuit In The North Sea” aired on 1950-07-22 and was written by Gil Doud and Antony Ellis. This episode was definitely a period piece.

The British government restricted imported goods in the aftermath of the war. Not surprisingly the major growth industry in Britain at the time was smuggling. Nylon stockings and cigarettes were the most popular in trade.

The Home Secretary blamed Scotland Yard but Inspector Peter Black threw the problem back at him. The police could do little against a hundred gangs with fast boats and private aircraft.

The Secretary therefore gave carte blanche for the use of naval and air forces. Scotland Yard monitored radio traffic and raided homes, gathering information. On board a destroyer, Black and company intercepted four boats moving in from the European coast and blew them out of the water. All in a day's work.

Pausing for a Wrigley’s Spearmint Gum commercial, the episode wrapped up with a budget summary. The operation cost His Majesty’s government thousands of pounds sterling but stopped millions of pounds of goods infiltrated into Britain. It seems to me that if they had allowed the goods into the country then the government could have assessed hundreds of thousands of pounds in tariffs.

“Pursuit And The Ladies Of Farthing Street” aired on 1951-09-18 and was written by Antony Ellis. The episode began with a Dr Lyon commercial plugging his Tooth Powder to whiten teeth. Even then toothpaste was winning the dentifrice battle.

Inspector Peter Black and Sergeant Moffet were called out to a fresh murder by an anonymous letter. The dead man’s papers said he was William Prue, late of the Daffodil and Tulip, a tea shop on Farthing Street in Kent.

The episode paused for a Double Danderine commercial, a treatment said to destroy infectious dandruff or your money back. Back to the episode, where the two ladies operating the tea shop, named Minton and Montegue, were hostile and uncooperative toward the Inspector

Prue was found to be William Henderson, a former guest of Dartmoor prison. One of the two ladies was the sister of a convicted murderer named Percy Minton, serving life in Dartmoor.

The ladies ratted out each other when Black visited them a second time. Miss Minton confessed to the murder for which her brother had been convicted. She had fallen for a ruffian and later killed him during a drunken argument.

Percy had taken the blame since he had no prospects in life and Dartmoor would have a warm bed and three meals a day. He was pardoned and his sister went in to Holloway.

“Pursuit In Clynewidd Mine” aired on 1952-03-04 and was written by Antony Ellis. The plot opened with a Welsh mine disaster, one with a twist. One of the trapped miners down below had been murdered by poison.

Pausing only for a Haleys M-O commercial, for those who simultaneously had constipation and heartburn, Black and Moffet began investigating. The deceased was a womanizer whose murder wasn’t a complete surprise.

Black went down with the rescue crew but was trapped by a second cave-in. Not to worry, as an announcer burbled about how many problems could be solved by Ironized Yeast tablets. Peps you up, gives you energy to face the problems of the day.

Black managed to do some investigating while he and the miners waited for the draegermen to rescue them. The miners speculated about suspects. Someone had spiked the dead man’s tea flask. They waited. No real suspense since Black was booked for the series. Melodrama filled the time. They were desperately thirsty.

They found the dead man’s canteen and agreed to share. One of the miners panicked and refused to take his share, thereby identifying himself as the poisoner. Black goaded the culprit to drink it. He broke down and confessed. After the rescue, the miner was tried and hanged.

Michael Shayne.

There were two radio series based on the novels by Brett Halliday (pseudonym of Davis Dresser). The first aired along the Pacific coast from 1944 to 1947. In that series, Michael Shayne was a laid-back Sam Francisco private detective, assisted by his secretary/girlfriend Phyllis Knight.

The second series was syndicated nationwide from 1948 to 1953. Shayne was in New Orleans, sans secretary. He was played by Jeff Chandler, who narrated in tones of increasing hysteria. Even crossing the street seemed like a war scene the way Chandler told the story.

"Triple Mystery" aired on 1945-09-03 and was written by Richard de Graffe. Shayne arrived home after a long day to find in his apartment a shrunken human head in the living room. Stretched out on his bed was the body of a man (with head still attached). For a top private detective, Shayne certainly was sloppy about security.

The body had a wallet with identification for R.E. McIntyre. With Phyllis and a police inspector, Shayne called upon the widow, who wasn't very bereaved. The trail led next to R.E.'s business partner Anthony Ross. They had a tin mine business in Bolivia.

As they approached the Ross mansion, they saw a man fleeing. He got away because he had pulled the ignition wires loose in Shayne's car. This was baffling to the listener because the trio hadn't been away from the car for more than a few seconds. How could that be done so quickly without them noticing? And why did Shayne leave his car unlocked?

Pause for a commercial. Union 76 extolled its new gasoline, more powerful than pre-war gasoline. The fuel had extra ingredients as used by the Air Force.

Returning to the mansion, the trio spoke with Ross. He said a Bolivian enemy was in town seeking revenge over the tin mine, to which he had a claim. Shayne and Phyllis located the mine foreman, who had arrived in town two weeks before.

Various excursions followed, shots were fired, and plot coupons were collected. The mysterious man was captured and identified as a private detective hired by McIntyre. Another victim, named Locke, was found, with a shrunken head left nearby. He survived and blabbed details.

His story failed cross-examination and was a setup to cast suspicion on someone else. In the epilogue the motive was disclosed. Locke was in love with Mrs MacIntyre but it was unrequited. His scheme was to divert attention to the mine and clear the field for romancing.

"The Case Of The Generous Killer" aired on 1948-09-04. Credits were given to everyone except the writer. This was the New Orleans version with Jeff Chandler overacting the part of Michael Shayne, sans Phyllis. Perhaps that was why he was so frenetic; he needed a woman to calm him.

Be that as it may, a client arrived at Shayne's office bearing a $100 banknote. The man said he was a ship's cook who was hired by a passenger to act as a messenger. Shayne visited the ship and found the passenger hanging in his cabin from a noose. NOPD Inspector Lefevre was ten seconds behind him. No identification on the body.

A waterfront informant called Weasel tipped the name of the deceased to Shayne. The defunct was Victor Groves, a professional hitman. Nothing else added up. The usual alarums followed. Shayne was slugged unconscious as he was in every episode.

Weasel became the second victim. Lefevre accused Shayne of high crimes and misdemeanors. Shayne and Lefevre reconciled but not to the former's satisfaction. Only they knew the hanged man was not Groves but his victim. The real Groves was the ship's cook.

The hunt was on. The chase ended in a dark alley, narrated by Shayne at the top of his lungs. Improbable coincidences were explained away in the epilogue.

WHEN WORDS COLLIDE 2025

Calgary's annual readercon When Words Collide has a membership limit of 1,000 plus volunteers and guests. The event always sells out a few months before. Reports of previous WWC conventions appeared in OPUNTIAs #71, 253, 266, 282, 318, 350, 387, 421, 452, 481, 507, 532, 555, and 580.

The 2025 WWC will be held August 15 to 17 at a new location, the Sheraton Cavalier Hotel, 2620 - 32 Avenue NE. The Alexandra Writers Centre in Calgary are the organizers. They did a good job in 2024 and will no doubt do so again in 2025. Details from www.whenwordscollide.org

Numerous authors, editors, and publishers will be in attendance. The dealer bourse is restricted to books. The average customer buys tote bags full.

SEEN IN THE LITERATURE

Stars.

Pfalzner, S., et al (2024) **Trajectory of the stellar flyby that shaped the outer Solar System.** NATURE ASTRONOMY 8:doi.org/10.1038/s41550-024-02349-x (available as a free pdf)

[An Astronomical Unit (AU) is the mean distance between Earth and the Sun, and is widely used as a measurement in astronomy. Way, way out past Neptune is a cloud of object more than 60 AU distant, too far for the planets to affect their orbits. This paper suggested a passing star threw them out there.]

Authors' abstract: *Unlike the Solar System planets, thousands of smaller bodies beyond Neptune orbit the Sun on eccentric orbits.*

While migration of the giant planets during the early stages of Solar System evolution could have induced substantial scattering of trans-Neptunian objects (TNOs), this process cannot account for the small number of distant TNOs (radius >60 AU) outside the planets' reach.

The alternative scenario of the close flyby of another star can instead produce all these TNO features simultaneously, but the possible parameter space for such an encounter is vast.

Here we compare observed TNO properties with thousands of flyby simulations to determine the specific properties of a flyby that reproduces all the different dynamical TNO populations, their locations and their relative abundances, and find that a 0.8 solar mass star passing at a distance of radius = 110 ± 10 AU, inclined by an angle of 70˚, gives a near-perfect match.

This flyby also replicates the retrograde TNO population, which has proved difficult to explain. Such a flyby is reasonably frequent; at least 140 million solar-type stars in the Milky Way are likely to have experienced a similar one.

In light of these results, we predict that the upcoming Vera Rubin telescope will reveal that distant and retrograde TNOs are relatively common. The Solar System planets accumulated from a disk of dust and gas that once orbited the Sun. Therefore, the planets move close to their common plane on near-circular orbits.

About 3,000 small objects have been observed to orbit the Sun beyond Neptune (radius >35 AU); surprisingly, most move on eccentric and inclined orbits. Therefore, some force must have lifted these trans-Neptunian objects (TNOs) from the disk where they formed and altered their orbits markedly.

One popular hypothesis is that the planets originally were in a more compact configuration; the TNOs formed between them and were scattered outwards when the planets moved to their current locations.

However, three distinct TNO dynamical groups are incredibly challenging to explain from the original planet scattering:
(i) the cold Kuiper belt objects moving on nearly circular orbits close to the plane,
(ii) the Sedna-like TNOs orbiting at large distances (radius >60 AU) on highly eccentric orbits (e >0.5) and
(iii) TNOs with high inclination (i > 60˚).

While only three Sedna-like objects and few highly inclined TNOs are known so far, they are the make-or-break test for any outer Solar System formation theory. Their existence, especially the observed clustering among the Sedna-like and high-inclination TNOs, is unlikely to stem from scattering by the planets.

Here, we build on a completely different hypothesis for the TNOs' origin. In this model, the TNOs formed in the outer Solar System (>30 AU) and the close passage of another star catapulted them to their current orbits.

This hypothesis was initially overlooked as such close flybys were deemed too rare. However, recent Atacama Large Millimeter Array observations reveal that close stellar flybys seem to be relatively common.

Recently, this scenario has gained renewed interest due to simulations showing that flybys could produce a cold Kuiper belt population and Sedna-like objects.

[Images on the next page are from this paper.]

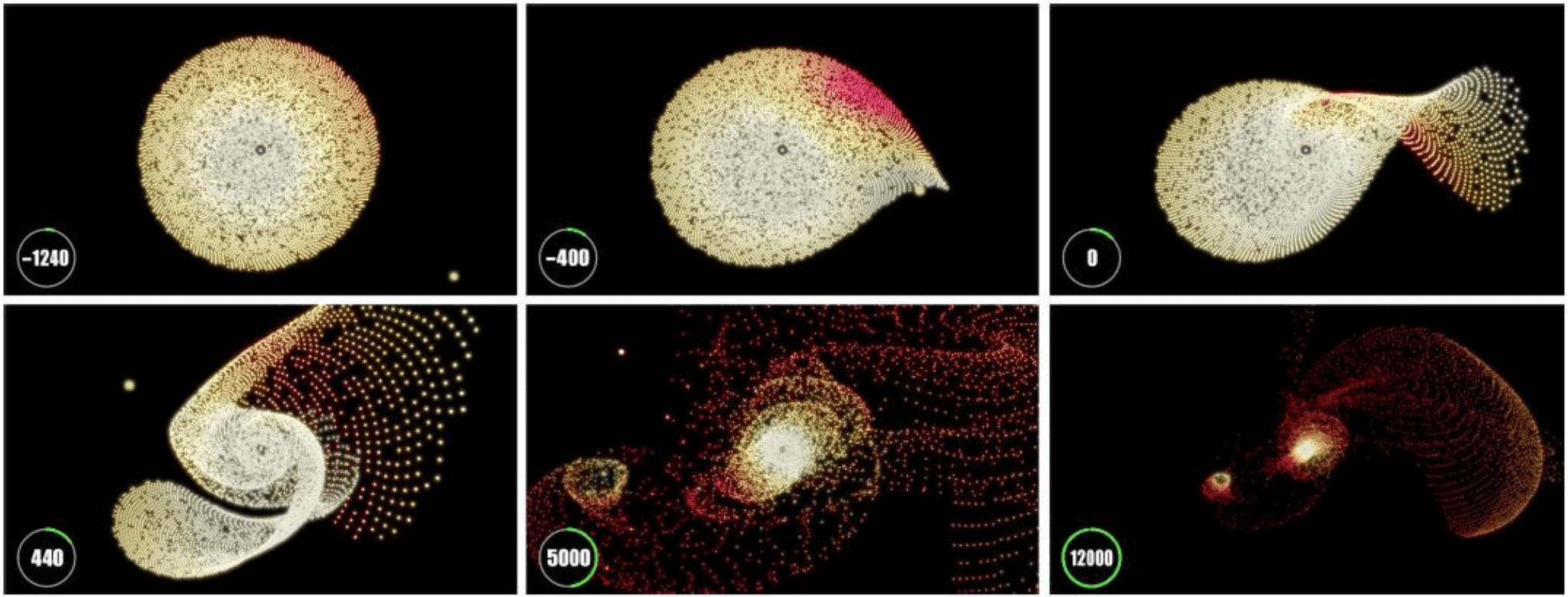


Fig. 1 | Simulation snapshots of model A1. The perturber star approaches from the bottom right. The sequence shows the typical appearance of two spiral arms, the loss of matter that becomes unbound and the capture of some material by the perturber star. The time is given in years relative to the time of periastron passage. For the first four snapshots, the size of the real area is kept constant; the last two plots show a zoom-out. The colours indicate the velocities of the test particles relative to the Sun.

Ohnaka, K., et al (2024) **Imaging the innermost circumstellar environment of the red supergiant WOH G64 in the Large Magellanic Cloud.** A S T R O N O M Y A N D A S T R O P H Y S I C S 691:doi.org/10.1051/0004-6361/202451820 (available as a free pdf)

[Astronomical telescopes have made giant strides in the past few decades. This is a study of a dying star in a different galaxy, the Large Magellanic Cloud, not our home galaxy the Milky Way.]

Author' abstract: *Significant mass loss in the red supergiant (RSG) phase has great influence on the evolution of massive stars and their final fate as supernovae. We present near-infrared interferometric imaging of the circumstellar environment of the dust-enshrouded RSG WOH G64 in the Large Magellanic Cloud.*

WOH G64 was observed with the GRAVITY instrument at ESO's Very Large Telescope Interferometer (VLTI) at 2.0 to 2.45 micrometres. We succeeded in imaging the innermost circumstellar environment of WOH G64, the first interferometric imaging of an RSG outside the Milky Way.

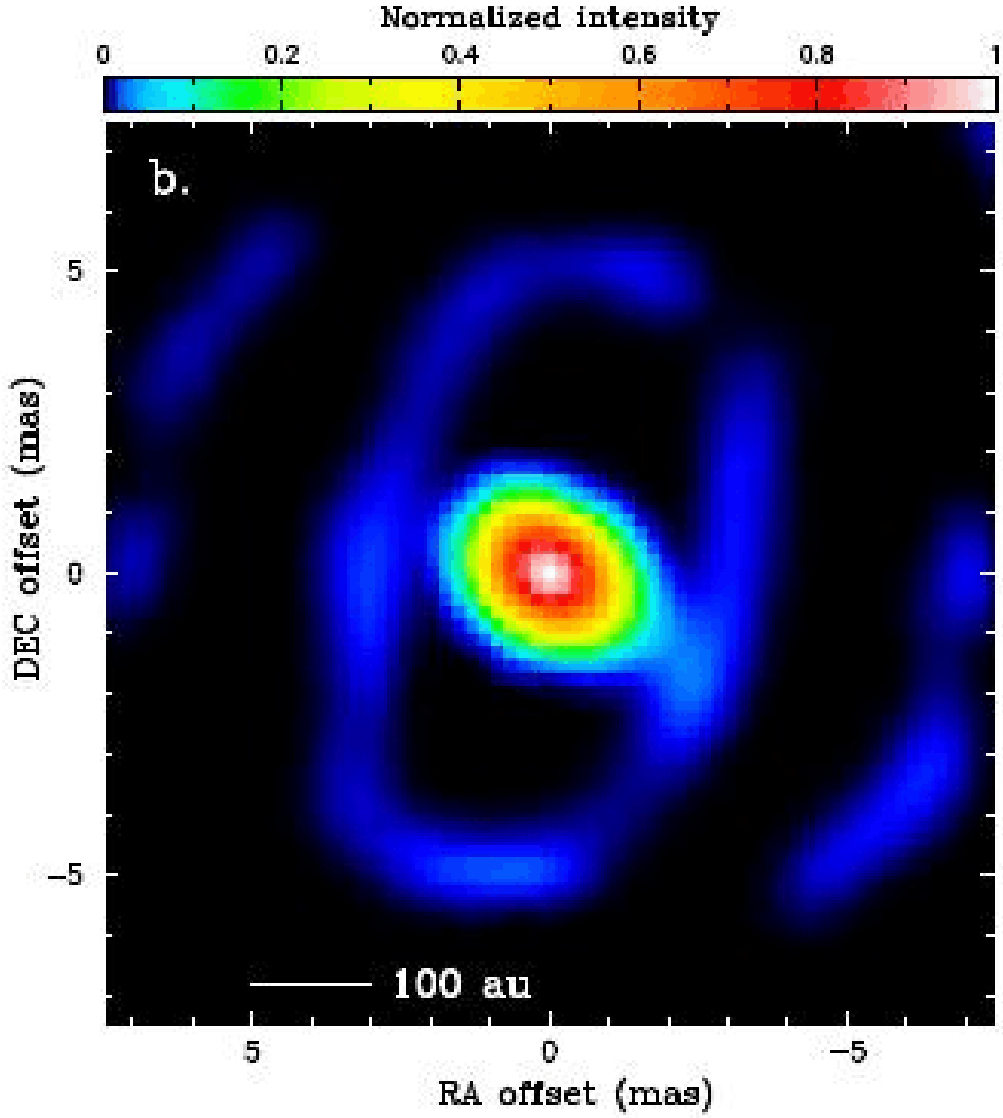
The reconstructed image reveals elongated compact emission with a semimajor and semiminor axis of 2 and 1.5 mas, respectively. The GRAVITY data show that the stellar flux contribution at 2.2 micrometres at the time of our observations in 2020 is much lower than predicted by the optically and geometrically thick dust torus model based on the VLTI/MIDI data taken in 2005 and 2007.

We found a significant change in the near-infrared spectrum of WOH G64: while the (spectro)photometric data taken at 1 to 2.5 micrometres before 2003 show the spectrum of the central RSG with H_2O absorption, the spectra and JHK0 photometric data taken after 2016 are characterized by a monotonically rising continuum with very weak signatures of H_2O.

This spectral change likely took place between December 2009 and 2016. On the other hand, the mid-infrared spectrum obtained in 2022 with VLT/VISIR agrees well with the spectra obtained before 2007.

The compact emission imaged with GRAVITY and the near-infrared spectral change suggest the formation of hot new dust close to the star, which gives rise to the monotonically rising near-infrared continuum and the high obscuration of the central star. The elongation of the emission may be due to the presence of a bipolar outflow or effects of an unseen companion.

[Image of the star and surrounding dust clouds is from this paper.]



Planets.

Barber, M.G., et al (2024) **A giant planet transiting a 3-Myr protostar with a misaligned disk.** NATURE 635:doi.org/10.1038/s41586-024-08123-3 (available as a free pdf)

Authors' abstract: *Astronomers have found more than a dozen planets transiting stars that are 10 to 40 million years old1, but younger transiting planets have remained elusive.*

The lack of such discoveries may be because planets have not fully formed at this age or because our view is blocked by the protoplanetary disk. However, we now know that many outer disks are warped or broken. Provided the inner disk is depleted, transiting planets may thus be visible.

Here we report observations of the transiting planet IRAS 04125+2902 b orbiting a 3-million-year-old, 0.7-solar-mass, pre-main-sequence star in the Taurus Molecular Cloud. The host star harbours a nearly face-on (30 degrees inclination) transitional disk and a wide binary companion.

The planet has a period of 8.83 days, a radius of 10.7 Earth radii (0.96 Jupiter radii) and a 95%-confidence upper limit on its mass of 90 Earth masses (0.3 Jupiter masses) from radial-velocity measurements, making it a possible precursor of the super-Earths and sub-Neptunes frequently found around main-sequence stars.

The rotational broadening of the star and the orbit of the wide (4 arcseconds, 635 astronomical units) companion are both consistent with edge-on orientations. Thus, all components of the system are consistent with alignment except the outer disk. The origin of this misalignment is unclear.

Courtney-Davies, L., et al (2024) **Hematite U-Pb dating of Snowball Earth meltwater events.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2410759121

Authors' abstract: *The Snowball Earth hypothesis predicts global ice cover; however, previous descriptions of Cryogenian (720 to 635 megayears ago) glacial deposits are limited to continental margins and shallow marine basins. The Tavakaiv (Tava) sandstone injectites and ridges in Colorado, USA, preserve a rare terrestrial record of Cryogenian low-latitude glaciation.*

Injectites, ridges, and chemically weathered crystalline rock display features characteristic of fluidization and pervasive deformation in a subglacial environment due to glacial loading, fluid overpressure, and repeated sand injection during meltwater events.

In situ hematite U-Pb geochronology on hematite-quartz veins, which crosscut and are cut by Tava dikes, constrain sand injection at ~690 to 660 Ma.

We attribute early Tava sand injection episodes to basal melting associated with rifting and geothermal heating, and later injections to meltwater generation during ~661 Ma Sturtian deglaciation.

A modern analog is provided by the Ross Embayment of Antarctica, where rift-related faults border sediment filled basins, overpressurized fluids circulate in confined aquifers below ice, and extensive preglacial topography is preserved.

Field evidence and geochronology in Colorado further highlight that deep chemical weathering of Proterozoic bedrock and denudation associated with the Great Unconformity predate Cryogenian injection of fluidized sand, consistent with limited glacial erosion.

The chemically weathered crystalline rock associated with the sandstones lacks evidence of mechanical abrasion and glacial scouring, suggesting that erosion at the Great Unconformity predates the Sturtian glaciation.

Gan, T., et al (2024) **Lithium isotope evidence for a plumeworld ocean in the aftermath of the Marinoan snowball Earth.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2407419121

Authors' abstract: *It has been hypothesized that the surface ocean was frozen for several million years during an ice age known as the Marinoan snowball Earth. When this event ended ~635 megayears ago, a plumeworld ocean developed, with buoyant meltwater sitting above denser hypersaline seawater that aged during the glaciation.*

We use lithium isotopes (^{7}Li) to test the plumeworld scenario, noting that ^{7}Li signatures would be different between meltwater and hypersaline seawater, with the former leaving a stronger fingerprint in rocks deposited nearshore than those in offshore environments.

Our data are consistent with the plumeworld scenario and further reveal low ^{7}Li values of the hypersaline seawater, likely due to muted continental weathering but strong seafloor reverse weathering during the snowball Earth.

The snowball Earth hypothesis predicts that continental chemical weathering diminished substantially during, but rebounded strongly after, the Marinoan ice age some 635 Mya.

Defrosting the planet would result in a plume of fresh glacial meltwater with a different chemical composition from underlying hypersaline seawater, generating both vertical and lateral salinity gradients.

Here, we test the plumeworld hypothesis using lithium isotope compositions in the Ediacaran Doushantuo cap dolostone that accumulated in the aftermath of the Marinoan snowball Earth along a proximal-distal (nearshore-offshore) transect in South China.

Our data show an overall decreasing ^{7}Li trend with distance from the shoreline, consistent with the variable mixing of a meltwater plume with high ^{7}Li (due to incongruent silicate weathering on the continent) and hypersaline seawater with low ^{7}Li (due to synglacial distillation).

The evolution of low ^{7}Li of synglacial seawater, as opposed to the modern oceans with high ^{7}Li, was likely driven by weak continental chemical weathering coupled with strong reverse weathering on the seafloor underneath silica-rich oceans.

The spatial pattern of ^{7}Li is also consistent with the development and then collapse of the meltwater plume that occurred at the time scale of cap dolostone accumulation.

Therefore, the ^{7}Li data are consistent with the plumeworld hypothesis, considerably reduced chemical weathering on the continent during the Marinoan snowball Earth, and enhanced reverse weathering on the seafloor of Precambrian oceans.

Kegerreis, J.A., et al (2024) **Origin of Mars's moons by disruptive partial capture of an asteroid.** ICARUS 425:doi.org/10.1016/j.icarus.2024.116337

Authors' abstract: *The origin of Mars's small moons, Phobos and Deimos, remains unknown. They are typically thought either to be captured asteroids or to have accreted from a debris disk produced by a giant impact.*

Here, we present an alternative scenario wherein fragments of a tidally disrupted asteroid are captured and evolve into a collisional proto-satellite disk. We simulate the initial disruption and the fragments' subsequent orbital evolution.

We find that tens of percent of an unbound asteroid's mass can be captured and survive beyond collisional timescales, across a broad range of periapsis distances, speeds, masses, spins, and orientations in the Sun-Mars frame. Furthermore, more than one percent of the asteroid's mass could evolve to circularise in the moons' accretion region.

This implies a lower mass requirement for the parent body than that for a giant impact, which could increase the likelihood of this route to forming a proto-satellite disk that, unlike direct capture, could also naturally explain the moons' orbits.

These three formation scenarios each imply different properties of Mars's moons to be tested by upcoming spacecraft missions. The moons' spectral properties suggest that they could be primitive asteroids caught by the planet.

However, their near circular and near-equatorial orbits more naturally align with accretion from a disk around Mars, typically assumed to have arisen from a large impact or alternatively from a primordial disk, although the latter may not be compatible with their spectra.

Here, we present and explore a third possibility: the capture of tidally disrupted material from an unbound asteroid passing within Mars's Roche limit, which then evolves into a collisional disk.

A similar mechanism has been shown to be a plausible route for forming the rings of giant planets, and a much smaller asteroid than that needed for an impact might be sufficient to produce a successful proto-satellite disk.

Fenton, L.K., et al (2024) **Aeolian biodispersal of terrestrial microorganisms on Mars through saltation bombardment of spacecraft.** ASTROBIOLOGY 24:doi.org/10.1089/ast.2023.0125

Authors' abstract: *A major unknown in the field of planetary protection is the degree to which natural atmospheric processes remove terrestrial microorganisms from robotic and crewed spacecraft that could potentially contaminate Mars (i.e., forward contamination).*

We present experiments in which we measured the removal rate of Bacillus subtilis HA101 spores from aluminum surfaces under the bombardment of naturally rounded sand grains.

To simulate grain impacts, we constructed a pneumatic sand-feed system and gun to accelerate grains to a desired speed, with independent control of impacting grain mass, flux, and angle.

Spore counts of the resulting bombarded surfaces when using scanning electron microscopy indicate that although spores directly impacted by sand grains would likely be killed, those immediately adjacent to grain impacts might be released into the environment intact.

The experiments demonstrate a linear relationship between the fractional dislodgement rate of spores and grain impact speed, which can be used to estimate input to microbial transport models (e.g., using numerical models of saltation).

Even the slowest grain impacts dislodged spores. Such slow events may be common and widespread on Mars, which suggests that microbial dislodgement by slow saltation near the surface is largely unavoidable.

Jasinski, J.M., et al (2024) **The anomalous state of Uranus's magnetosphere during the Voyager 2 flyby.** NATURE ASTRONOMY 8:doi.org/10.1038/s41550-024-Article 4-02389-3 (available as a free pdf)

Authors' abstract: *The Voyager 2 flyby of Uranus in 1986 revealed an unusually oblique and off-centred magnetic field. This single in situ measurement has been the basis of our interpretation of Uranus's magnetosphere as the canonical extreme magnetosphere of the solar system; with inexplicably intense electron radiation belts and a severely plasma-depleted magnetosphere.*

However, the role of external forcing by the solar wind has rarely been considered in explaining these observations. Here we revisit the Voyager 2 dataset to show that Voyager 2 observed Uranus's magnetosphere in an anomalous, compressed state that we estimate to be present less than 5% of the time.

If the spacecraft had arrived only a few days earlier, the upstream solar wind dynamic pressure would have been ~20 times lower, resulting in a dramatically different magnetospheric configuration.

We postulate that such a compression of the magnetosphere could increase energetic electron fluxes within the radiation belts and empty the magnetosphere of its plasma temporarily.

Therefore, the interpretation of Uranus's magnetosphere as being extreme may simply be a product of a flyby that occurred under extreme upstream solar wind conditions.

All previous magnetospheric analyses of the Voyager 2 flyby of Uranus that have utilized the upstream solar wind conditions have focused on the data acquired a few hours before the first bow shock crossing.

Therefore, the picture that has been built of the planet's magnetosphere is representative of the solar wind conditions that existed only during the flyby.

Origin Of Life.

Yoshida, T., et al (2024) **Self-shielding enhanced organics synthesis in an early reduced Earth's atmosphere.** ASTROBIOLOGY 24:doi.org/10.1089/ast.2024.0048

Authors' abstract: *Earth is expected to have acquired a reduced proto-atmosphere enriched in H_2 and CH_4 through the accretion of building blocks that contain metallic Fe and/or the gravitational trapping of surrounding nebula gas.*

Such an early, wet, reduced atmosphere that covers a proto-ocean would then ultimately evolve toward oxidized chemical compositions through photochemical processes that involve reactions with H_2O-derived oxidant radicals and the selective escape of hydrogen to space.

During this time, atmospheric CH_4 could be photochemically reprocessed to generate not only C-bearing oxides but also organics. However, the branching ratio between organic matter formation and oxidation remains unknown despite its significance on the abiotic chemical evolution of early Earth.

Here, we show via numerical analyses that UV absorptions by gaseous hydrocarbons such as C_2H_2 and C_3H_4 significantly suppress H_2O photolysis and subsequent CH_4 oxidation during the photochemical evolution of a wet proto-atmosphere enriched in H_2 and CH_4.

As a result, nearly half of the initial CH_4 converted to heavier organics along with the deposition of prebiotically essential molecules such as HCN and H_2CO on the surface of a primordial ocean for a geological timescale order of 10 to 100 megayears.

Our results suggest that the accumulation of organics and prebiotically important molecules in the proto-ocean could produce a soup enriched in various organics, which might have eventually led to the emergence of living organisms.

Paleobiology.

Lynch, Michael (2024) **The bioenergetic cost of building a metazoan.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2414742121

[All cellular energy is based on adenosine triphosphate (ATP), a molecule that fuels every transaction within a cell. The evolution of multicellularity provides some ATP efficiencies but adds other expenses.]

Author's abstract: *Organismal success ultimately depends on the ability to efficiently transform environmental materials into biomass essential to growth and survival.*

The energetic cost per unit biomass produced is more than ten-fold higher in multicellular organisms than in unicellular species with comparable size.

Thus, the additional support structures and functions that endow metazoans represent a significant barrier to the evolution of multicellularity unless they are offset by ecological advantages that come with such a life style.

Consideration of the features of biology's energy-making machine, ATP synthase, provides insight into the investments made into this key molecule and yields estimates of the upper bound to rates of organismal doubling times.

All life forms depend on the conversion of energy into biomass used in growth and reproduction. For unicellular heterotrophs, the energetic cost associated with building a cell scales slightly sublinearly with cell weight.

However, observations on multiple Daphnia species and numerous other metazoans suggest that although a similar size-specific scaling is retained in multicellular heterotrophs, there is a quantum leap in the energy required to build a replacement soma, presumably owing to the added investment in nonproductive features such as cell adhesion, support tissue, and intercellular communication and transport.

Thus, any context-dependent ecological advantages that accompany the evolution of multicellularity come at a high baseline bioenergetic cost.

At the phylogenetic level, for both unicellular and multicellular eukaryotes, the energetic expense per unit biomass produced declines with increasing adult size of a species, but there is a countergradient scaling within the developmental trajectories of individual metazoan species, with the cost of biomass production increasing with size.

Translation of the results into the universal currency of adenosine triphosphate (ATP) hydrolyses provides insight into the demands on the electron-transport/ATP-synthase machinery per organism and on the minimum doubling times for biomass production imposed by the costs of duplicating the energy-producing infrastructure.

Carlisle, E., et al (2024) **Ediacaran origin and Ediacaran-Cambrian diversification of Metazoa.** SCIENCE ADVANCES 10:doi.org/10.1126/sciadv.adp7161 (available as a free pdf)

Authors' abstract: *The timescale of animal diversification has been a focus of debate over how evolutionary history should be calibrated to geologic time. Molecular clock analyses have invariably estimated a Cryogenian or Tonian origin of animals while unequivocal animal fossils first occur in the Ediacaran.*

However, redating of key Ediacaran biotas and the discovery of several Ediacaran crown-Metazoa prompt recalibration of molecular clock analyses. We present revised fossil calibrations and use them in molecular clock analyses estimating the timescale of metazoan evolutionary history.

Integrating across uncertainties including phylogenetic relationships, clock model, and calibration strategy, we estimate Metazoa to have originated in the early Ediacaran, Eumetazoa in the middle Ediacaran, and Bilateria in the upper Ediacaran, with many crown-phyla originating across the Ediacaran-Cambrian interval or elsewise fully within the Cambrian.

Retallack, G.J., and I.N. Bindeman (2024) **Stable isotopic evidence for increased terrestrial productivity through geological time.** SCIENTIFIC REPORTS 14:doi.org/10.1038/s41598-024-78838-w (available as a free pdf)

Authors' abstract: *Marine life on Earth is known back to the Archean Eon, when life on land is assumed to have been less pervasive than now.*

Precambrian life on land can now be tested with stable isotopes because living soil CO_2 is isotopically distinct for both carbon and oxygen from both marine and volcanic CO_2.

Our novel compilation of previously published oxygen and carbon isotopic compositions of pedogenic and paleokarst carbonate can be compared with the coeval marine record.

Long-term enrichment (to heavier isotopic composition) of oxygen, but no significant trend in carbon through time, long apparent from marine carbonate, is now demonstrated also for pedogenic and paleokarst carbonate. Oxygen isotopic enrichment is not due to changing global temperature or hypsometry, but to increased evapotranspiration and photosynthesis on larger continents.

Differences in isotopic composition between land and sea have increased in an episodic fashion, peaking at times of major evolutionary innovations for life on land, and also at times of ice ages.

The $d^{13}C$ and $d^{18}O$ divergences between land and sea correspond to terrestrial productivity spikes including evolution of Neoproterozoic (635 megayears ago) lichens, middle Ordovician (470 Ma) non-vascular land plants, middle Devonian (385 Ma) forests, early Cretaceous (125 Ma) angiosperms, and middle Miocene (20 Ma) sod grasslands.

Kent, D.V., et al (2024) **Correlation of sub-centennial-scale pulses of initial Central Atlantic Magmatic Province lavas and the end-Triassic extinctions.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2415486121

[The end-Triassic mass extinction occurred 201 megayears ago. Most reptile lineages became extinct, leaving only crocodilians, dinosaurs, and pterosaurs. Flood lavas and mass vulcanism triggered by continental drift are believed to have caused the extinctions.]

Authors' abstract: *During the initial phase of eruptions, Central Atlantic Magmatic Province (CAMP) basalts spewed more than 500 times the amount of sulfur released during the Laki historic eruption in Iceland. The repeated injections of sulfate aerosols, constrained by paleosecular variation data, occurred in rapid succession.*

The resulting severe albedo-induced volcanic winters may have been the proximal cause for the well-resolved end-Triassic mass extinction in the continental realm.

However, in the less temporally constrained marine realm, longer-term cumulative release of carbon dioxide from CAMP eruptive and intrusive activity may have played an important albeit somewhat diachronous role in the extinctions through ocean acidification and longer-term warming.

The end-Triassic extinction (ETE) on land was synchronous with the initial lavas of the Central Atlantic Magmatic Province and occurred just after the brief 26 thousand year (kyr) reverse geomagnetic polarity Chron E23r that can be used for global correlation.

Lava-by-lava paleomagnetic secular variation data, previously reported from Morocco and northeastern United States combined with our data for the North Mountain Basalt from the Fundy Basin of Canada show that the initial phase of CAMP volcanism occurred in only five directional groups or pulses each occupying less than a century.

The first four directional groups occur during a ~40 kyr period based on available astrochronology and U-Pb geochronology.

The coincidence of the initial major pulse of CAMP volcanism with the ETE points to short-lived volcanic winters albedo-induced by sulfate aerosols as a plausible key agent of the extinctions in the tropical continental realm, whereas looser correlations allow prolonged CO emissions to contribute to more long-ranging effects in the marine realm via ocean acidification and longer-term warming.

Bos, R., et al (2024) **A high resolution palynological and geochemical study of the end-Triassic mass-extinction based on a new cored succession at Winterswijk (the Netherlands).** GEOLOGICAL MAGAZINE 161:doi.org/10.1017/S0016756824000323 (available as a free pdf)

Authors' abstract: *Based on a new cored succession at Winterswijk, evidence is uncovered of the end-Triassic mass-extinction (ETME) event in a subsurface sedimentary succession of the Netherlands.*

The ETME was one of the most devastating events for the biosphere during the Phanerozoic era. Massive volcanism from the Central Atlantic Magmatic Province initiated the breakup of the supercontinent Pangea and resulted in terrestrial and marine extinction pulses, which drastically altered the course of life on Earth.

The newly cored material reveals a sedimentary succession representing a shallow marine setting dominated by laminated black shale and claystone deposits.

A high-resolution palynostratigraphic dataset provides evidence for a late Rhaetian vegetation assemblage that displays a stepwise decline of arborescent tree vegetation that is transiently replaced by a community of ferns and fern allies.

Geochemical records link this major disturbance in palynofloral biodiversity to a pulse of volcanic activity as evidenced by a negative excursion in stable organic carbon isotopes.

Shifts towards drier climate conditions, as inferred from sedimentary elemental composition, suggest continental aridification strongly influenced the terrestrial realm following volcanic pulses.

Presence of reworked material suggests unstable soils that were affected by increased erosion rates, inhibiting the reestablishment of conifer tree vegetation.

Comparison of our findings with other contemporaneous European Triassic-Jurassic boundary sections confirms the progression of the end-Triassic extinction, which exhibits a two-phased structure.

Lopatin, A.V., et al (2024) **Mummy of a juvenile sabre-toothed cat *Homotherium latidens* from the Upper Pleistocene of Siberia.** SCIENTIFIC REPORTS 14:doi.org/10.1038/s41598-024-79546-1

Authors' abstract: *The frozen mummy of the large felid cub was found in the Upper Pleistocene permafrost on the Badyarikha River (Indigirka River basin) in the northeast of Yakutia, Russia.*

The study of the specimen appearance showed its significant differences from a modern lion cub of similar age (three weeks) in the unusual shape of the muzzle with a large mouth opening and small ears, the very massive neck region, the elongated forelimbs, and the dark coat color.

Tomographic analysis of the mummy skull revealed the features characteristic of Machairodontinae and of the genus Homotherium. For the first time in the history of paleontology, the appearance of an extinct mammal that has no analogues in the modern fauna has been studied.

In 2020, the frozen mummified carcass of a large carnivore cub was found in the Abyisky ulus of the Republic of Sakha (Yakutia). The locality, called Badyarikhskoe, is located on the Badyarikha River (right tributary of the Indigirka River, Yana-Indigirka Lowland; 67˚41'14''N, 146˚46'13''E). The numerous bones of mammoth fauna representatives are collected from the loess-like loams of the Yedoma horizon in this locality.

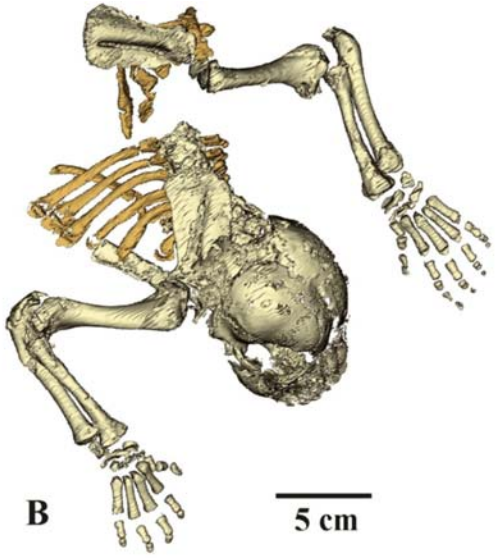
Radiocarbon dating of the find (based on wool) is 31,808 ± 367 years BP, calibrated as 35,471 to 37,019 years cal BP.

Findings of frozen mummified remains of the Late Pleistocene mammals are very rare. In Russia, the most of these finds are concentrated in the Indigirka River basin. Over the past 10 years, mummies of various animals were discovered there.

The Badyarikha mummy contains the head and the anterior part of the body preserved approximately to the caudal edge of the chest. There are also incomplete pelvic bones articulated with the femur and shin bones. They were found encased in a piece of ice along with the front part of the cub corpse. The specimen is stored at DMF AS RS in Yakutsk.

The study of the mummy was carried out at the PIN. The carcass of a three-week-old lion cub, Panthera leo (Linnaeus, 1758), from the collection of the ZMMU (no. S-210286) was used for comparative analysis.

[Images are from this paper.]



Dinosaurs.

Qvarnström, M., et al (2024) **Digestive contents and food webs record the advent of dinosaur supremacy.** NATURE 635:doi.org/10.1038/s41586-024-08265-4 (available as a free pdf)

[This was a study of dinosaur coprolites, that is, fossilized excrement. The fragments of plant and animal remains in the coprolite tell a tale.]

Authors' abstract: *The early radiation of dinosaurs remains a complex and poorly understood evolutionary event. Here we use hundreds of fossils with direct evidence of feeding to compare trophic dynamics across five vertebrate assemblages that record this event in the Triassic-Jurassic succession of the Polish Basin (central Europe).*

Bromalites, fossil digestive products, increase in size and diversity across the interval, indicating the emergence of larger dinosaur faunas with new feeding patterns. Well-preserved food residues and bromalite-taxon associations enable broad inferences of trophic interactions.

Our results, integrated with climate and plant data, indicate a stepwise increase of dinosaur diversity and ecospace occupancy in the area. This involved

(1) a replacement of non-dinosaur guild members by opportunistic and omnivorous dinosaur precursors, followed by

(2) the emergence of insect and fish-eating theropods and small omnivorous dinosaurs. Climate change in the latest Triassic resulted in substantial vegetation changes that paved the way for

(3) and (4) an expansion of herbivore ecospace and the replacement of pseudosuchian and therapsid herbivores by large sauropodomorphs and early ornithischians that ingested food of a broader range, even including burnt plants. Finally,

(5) theropods rapidly evolved and developed enormous sizes in response to the appearance of the new herbivore guild. We suggest that the processes shown by the Polish data may explain global patterns, shedding new light on the environmentally governed emergence of dinosaur dominance and gigantism that endured until the end-Cretaceous mass extinction.

Dinosaurs evolved in the mid-part of the Triassic, as indicated by the earliest unequivocal dinosaur fossils in upper Carnian deposits and the remains of close dinosaur ancestors in the Middle Triassic.

However, terrestrial ecosystems dominated by dinosaurs of various trophic levels and taxonomic affinities, a structuring that would persist until the end-Cretaceous mass extinction, did not appear until the Early Jurassic, some 30 million years later.

Many non-dinosaur tetrapods (for example, most temnospondyl amphibians, procolophonid parareptiles, rhynchosaurs, phytosaurs and pseudosuchians, and some therapsids) became extinct during this interval, leading to the rise of dinosaurs being considered one of the most classic examples of a macroevolutionary biotic replacement.

Two main contrasting models have been proposed to explain this event. The traditional 'competitive replacement model' argues that dinosaurs outcompeted their rivals because of more efficient physiologies, new anatomical adaptations or different feeding habits.

By contrast, the 'opportunistic replacement' model focuses on the role of stochastic processes that would have enabled the early radiation of dinosaurs following a diversity decline, or total extinction, of other groups.

[Images on the next page are from this paper.]

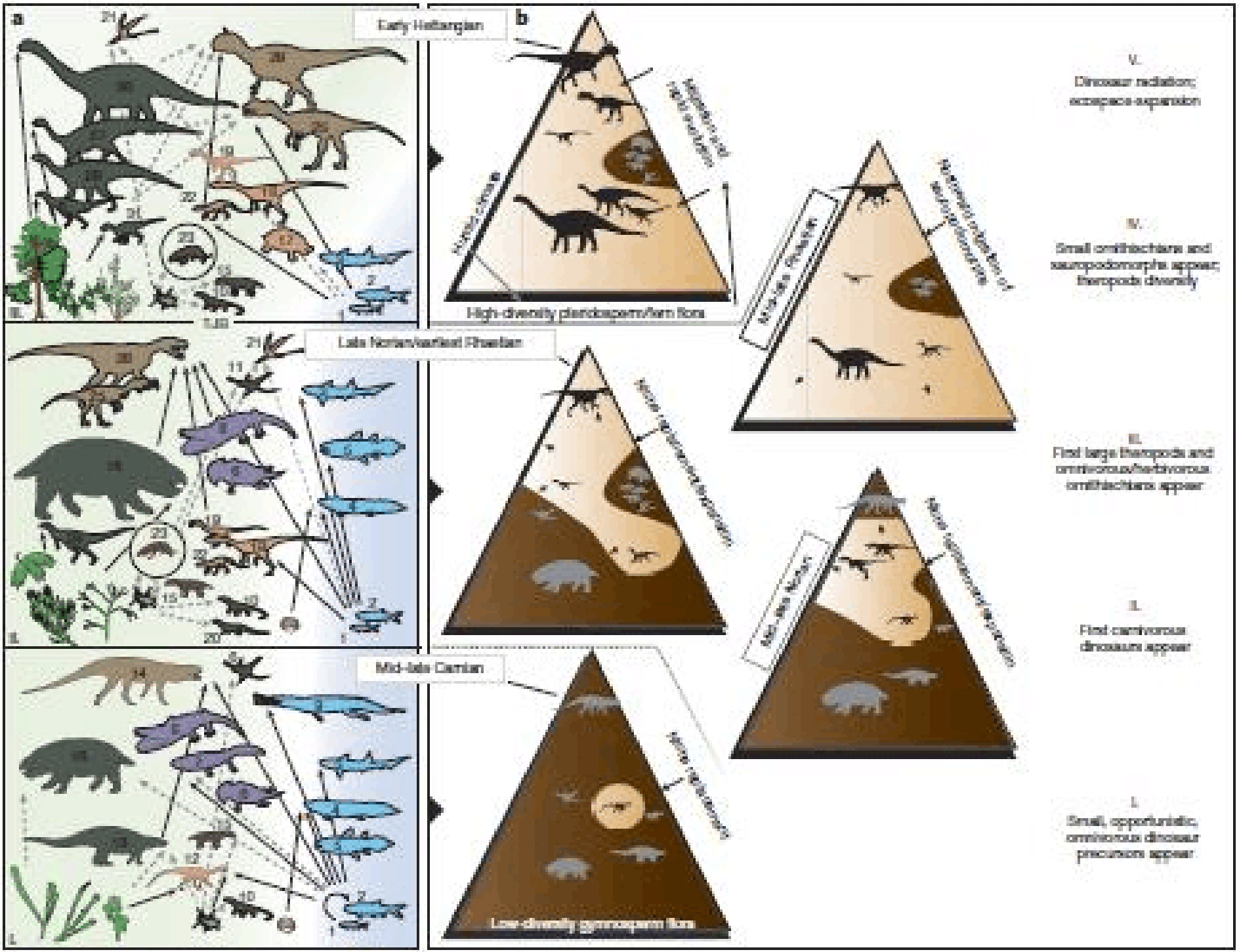


Fig. 3 | Reconstructed food webs across the Triassic–Jurassic transition, model for the dinosaurs' stepwise rise to dominance and key phases of dinosaur evolution in the Polish Basin.

MacLennan, S.A., et al (2024) **Extremely rapid, yet non-catastrophic, preservation of the flattened-feathered and 3D dinosaurs of the Early Cretaceous of China.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2322875121

Authors' abstract: *Northeast China's Early Cretaceous Yixian Formation preserves spectacular fossils that have proved extraordinarily important in testing evolutionary hypotheses involving the origin of birds and the distribution of feathers among non-avian dinosaurs.*

These fossils occur either flattened with soft tissue preservation (including feathers and color) in laminated lacustrine strata or as three-dimensional (3D) skeletons in "life-like" postures in more massive deposits.

The relationships of these deposits to each other, their absolute ages, and the origin of the extraordinary fossil preservation have been vigorously debated for nearly a half century, with the prevailing view being that preservation was linked to violent volcanic eruptions or lahars, similar to processes that preserved human remains at Pompeii.

We present high-precision zircon U-Pb geochronology from cores and outcrops, demonstrating that Yixian Formation accumulation rates are more than an order of magnitude higher than usually estimated.

Additionally, we provide zircon provenance and sedimentological data from 3D dinosaur fossils, which imply that their death and burial occurred in collapsed burrows, rather than via a catastrophic volcanogenic mechanism.

In the studied area, the three principal fossil-rich intervals of the Yixian occur as a cyclic sequence that correspond to periods of high precipitation. Using Bayesian-Markov Chain Monte Carlo approaches, we constrain the total duration of the sequence to less than ~93,000 years and suggest that climatic precession paced the expression of these cyclic sediments.

Rather than representing multiple, Pompeii-like catastrophes, the Yixian Formation is instead a brief snapshot of normal life and death in an Early Cretaceous continental community.

Zoology.

Bojarska, K., et al (2024) **The use of haystacks by wolves may facilitate the transmission of sarcoptic mange.** SCIENTIFIC REPORTS 14:doi.org/10.1038/s41598-024-78026-w (available as a free pdf)

[This paper caught my eye because I grew up on a cattle ranch in west-central Alberta. My father was a livestock veterinarian who kept a couple of hundred rangeland beef cattle on the side. I don't recall we had mange in our cattle but the pest was not unheard of in the area.]

[Wolves were extirpated from our district long before I was born but coyotes were everywhere. We had huge stacks of rectangular bales of hay and straw on the farmstead to overwinter the herd. The bales were compressed, so would not have been suitable in the stacks for coyote nesting.]

Authors' abstract: *Wildlife that use anthropogenic resources often come into conflict with humans, e.g. due to damaged property, habituation or transmission of pathogens, amongst them Sarcoptes scabiei, the aetiological agent of sarcoptic mange, an emerging panzootic skin disease.*

This study examines the use of haystacks intended for supplementary feeding of European bison (Bison bonasus) by wolves (Canis lupus) with sarcoptic mange and the potential role of this behaviour in skin parasite transmission and human-wolf conflict.

Hay samples from the beds used by wolves were found to harbour S. scabiei mites, even several days after the last use. Our data demonstrate an unforeseen link between wild ungulate supplementary feeding and wolf behaviour that may lead to conflict, namely approaching human settlements.

However, no negative interactions were observed between wolves and humans or domestic animals. The presence of S. scabiei mites in haystacks provides a potential for its human-facilitated environmental transmission among wildlife and to domestic animals.

The emergence of infectious diseases in wildlife poses a substantial threat to the conservation of global biodiversity. In an era of global change, human activities such as hunting, as well as habitat alterations, supplementary feeding, wildlife translocation, and the introduction of pathogens carried by alien

speciesor domestic animals, have a strong influence on potential host population size, demography and behaviour. These factors play a significant role in the emergence of disease and its transmission in wildlife.

Lai, S., et al (2024) **Canids as pollinators? Nectar foraging by Ethiopian wolves may contribute to the pollination of *Kniphofia foliosa*.** ECOLOGY 105:doi.org/10.1002/ecy.4470 (available as a free pdf)

Authors' abstract: *Up to 87% of flowering plant species depend on a wide range of animal species for their pollination. Among mammals, nectivorous pollinator species are principally represented by flying species such as bats and, to a smaller extent, by some marsupials, rodents, primates, and small carnivores.*

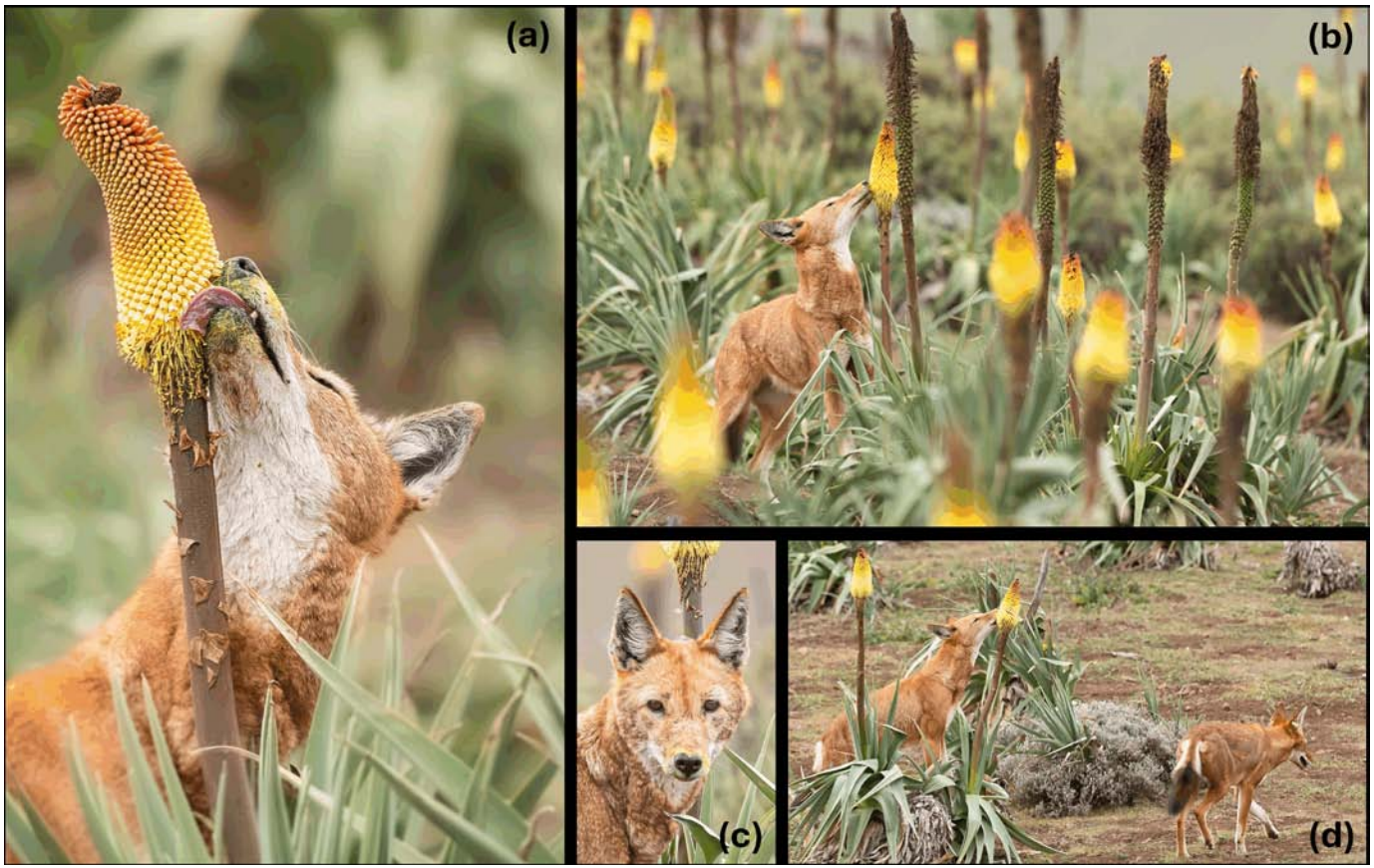
It has been pointed out that therophily, pollination by non-flying mammals, may however be more widespread and hold more significance than currently recognized.

Here, we report the visitation to inflorescences of the Ethiopian red hot poker (Kniphofia foliosa) by a large carnivore, the Ethiopian wolf (Canis simensis), in the Bale Mountains of southern Ethiopia.

Wolves were observed foraging for nectar on K. foliosa flowers, which deposited relatively large amount of pollen on their muzzles, suggesting they could contribute to pollination.

Kniphofia foliosa (Asphodelaceae) is a perennial herb endemic to Ethiopia found in the Bale Mountains and other high altitude grasslands, which also host the endemic Ethiopian wolf, a top predator restricted to the Afroalpine ecosystem. Flowers from the Kniphofia genus produce large amounts of nectar, which attracts a variety of bird and insect pollinators.

The nectar-feeding behavior of wolves on K. foliosa flowers during the main blooming season has been opportunistically but repeatedly observed by the authors over many years.



Typically, the wolf approached a stalk and licked the most mature flowers located at the bottom of the inflorescence and containing the most nectar.

[Images are from this paper.]

Environmental Science.

Wanga, J., et al (2024) **A scaling law for predicting urban trees canopy cooling efficiency.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2401210121 (available as a free pdf)

Authors' abstract: *Many cities seek to alleviate extreme heat via planting trees. However, the cooling achieved by such programs is debated because previous analyses address scales much smaller than the whole-city scale on which planners operate.*

To fill this gap, we conducted a scaling analysis of cooling efficiency (CE), the temperature reduction associated with 1% of increasing urban tree canopy (UTC), to predict whole-city CE.

Results show that CE increased with enlarging spatial scales in a convex power-law form. The power law was consistently found in multiple cities with different climate contexts and was also robust under different summer weather conditions within a city.

Urban heat mitigation is a pressing concern for cities. Intense urban heat poses a threat to human health and urban sustainability. Tree planting is one of the most widely employed nature-based heat mitigation methods worldwide.

Cities worldwide are experiencing increased extreme heat due to the synergistic effects of global warming and the urban heat island (UHI) effect. According to Tuholske et al., global exposure to daily maximum wet bulb temperature of 30 ˚C increased nearly 200% from 1983 to 2016. Exposure to such extremes is expected to grow with continued global warming and growth of cities.

To set UTC goals, the foremost question managers and decision-makers have asked is, "How much UTC cover does our city need"? This question is crucial because cities typically have limited space for greening.

Considerable research has investigated the cooling effects of change in UTC. For example, studies have shown that as UTC within neighborhoods increases, temperature significantly decreases. With one percent of increase in UTC, temperature can decrease 0.04 to 0.57 degrees at these fine scales.

Zhua, J.L., et al (2024) **Weather deviations linked to undocumented migration and return between Mexico and the United States.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2400524121 (available as a free pdf)

Authors' abstract: *As the world's climate continues to change, human populations are exposed to increasingly severe and extreme weather conditions that can promote migration.*

Here, we examine how extreme weather influences the likelihood of undocumented migration and return between Mexico and the United States.Weused data from 48,313 individuals observed between 1992 and 2018 in 84 Mexican agricultural communities.

While controlling for regional and temporal confounding factors, we related individual decisions to migrate to the United States without documents and subsequently return to Mexico with lagged weather deviations from the historical norm during the corngrowing season (May to August).

Undocumented migration was most likely from areas experiencing extreme drought, and migrants were less likely to return to their communities of origin when extreme weather persisted.

These findings establish the role of weather shocks in undocumented Mexican migration to, and eventual settlement in, the United States. The findings also suggest that extreme weather conditions, which are likely to increase with climate change, promote clandestine mobility across borders and, thus, expose migrants to risks associated with crossing dangerous terrain and relying upon smugglers.

Research shows that the extent to which individuals migrate can be affected by both sudden weather events, like tornadoes, hurricanes, and floods, and slow-onset weather processes, such as above average temperatures or deviations in rainfall.

Most weather-related migration occurs within national borders given high costs of international movement. That said, weather stressors can promote international migration in cases where origin-destination countries are connected via migrant networks, and when clandestine crossing is possible, as is the case between Mexico and the United States.

We focus on the migration between Mexico and the United States, the largest sustained international flow in the world. By 2017, over 10 million Mexican-born individuals were residing in the United States, about half of them without documents.

We study this latter group. Undocumented migrants not only face risks as they move across unfamiliar and often hostile terrain but also from working stressful, dangerous, unhealthy, and low-paying jobs once in the United States.

After peaking at 6.9 million in 2005, the number of undocumented Mexicans in the United States dropped to 4.9 million by 2017. Yet the share of undocumented Mexicans who have been in the country for 10 years or more has increased from 41% in 2005 to 83% in 2017.

Our goal is to link weather conditions to the likelihood and duration of undocumented mobility from Mexico to the United States. Mexico is a key setting for studying the potential impact of weather stressors on migration.

The country is projected to experience a 1.1 to 3 degree Celsius increase in mean annual temperature by 2060, in addition to the 0.6 degree increase it has already experienced from 1960 to 2003.

Weather extremes are likely to create significant economic damage for rural populations, the majority of which are dependent on rain-fed agriculture given that only a quarter of cultivated land is irrigated. Weather extremes accounted for approximately 80% of economic losses due to natural disasters in Mexico.

Human Prehistory.

Hatala, K.G., et al (2024) **Contemporary hominin locomotor diversity.** SCIENCE 386:doi.org/10.1126/science.ado5275

Authors' abstract: *For much of the Pliocene and Pleistocene, multiple hominin species coexisted in the same regions of eastern and southern Africa. Due to the limitations of the skeletal fossil record, questions regarding their interspecific interactions remain unanswered.*

We report the discovery of footprints (~1.5 million years old) from Koobi Fora, Kenya, that provide the first evidence of two different patterns of Pleistocene hominin bipedalism appearing on the same footprint surface. New analyses show that this is observed repeatedly across multiple contemporaneous sites in the eastern Turkana Basin.

These data indicate a sympatric relationship between Homo erectus and Paranthropus boisei, suggesting that lake margin habitats were important to both species and highlighting the possible influence of varying levels of coexistence, competition, and niche partitioning in human evolution.

Adeleye, M.A., et al (2024) **Landscape burning facilitated Aboriginal migration into Lutruwita/Tasmania 41,600 years ago.** SCIENCE ADVANCES 10:doi.org/10.1126/sciadv.adp6579 (available as a free pdf)

[The Aborigines actively altered their environment. In their time the Ministry of Environment did not exist.]

Authors' abstract: *The establishment of Tasmanian Palawa/Pakana communities ~40 thousand years ago (ka) was achieved by the earliest and farthest human migrations from Africa and necessitated migration into high-latitude Southern Hemisphere environments.*

The scarcity of high-resolution paleoecological records during this period, however, limits our understanding of the environmental effects of this pivotal event, particularly the importance of using fire as a tool for habitat modification.

We use two paleoecological records from the Bass Strait islands to identify the initiation of anthropogenic landscape transformation associated with ancestral Palawa/Pakana land use.

People were living on the Tasmanian/Lutruwitan peninsula by ~41.6 ka using fire to penetrate and manipulate forests, an approach possibly used in the first migrations across the last glacial landscape of Sahul.

Armstrong, C.G., et al (2024) **Genetic differentiation and precolonial Indigenous cultivation of hazelnut (*Corylus cornuta*, Betulaceae) in Western North America.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2402304121

[There is a myth of pristine wilderness in North America before the arrival of Europeans. In actual fact, the pre-contact peoples were everywhere and so was their agriculture, including growing hazelnuts.]

Authors' abstract: *Cultivation studies evaluating land-use histories and coevolutionary dynamics between humans and plants focus predominantly on domesticated species.*

Traditional anthropological divisions of foragers and farmers have shaped our understanding of ancient cultivation practices but have several limitations, including how people stewarded and managed non-domesticated species.

To investigate the long-term effects of plant management in the Pacific Northwest, this study focuses on beaked hazelnut (Corylus cornuta) which has a long, precolonial history of management, transportation, and cultivation in British Columbia (BC, Canada).

In particular, isolated hazelnut populations in northwestern BC are thought to be the result of historical transplanting and management.

We sampled individual hazelnuts (n = 219) representing three distinct regions in and assessed 9,650 genome-wide SNPs identified with nextRAD genotyping-by-sequencing libraries to test for population genetic structure. We used linear measurements of individuals to assess morphological phenotypes and to identify variation between individuals and lineages.

These data reveal shared genetic clusters in distant and disjunct northwestern and interior regions consistent with the movement of humans across the landscape. We also find several small genetically distinct populations in the northwestern region.

The genetic structure of hazelnut in the previously labeled disjunct region in Gitxsan, Ts'msyen, and Nisga'a homelands is consistent with the enduring influence of people on the distribution of purportedly wild plant species.

Our results support the hypothesis that hazelnut was likely transplanted long distances and also managed in situ. This study highlights the often-overlooked agency of indigenous peoples in shaping species range distributions in North America.

Pilli, E., et al (2024) **Ancient DNA challenges prevailing interpretations of the Pompeii plaster casts.** CURRENT BIOLOGY 34:P5307-5318

Authors' abstract: *The eruption of Somma-Vesuvius in 79 CE buried several nearby Roman towns, killing the inhabitants and burying under pumice lapilli and ash deposits a unique set of civil and private buildings, monuments, sculptures, paintings, and mosaics that provide a rich picture of life in the empire.*

The eruption also preserved the forms of many of the dying as the ash compacted around their bodies. Although the soft tissue decayed, the outlines of the bodies remained and were recovered by excavators centuries later by filling the cavities with plaster.

From skeletal material embedded in the casts, we generated genome-wide ancient DNA and strontium isotopic data to characterize the genetic relationships, sex, ancestry, and mobility of five individuals.

We show that the individuals' sexes and family relationships do not match traditional interpretations, exemplifying how modern assumptions about gendered behaviors may not be reliable lenses through which to view data from the past.

For example, an adult wearing a golden bracelet with a child on their lap, often interpreted as mother and child, is genetically an adult male biologically unrelated to the child. Similarly, a pair of individuals who were thought to have died in an embrace, often interpreted as sisters, included at least one genetic male.

All Pompeiians with genome-wide data consistently derive their ancestry largely from recent immigrants from the eastern Mediterranean, as has also been seen in contemporaneous ancient genomes from the city of Rome, underscoring the cosmopolitanism of the Roman Empire in this period.

Human Health.

Dunivin, Z.O., and P. Kaminski (2024) **Path dependence, stigmergy, and memetic reification in the formation of the 27 Club myth.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2413373121

Authors' abstract: *The "27 Club" refers to the widespread legend that notable people, particularly musicians, are unusually likely to die at age 27. A 2011 inquiry in The BMJ showed this is not the case, dismissing the 27 Club as a myth.*

We expand on this discourse by demonstrating that although the existence of the phenomenon cannot be empirically validated, it is real in its consequences. Using Wikipedia data, we show that while age 27 does not hold greater risk of mortality for notable persons, those who died at 27 are as a group exceptionally notable compared to those who died at other young ages.

The 27 Club legend originated from a statistically improbable event circa 1970, wherein four superstar musicians died within the span of 2 years all at age 27. This coincidence captured the public imagination such that our fascination with the 27 Club brought itself into being, producing greater interest in those who died at age 27 than would have been otherwise.

This demonstrates path dependence in cultural evolution, whereby an effectively random event evolves into a narrative that shapes otherwise unrelated events and thus the way we make and interpret history.

Modern Humans.

Pradeep, S., et al (2024) **Soft matter mechanics of baseball's Rubbing Mud.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 121:doi.org/10.1073/pnas.2413514121 (available as a free pdf)

Authors' abstract: *Researchers looking for sustainable materials with optimal mechanical properties may draw inspiration from a baseball tradition. For nearly 100 years, a mysterious mud harvested from an undisclosed river site in New Jersey (USA) has been the agent of choice in the USA's Major League Baseball for "de-glossing" new baseballs.*

It is unclear, however, what makes this "Rubbing Mud" work. Here, we perform a multiscale investigation of the rheology and tribology of this mud material under baseball-relevant conditions and identify three mechanisms by which the mud alters the surface properties of the baseball.

First, the mud creates a more uniform baseball surface by filling in pores in the leather; this is possible because of its relatively high cohesion (clays and organics) making the material remarkably shear thinning.

Second, the residue of cohesive particles coating the baseball effectively doubles contact adhesion.

Third, a sparse population of angular sand grains are bonded to the baseball by clay-sized particles, leaving a studded surface that enhances friction.

The proportions of cohesive, frictional, and viscous elements in Rubbing Mud conspire to create a soft material with an unusual mix of properties, that could find other applications in the development of sustainable geomaterials.

Technology.

Gee, K.I., et al (2024) **Starship super heavy acoustics: Far-field noise measurements during launch and the first-ever booster catch.** JOURNAL OF ACOUSTICAL SOCIETY OF AMERICA EXPRESS LETTERS 4:doi.org/10.1121/10.0034453 (available as a free pdf)

Authors' abstract: *Far-field (9.7 to 35.5 km) noise measurements were made during the fifth flight test of SpaceX's Starship Super Heavy, which included the first-ever booster catch.*

Key results involving launch and flyback sonic boom sound levels include
(a) A weighted sound exposure levels during launch are 18 dB less than predicted at 35 km;
(b) the flyback sonic boom exceeds 10 psf at 10 km; and
(c) comparing Starship launch noise to Space Launch System and Falcon 9 shows that Starship is substantially louder; the far-field noise produced during a Starship launch is at least ten times that of Falcon 9.

Smith, J., et al (2024) **Mapping the ionosphere with millions of phones.** NATURE 635:doi.org/10.1038/s41586-024-08072-x (available as a free pdf)

Authors' abstract: *The ionosphere is a layer of weakly ionized plasma bathed in Earth's geomagnetic field extending about 50 to 1,500 kilometres above Earth.*

The ionospheric total electron content varies in response to Earth's space environment, interfering with Global Satellite Navigation System (GNSS) signals, resulting in one of the largest sources of error for position, navigation and timing services.

Networks of high-quality ground-based GNSS stations provide maps of ionospheric total electron content to correct these errors, but large spatiotemporal gaps in data from these stations mean that these maps may contain errors.

Here we demonstrate that a distributed network of noisy sensors, in the form of millions of Android phones, can fill in many of these gaps and double the measurement coverage, providing an accurate picture of the ionosphere in areas of the world underserved by conventional infrastructure.

Using smartphone measurements, we resolve features such as plasma bubbles over India and South America, solar-storm-enhanced density over North America and a midlatitude ionospheric trough over Europe. We also show that the resulting ionosphere maps can improve location accuracy, which is our primary aim.

There are billions of smartphones worldwide, each equipped with a powerful processor and a wide array of sensors. Although these sensors are generally of lower quality than those in conventional scientific instruments, the number and ubiquity of smartphones offer advantages over existing infrastructure in coverage and resolution.

In this paper, we produce maps of the ionospheric total electron content (TEC) using satellite navigation signals from millions of smartphones equipped with dual-frequency Global Navigation Satellite System (GNSS) receivers.

The conditions in the ionosphere are dynamic: the electron density varies depending on the location, time, and solar and geomagnetic activities. Steep spatial gradients in ionospheric TEC often cause plasma density structures that disturb trans-ionospheric radio signals.

TEC is an important indicator of the state of the ionosphere and space weather. Global real-time ionospheric TEC maps are needed to produce space-weather operational products to serve a broad spectrum of civilian and security activities, including electric power distribution, aviation, satellite operations, navigation, precision agriculture and communications.

Current operational ionospheric and space-weather products provide limited coverage, spatial resolution and refresh rates, especially real-time products.

Global Positioning System (GPS) and other GNSS receivers estimate distances to satellites by measuring the time for a radio signal to travel from a satellite to a receiver. Ionospheric TEC affects the propagation speed of radio waves, introducing significant errors in receivers' calculations of the distance to satellites.

This is one of the largest sources of geolocation error, and many GNSS receivers use a coarse spatiotemporal model of the ionospheric TEC to compensate for it. Most phones use an 8-parameter model, mitigating about 50% of the ionospheric error.

Sun, W., et al (2024) **Sudden death of quantum advantage in correlation generations.** SCIENCE ADVANCES 10:doi.org/10.1126/sciadv.adr5002 (available as a free pdf)

[Quantum computers may not be as powerful as first thought.]

Authors' abstract: *Quantum noise is one of the most profound obstacles to implementing large-scale quantum algorithms and schemes.*

In particular, the dynamical process by which quantum noise, varying in strength from 0 to critical levels, affects and destroys quantum advantage has not been well understood.

Meanwhile, correlation generation serves as a precious theoretical model for information processing tasks, where quantum advantage can be precisely quantified.

In this study, we show that this model provides valuable insights into the understanding of this dynamical process. We prove that, as the strength of quantum noise continuously increases from 0, the quantum advantage diminishes gradually and eventually vanishes.

Unexpectedly, in some cases, we observe the phenomenon of a sudden death of quantum advantage. When the noise strength exceeds a certain threshold, the quantum advantage abruptly disappears from a substantial level. This phenomenon, once again, reveals the tremendous impact of noise on quantum information processing tasks. Quantum noise is one of the major obstacles in building large-scale quantum computers.

Although remarkable progress in their physical implementation has been made, we still lack sufficient quantum computational resources to perform quantum error corrections, which are considered the ultimate approach to combat quantum noise.

As a result, we are now limited to working with noisy intermediate scale quantum (NISQ) computers, which usually based on short-depth quantum circuits that do not incorporate error correction.

In recent years, researchers have intensively used NISQ computers to sample outputs from random quantum circuits and solve optimization problems such as calculating the ground-state energy of physically relevant Hamiltonians, in an effort to demonstrate that these computers can efficiently solve problems that classical computers cannot.

Addressing the impact of noise on quantum advantage presents two major challenges. First, rigorous characterization of quantum advantage is usually difficult to achieve.

For example, while Shor's algorithm marked a milestone in quantum computing, it remains unproven whether it can achieve an exponential speedup over the best classical counterpart, as the classical computational complexity of integer factorization is still unresolved.

In some specific computational models, such as query complexity, communication complexity, and certain machine learning models, researchers have mathematically demonstrated quantum advantage, often by providing rough upper bounds on the power of quantum computing while simultaneously lower bounding the classical counterpart's performance on the same task. However, after factoring in the impact of quantum noise, it becomes exceedingly difficult to quantify quantum advantage for most problems. Therefore, to investigate the impacts of noise of varying strengths on quantum advantage, a proper measure for quantifying it is essential.

Because quantum advantage is achieved only when a quantum computer can solve a computational problem more efficiently than classical computers, a key focus of this research is determining when sampling from the outputs of noisy random quantum circuits can or cannot be efficiently simulated by classical algorithms.

Brooks, Robert C. (2024) **How might artificial intelligence influence human evolution?** QUARTERLY REVIEW OF BIOLOGY 99:doi.org/10.1086/733290

Author's abstract: *As artificial intelligence (AI) becomes more common and sophisticated, its effects on human lives and societies are attracting considerable attention. The question of how these new technologies might affect human evolution remains far less often asked, and most attempts focus on dramatic but perhaps unlikely events, including possibilities of human annihilation, assimilation, or enslavement.*

I consider some possible forms of human-AI interaction, and the evolutionary implications of such interactions via natural selection, including forms of selection that resemble the inadvertent and deliberate selection that occur during domestication.

The direction and rate of evolution can be hard to predict even for organisms kept under controlled conditions. Far more so the complexities of predicting selection and resulting evolution of humans in a fast-moving AI-rich world.

Nonetheless, I extract several predictions, including the acceleration of recent trends toward smaller brains, selection on attention spans, personality types, and mood-disorder susceptibilities. Further, changes in intimacy-building and mating competition due to AI applications that act as friends and intimates are likely already affecting mating success and may influence the evolution of social behavior.