OPUNTIA 527

Summer Solstice 2022

Opuntia is published by Dale Speirs, Calgary, Alberta. It is posted on www.efanzines.com and www.fanac.org. 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: I took this photo of the mural from 4 Street SW in the downtown core of Calgary. The sandstone edifice is the Knox United Church, built in 1913. The building is now a listed historical site, meaning the developers can't touch it.

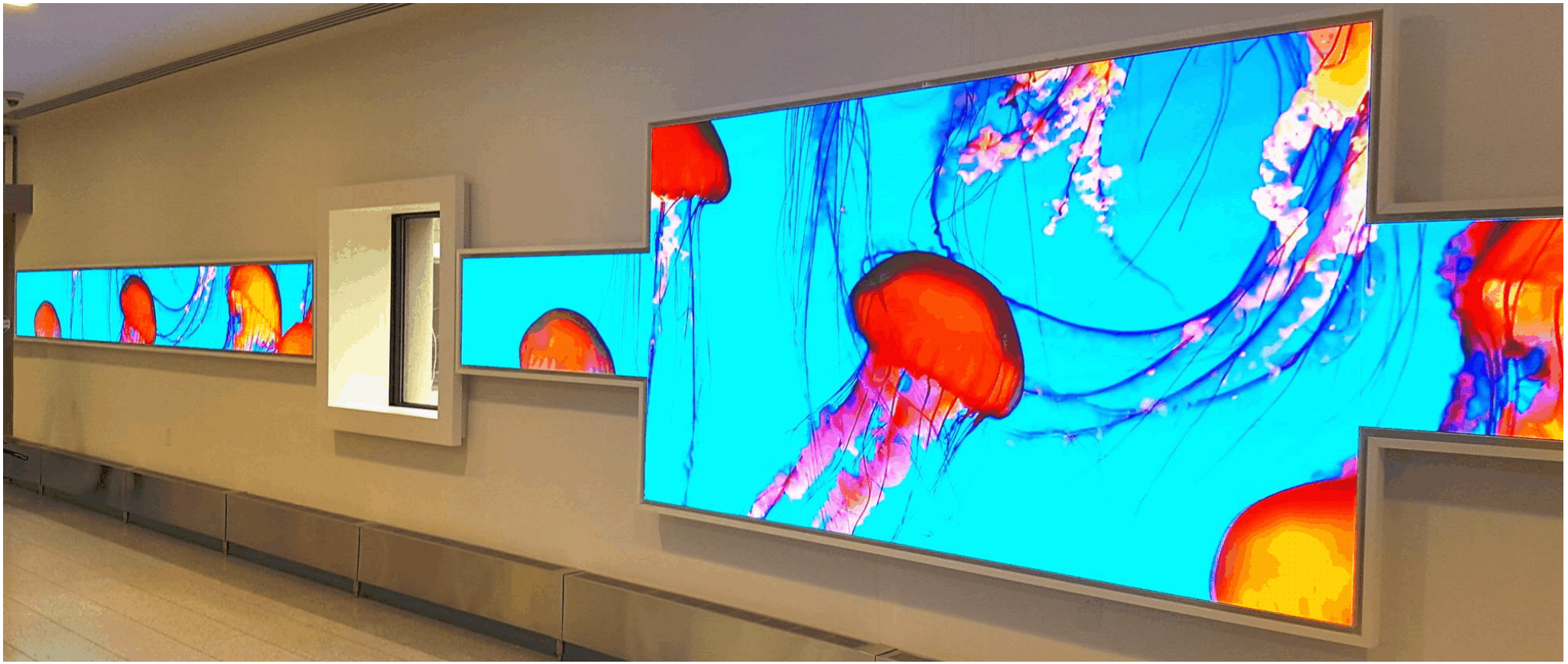
BOW VALLEY SQUARE ELECTRONIC ART: PART 4

photos by Dale Speirs

[Parts 1 to 3 appeared in OPUNTIA #487, 490, and 516.]

Bow Valley Square is a cluster of skyscrapers in downtown Calgary. They are 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 by local artists constantly rotate.


MEDI
DERM
Botox
Facials
Peels
Acne
Laser Hair Removal
Skin Tightening
Photorejuvenation
Fractional Resurfacing
Fat Reduction
Body Contouring
Cellulite
Medical Grade Products
Mineral Makeup

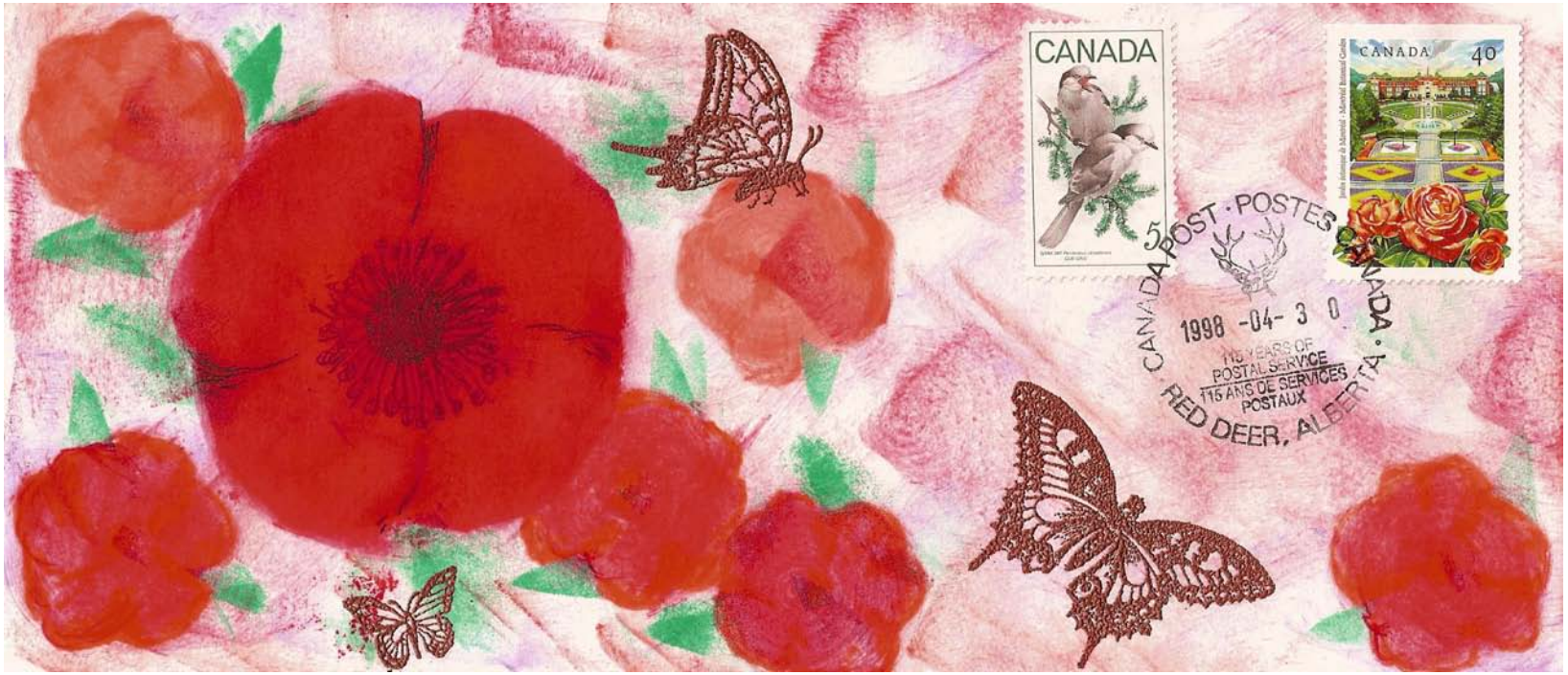


Calgary is 600 km from the nearest ocean, so here is a substitute.

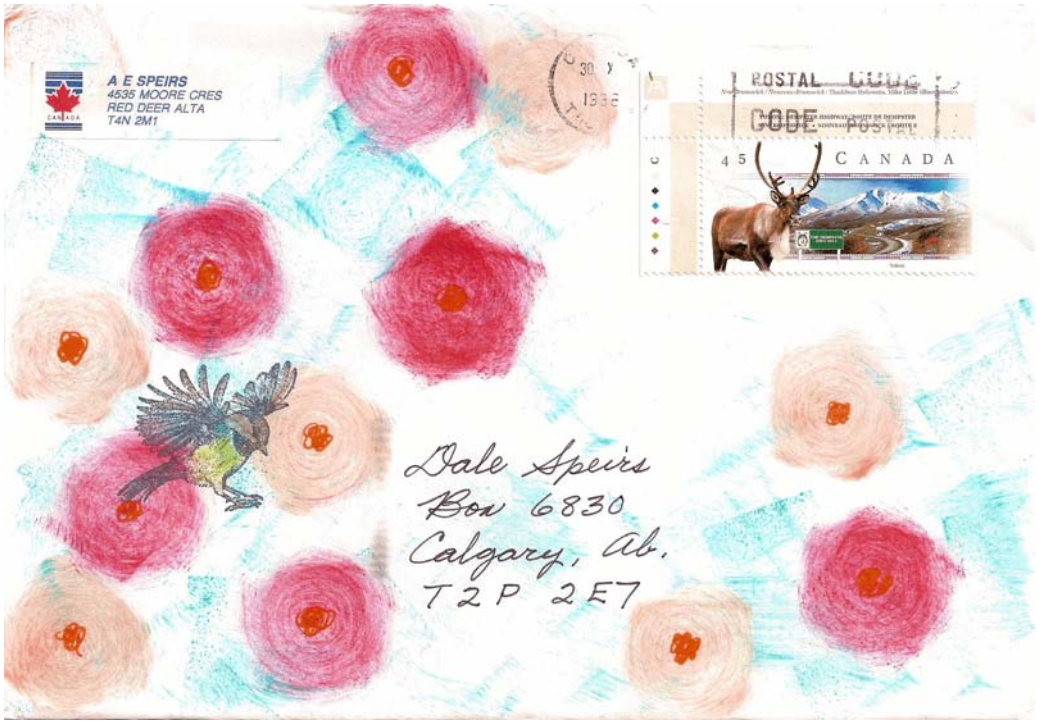
MAIL ART OF BETTY SPEIRS: PART 10
by Dale Speirs

[Parts 1 to 9 appeared in OPUNTIAs #511, 514, 517, 519, 521, 523 to 526.]

Late June and early July are the height of the flowering season in Alberta, which supplies the theme for this issue.



These flowers were made by dabbing ink on with cotton balls.



Meconopsis is from the Himalayas but grows well in Alberta. We had them growing in our flowerbeds.

Dodecatheon is native to Alberta. They were abundant on our ranch.

Next page: We also had orchids growing the bush on the ranch.

100900

APR 2 7 1999

RED DEER CO-OP
T4N 3P0

FIRST DAY OF
ISSUE

FIRST DAY OF
ISSUE

100900

APR 2 7 1999

RED DEER CO-OP
T4N 3P0

These are genuine pressed flowers and leaves from the ranch, glued to the covers.

The ranch is gone. Dad died in 1996 and there was no way Mom could run it by herself. In any event, the city of Red Deer had grown north to the ranch and swallowed it up. The land was bulldozed flat. The southern section was used to expand the highway to six lanes, and the rest was "developed", as they say. No more wildflowers.

CRIME AND PUBLISHMENT: PART 6
by Dale Speirs

[Parts 1 to 5 appeared in OPUNTIAs #61.1, 391, 422, 471, and 494.]

Ghostwriters In The Sky.

"The Story That Was Not For Publication" by Michael White (1910 December, THE BLACK CAT, available as a free pdf from www.archive.org) was an installment in the eternal war between editors and writers.

A short-story writer named Allen (first name never given) had his western stories rejected by the editor of THE RED BLOOD MAGAZINE, an action-adventure fiction magazine. The editor wanted something different as long as it was like the other popular stuff. There is no new thing under the sun.

Allen's girlfriend Ethel Hoyt was staying in Johannesburg, South Africa. He asked her to send him brochures and books on South Africa and its fauna, this being several years before Google and the World Wide Web. Allen studied them carefully and rewrote his westerns as adventures on the veldt of South Africa.

He sent the completed manuscripts to Hoyt, who then re-mailed them in a fresh envelope from Johannesburg as being from the typewriter of Bert Lamar. The very thing the editor wanted, especially from a fresh new talent instead of hacks like Allen.

Hoyt and her family returned to America. Allen had great pleasure introducing himself as Lamar to the editor, and Hoyt as his new fiance.

THE WHISTLER was an old-time radio anthology series that aired from 1942 to 1955. It was not a mystery show. Both the narrator and the protagonist explained everything to the listener as a perfect crime was plotted and carried out. The criminal would gloat after the crime and get in a few bwah-ha!-ha!s.

After the final commercial, the epilogue would reveal some detail the criminal overlooked that tripped him up. It was for the listener to keep track of the little details, discard the red herrings, then predict what the twist ending would be.

"Stolen Murder" was written by Eleanor Beeson and aired in 1946-08-12. Ken Broderick and Tom Barton had been boyhood friends driven apart by Ken's wife Helen. She despised Tom.

Tom was sickly and racing to finish his murder mystery novel before he died. Ken promised to get the manuscript to an agent but kept it for himself. He took Tom out to a remote cabin for recuperation. Ken then clinched a deal with a publisher, Helen's brother, under his own name.

The bad news was Tom made a miraculous recovery. He was unaware that Ken had hijacked his book. The novel was a success, which put Ken in trouble. He decided Tom had to die out there in the woods.

A hunting accident seemed the best method. Ken confessed the theft, then shot Tom dead. A moment after the shot, another hunter came by and saw the corpse. Ken hid in the brush until he left.

The next day, back in the city, Ken got the good news that the novel was an instant success. Even better news was that the hunter testified to the coroner's jury the death looked accidental.

Break for the final commercial. Signal Oil service stations provided assurance that all would be well if you used their services. Too bad Ken didn't.

The twist was that Tom had written a roman a clef about a real murder he had committed. The details were so accurate that police checked and found the remains of Tom's victim. Since Ken claimed to numerous people that he wrote the bestseller, he had no way of proving himself innocent.

PULP was a 1972 comedy movie recently re-released on DVD and is well recommended. Michael Caine, then a handsome young man with a full head of hair, played Mickey King, a pulp fiction writer. Among his successes were hard-boiled semi-porn detective novels such as MY GUN IS LONG and THE ORGAN GRINDER.

King was hired to ghostwrite the autobiography of a retired Mafioso at a payment he couldn't refuse. Preston Gilbert had been a successful Hollywood star playing in countless gangster movies. He also dabbled on the side in the Mafia and had been deported back to Italy.

Now an elderly man, he was dying of cancer and wanted to leave a legacy. When other Mafioso learned of Gilbert's tell-all autobiography, they sent a hit man, who killed Gilbert and then went after King. The two were chasing each other, and the hit man was as much the prey as the predator.

King narrated the movie and it was obvious that he was rehearsing his next novel using the events of the day. Edited, of course, to make his alter ego detective successful at everything instead of the bumbling that King stumbled through.

The movie was filmed in Malta, with spectacular scenery for the plot. The comedy was very good, especially the running gags about King never being able to hail a taxi, and a tow truck doing steady business hauling away wrecked cars.

Writer's Block.

There was a radio series BOX 13 that aired from 1948 to the 1950s as a syndicated series. In those days, that meant the producer transcribed the episodes to disks, then sold them to individual radio stations to air as often as they wished. Available as free mp3s from the Old Time Radio Researchers at www.otrr.org/OTRRLibrary .

The protagonist was Dan Holiday, a newspaper reporter who quit his job to write great novels, then discovered he couldn't think of any plots. He therefore advertised in the newspaper that he would take on jobs no one else would do. Replies to Box 13 at the newspaper.

His assistant was Suzie, and what the two lived on was never specified, although presumably he eventually had royalties coming in from novels. Each episode opened with the letter writer reading aloud his missive, then segued to Suzie reading the second half to Holiday.

"Short Assignment" was written by Larry Kraft aired on 1948-10-03. The client was George Flit, a midget detective who needed Dan Holiday for a big job. The assignment was to visit the Bolton manor and prevent the son Kenneth from committing suicide. His father had died a short time before and his uncle was administering the estate.

Uncle Gilbert and Rita Martin ran interference and not in a nice way. Holiday managed to forestall a poisoned drinking but the car chase wasn't as successful. The excitement moved to Gilbert's penthouse where Kenneth was almost helped over a balcony railing by his uncle.

Gilbert and Rita tried to set up a frame that would leave both Holiday and Kenneth dead. They mentioned they had embezzled the estate, which the listener would have already surmised. Flit showed up, shots were fired, the police were called, and the plot rushed to a conclusion.

"Triple Cross" was written by Russell Hughes and aired on 1948-11-07. The anonymous letter to Dan Holiday invited him to Los Maros, expenses paid. Once at the hotel, he received instructions to bet specific numbers on a certain roulette wheel. He won $126,000 on two numbers. Obviously the wheel was fixed.

Further instructions sent him to the hotel bar for the cash delivery. A blonde woman picked him up, gave him a mickey, and relieved him of the money. The letter writer arrived, a gangster named Tony. He was annoyed and brandished a gun to emphasize the point.

Holiday had to get the money back. With Tony and his torpedoes constantly following him, his investigation proceeded. He got a name Kathy Lee and her address. With Tony dogging his steps, he found her body.

Holiday didn't find the cash but did locate some plane tickets to South America via San Francisco. Back to the casino, where Holiday started a fight to get the owner's attention. The croupier Frankie was obviously the thief.

From there to the airport where Frankie was sitting in the departure lounge. He didn't depart via airplane. Tony and his pals didn't like the betrayal and they resented Frankie killing Kathy Lee to silence her.

"The Philanthropist" was written by Russell Hughes and aired on 1949-01-30. The opening letter was from a hobo named Red, whose pal Sukey had gone missing. Dan Holiday didn't think there was much he could do.

He began by visiting a street mission patronized by Red and Sukey. Trying to interrogate the homeless people got him remarks such as to shut up and eat his soup. Soon after, Red departed his life in the rail yard, supposedly an accident.

Red had received a letter via the mission accommodation address. Holiday believed the letter was from Sukey and Red was murdered because there was something in it worth killing for.

Red had mentioned he was applying for a job with Mr Rockman, the philanthropist who supported the mission. Holiday visited him and got a job, unspecified work out-of-town.

Sukey was at the staging point, a brownstone with barred windows. The job was indexing magazines. After a few days, the boss called him in and said Holiday would be given a physical examination for workers compensation.

The supposition was that Rockman was running an insurance racket. He verified that none of the men had relatives and took out policies on them. The brownstone was a deliberate fire trap for profitable mass murder.

The alarum was a real fire. The men escaped. Holiday and Sukey visited Rockman, who would soon be living in a barred room.

"Tempest In A Casserole" aired on 1949-04-03. The letter came from Nick Nerakio, whose restaurant was filled by customers who bought one coffee and sat there all day. Then Nerakio's bank credit cut off for no apparent reason.

Other harassments followed. Dan Holiday eventually found out that someone was trying to sublet the restaurant. Things got bad and things got worse. Nerakio was beaten up, but refused to tell the police.

Holiday told him to sublet the place. The restaurant was adjacent to a bank, so Holiday informed the police, who set up a close watch. Nothing happened.

Holiday went back to the restaurant, where he got rude service from a made man. They were obviously not interested in the food business. He heard strange clanking sounds from the kitchen. Going next door to the department store on the other side of the restaurant, Holiday heard that sound again.

The noise was a pneumatic tube system used to send cash from the front counters to the back office. He brought the police in and got the manager to do a demonstration. The carrier tube didn't get there.

Holiday had the police send a tear gas grenade through the system. It detonated inside the restaurant and flushed out the thieves. They were looting cash from the store by tapping into the pneumatic system.

Dealing With Authors.

MR AND MRS NORTH aired on radio from 1942 to 1955, based on the novels by Frances and Richard Lockridge. The protagonists were Jerry and Pam North, average citizens with a remarkable propensity for stumbling into murder cases. Jerry was a publisher and Pam was a housewife.

"Murder By The Book", also circulates as "The Norths Borrow A Book". No writer was credited and the episode aired on 1943-03-03. Pam and Jerry North were visiting a manorial estate on Long Island in winter. Martha Gilroy was an aspiring author who was hoping Jerry would publish her book.

Her Uncle Gordon was the lord of the manor who had all the money. He was in Chicago on business but came back unexpectedly. He was very firm about the book not being published, to the point of pulling a gun and demanding Jerry hand over the manuscript.

There was a struggle, the gun went off, and Gordon Gilroy died there in the library. Jerry was about to be arrested by the police when someone thought to turn over the body. The bullet was lodged in the shoulder and couldn't have killed the victim.

However, there was a stab wound in Gordon's back which did do the job. The Norths figured it must have happened after the shooting, when Jerry went to the telephone to call the police and Pam went for a first-aid kit.

The murderer must have used the French doors from the library to a terrace. The search was on for the knife. The other catch was that Gordon had returned unexpectedly and only those in the house knew he was there. His multitude of enemies all thought he was in Chicago.

Martha mentioned that Gordon's wife Dolly was in the house. They had separated a year ago but she came back that day. Another suspect was Gordon's private secretary Norman Crosby, who must have come back with his boss. He had embezzled $10,000 and was about to be exposed.

The Norths prowled the mansion looking for clues. They worked in the usual manner of amateur sleuths: break-and-enter, contaminating evidence, and obstruction. Continuing the tradition, the most obvious suspect was the second murder victim. The Norths found Crosby in a closet, stabbed to death.

Dolly told police she had returned because Gordon had been shorting her on the support payments. Just to complicate the plot, the police caught gangster Red Barton trying to sneak out of the mansion. He was revealed as Dolly's boyfriend.

The gun went missing. Rather embarrassing for the police, one would think, who failed to secure the evidence. Martha tried to flee the house, fearing she would be the next victim at the hands of Dolly. The Norths restrained her and elucidated more details.

Dolly was blackmailing Gordon, who was a sharp practice man through and through. Martha's manuscript was a roman a clef about her family. Write what you know and all that. Gordon's attempt to block publication was understandable.

Having learned that Martha was in imminent danger, the Norths then left her alone in the library. The room with the French doors. Someone reached in and shot at Martha, so she said. Miraculously she survived, no thanks to the Norths.

Pam reversed the blame, accusing Martha of writing the book to blackmail her uncle. She had eavesdropped Jerry and Gordon's argument from the terrace. After the gunshot, she broke an icicle off the eavestrough, and stabbed Gordon when the Norths had left the room.

An icicle murder? Speaking as a Canadian homeowner whose single-detached bungalow has had its share of icicles, I don't believe it. An icicle might cause a nasty bruise but would not penetrate a business suit, then puncture Gordon's back and reach his heart.

Martha had the missing gun. She sobbed out a confession, saying that her father had been murdered by Gordon, who then stole the family wealth. Tomato surprises as far as the eye could see. She had staged the supposed attempt on her life by firing a bullet onto the wall. Next, she tried to commit suicide but failed. The State of New York would finish the job though.

"Collector's Item" aired on 1954-02-09. Phillip Jonas was an art dealer who quarreled constantly with his wife Margaret. He wanted to be a painter, and neglected her and the business.

Jump cut to the Norths, who were hosting a party for author Thea Dennison. She got into an argument with literary critic Sidney Dewitt. Jerry North tried to distract her by asking about her art collection. Didn't work because Dewitt was also interested in art.

The squabbling adjourned to Dennison's apartment. Dewitt identified her pride and joy painting, for which she paid $40,000 from Jonas, as a forgery. She telephoned Jonas and demanded he come over at once. The Norths excused themselves and returned to their apartment.

The next morning the police asked the Norths to assist them in their enquiries. Dewitt had been found dead from a blunt instrument in an elevator in Dennison's building.

She denied anything about a painting or Jonas. Later Dennison telephoned Jonas and demanded her $40,000 back. Margaret had no sympathy for Phillip and told him to refund the money.

When the Norths visited the art gallery the next day, Margaret told them he had been out of town for a week. A blatant lie, but they let it pass and caught her trying to hide the forged painting.

In the meantime, a serious quarrel between the Jonas' brought out that Phillip was the forger and had murdered Dewitt. In a fit of anger he murdered Margaret.

The Norths came back with the police and a museum curator. The police showed a search warrant, upon which Phillip went berserk. He pulled out a gun, a foolish thing to do in front of police officers.

The state was saved the cost of a trial. Dennison was hauled in by the police as an accessory. She wasn't upset. As Jerry told her, sales of her book spiked the day after her arrest.

An Editor's Lot Is Not A Happy One.

MURDER, SHE EDITED (2021) by Kaitlyn Dunnett (pseudonym of Kathy Lynn Emerson) was the fourth novel in a cozy series about Mikki Lincoln of Lenape Hollow, upstate New York. She was a freelance writer and editor.

As the novel began, Mikki had just inherited am abandoned farm, with mysterious presences coming and going. The condition of the inheritance was that she had to locate and edit the diaries of the previous family and publish them on the Internet. Persons unknown were racing her to get to the diaries.

The farm had a history. Fifty years prior a murder had been done, still unsolved. More immediately, Mikki was being harassed by Bella, an obsessive fan of a novelist Mikki had edited. There were two typographical errors in the last novel and Bella would not let up about them. Think of Stephen King's novel MISERY.

Others had been making use of the farm. Having been displaced by Mikki's sudden arrival, they were anxious to drive her away so they could continue using it as Crime Central. The house and barn were torched. The lawyers handling the estate were a nasty bunch.

The diaries were the MacGuffins of the plot. Mikki managed to find them and sneak them past the bad guys. She got them edited and online.

The book had several endings as one conspiracy after another surfaced. The final confrontation with the murderer, and there always is one in a cozy, was a twist. Mikki antagonized the killer so much that before he could kill her he had a serious full-scale heart attack. It is difficult to attack a Miss Marple when you can't breathe, your chest is being stabbed by an invisible knife, and your left arm is on fire.

Less believable was how Bella the fanatic was handled. Obsessives like her don't suddenly calm down and change. The less said, the better. Food cozies finish up with a recipes appendix. This book finished up with tips on good grammar.

THE GROVES OF ACADEMIA: PART 7
by Dale Speirs

[Parts 1 to 6 appeared in OPUNTIAs #67.1F, 262, 358, 372, 428, and 468.]

Black Magic On Campus.

RELIC HUNTER was a syndicated action-adventure television series that originally aired from 1999 to 2002, now available on DVD. Each episode opened with a flashback to centuries ago about how an artifact, often with magical powers, was lost to posterity. It would be the MacGuffin of the episode.

Hunting down the artifact was Professor Sydney Fox and her assistant Nigel Bailey of Trinity College. She and most of the women on the show wore pushup bras and showed a lot of cleavage in the show, a deliberate ploy by the producers to attract male viewers. Fox knew martial arts and generally used them once per episode. She also had a few gadgets to help her, most commonly a hand-sized crossbow that fired a grapple on a long wire cable.

"The Warlock Of Nu Theta Phi" was a 2002 episode from Season 3, written by Tracey Forbes. The prologue was set in New England in 1692 when a witch sacrificed herself to protect an amulet with magical powers.

Flashing forward three centuries, a student at the college found the amulet out in the woods while she was botanizing. She gave it to her roommate as congratulations for getting a 4.0 average. The roommate put it on and was possessed by the spirit of the ancient witch. The college hospital didn't know what to make of her. I don't blame them.

One of the fraternities on campus had a dungeon under its house, where the frat boys practiced what magic they could. A wannabe warlock stole the amulet, and the chase was on. The campus was in an uproar. Fox and Bailey saved the campus as was to be expected.

Alternative History On Campus.

"Writing Class" by Robert Sheckley (1952 December, IMAGINATION, available as a free pdf from www.gutenber.org) was a short-short. The story was mostly taken up by a college professor's lecture to his class on avoiding

clichés and not ignoring practical logistics. For example, he noted that writers should not "*oversimplify the aliens' problems. If they amass an army of twenty million, all have to be fed. If the rulers of fifty scattered star systems meet in conclave, remember that different star systems have different languages, and different races have different nervous systems.*

Bear in mind also, that there would be little logical reason for attacking Earth; the galaxy is filled with so many stars and planets, what is the necessity of fighting for one?"

Well said, that man.

One student in the writing didn't like the lecturer's advice about not describing Venusian Threngeners or Callistan Eddel-splayers as pure evil or monsters from the depths of hell. He decided to drop out of the course. The twist was that the course was about writing non-fiction, and he was a journalism major. There really were Venusian Threngeners and Callistan Eddel-splayers.

Murder On Campus.

NICK CARTER, MASTER DETECTIVE aired on old-time radio from 1943 to 1955. The detective first appeared in print in 1886, predating Sherlock Holmes, and often appeared on stage and in movies.

Nick Carter appeared in his own pulp magazines and dime novels, written by house authors. Like many other multimedia action-adventure heroes, there was little continuity between the different media.

Carter had boundless confidence in his ability and came across as arrogant to all. He had his own laboratory, a huge library, and kept better files than the FBI. On radio, his assistant was Patsy Bowen, whose functions were to scream, be kidnapped, and have the loose ends explained to her in the denouement.

"Murder Goes To College" was written by Jock Macgregor and aired on 1944-12-24. The venue was a woman's college, where student Edith Jordan had apparently killed herself. The dean Margaret Collingwood asked Nick Carter to verify the circumstances. Patsy Bowen accompanied him.

Upon their arrival, Collingwood said she hadn't notified police. Really? In both Canada and the USA, then and now, unattended deaths must be immediately reported to police. Be that as it may, Carter and Bowen examined her room. Contaminating evidence? What of it?

They found a bottle of sleeping pills and an ambiguous incomplete letter to her mother that might have been a suicide note or just sentimental. Collingwood advised who Jordan's friends were, and Carter interrogated them.

They didn't believe her death was suicide. Some mentioned Jordan had been fearful of something. Her hobby was photography and she liked to go out into the woods.

The college's chemistry professor analyzed the pills and doubted they could have killed Jordan. The police laboratory should have been doing that, not him. Lots of snooping about. Carter learned from Jordan's physician that the pills were prescribed after she broke her collarbone in a car accident.

Still no sign of the police. Carter talked to the mechanic who repaired Jordan's car. He said the steering wheel column had been sawed through to cause the accident. He informed Jordan but she didn't want it reported to police.

Carter went to the newspaper editor and arranged a story about the suicide with the statement that Jordan's diary was in a locked box in her room. The key was lost but a new one was being made. There was no diary but the box was obviously bait for the murderer. Hopefully police officers read the newspaper, which would be the only way they'd learn about the murder.

Bowen had been rummaging through Jordan's dormitory room. She found a hat with a bullet hole in it and photographs of a man out in the woods. The image was blurry and didn't identify him. More contaminated evidence.

There was a knock on the door. The sheriff had arrived. Apparently he did read the newspapers. He wasn't too bothered because he was investigating a murdered woman out in the woods. Her body had been buried in the brush several months prior.

The sheriff then asked the obvious question of Carter: "*What's the idea of withholding evidence?*". He was talking about the diary and was mollified when Carter told him the diary didn't exist. Carter staked out Jordan's room that night. The murderer showed, the mechanic.

He had killed the first woman and saw Jordan taking pictures. He shot at her and missed. She had her car serviced at his garage, so he tampered with the steering column. That didn't work, so he filled her one of her prescription capsules with pure morphine and put it on top.

He then blabbed all to Carter. He was a morphine addict and the dead woman his girlfriend, who was going to squeal to police about his morphine supply. The organist played a final crescendo, followed by Christmas greetings from the actors and staff (note the air date).

MAJORING IN MURDER (2003) by Jessica Fletcher and Donald Bain was set at Schoolman College, Indiana. Having decimated the population of Cabot Cove, Maine, the old dear had to go traveling. Obviously the college administrators never Googled the name Jessica Fletcher, elsewise they would not have hired her to teach a class on creative writing. A forensics course, yes.

The initial excitement was a tornado. Everyone fled for the basement shelters, excepting Professor Wesley Newmark, who dashed across the campus quad for his own building. The tornado trashed a few buildings as they so often do, leaving behind a dozen or so casualties. The only fatality was Newmark, found in the rubble of his office.

Since Fletcher was on site, that meant sleuthing. Valuable papers and documents had gone astray from Newmark's briefcase, not because of the tornado. The college president Lowell Needler was acting strangely and not because of post-trauma stress.

The campus was seething with alarums and confusions. Fletcher raced the Deppity Dawgs in their investigations. No bloodhound was ever bred that could sniff out corpses faster than Fletcher. She found the desiccated body of a woman in a campus basement. That murder had been decades ago.

There were two separate murderers, who babbled confessions instead of keeping quiet. Newmark had been murdered over financial fraud in the college ledgers, and the woman had died in a domestic dispute.

And so back to Cabot Cove, whose denizens undoubtedly preferred that Fletcher keep traveling.

MR AND MRS DETECTIVE
by Dale Speirs

From the 1930s to the 1960s, there was a fad in mystery fiction for husband and wife sleuths. Various movies and radio series were based on novels of couples such as Mr and Mrs North, Nick (the Thin Man) and Nora Charles, and Pat and Jean Abbott. The concept survived into the 1970s with the television show MCMILLAN AND WIFE.

Some couples were strictly amateurs, such as the Norths, while others had the husband as a police officer or private detective with the wife tagging along. The radio series are available as free mp3s from www.otrr.org/OTRRLibrary.

The Charles.

THE ADVENTURES OF THE THIN MAN aired on radio from 1941 to 1950, based on the novel by Dashiell Hammett and subsequent movies. Nick and Nora Charles were the married sleuths. The series was killed by the Red Scare when Hammett was named a Communist sympathizer. In the late 1950s, after the blacklisting was over, the characters were revived for television.

"The Boogie Woogie Murder", no writer credited, aired on 1945-02-09. The Charles were exposed to that new jive sound in a record shop but fortunately the next record was Beethoven. In a jukebox?

In the next booth was a dead woman, shot under the cover of the noisy boogie woogie record. Someone turned out the lights and snatched a vital clue out of Nora's hands. The killer missed a letter giving his address.

The Charles went over to his house and let themselves in to search the place. The police? What of them? A woman in the house objected with a gun but was quickly disarmed. The Charles searched her purse and found a letter demanding $10,000 in blackmail from her.

Let's pause a moment and consider the plot so far. Failure to notify police of a felony, obstruction, tampering with evidence, break-and-enter, assault, and theft. And those were the crimes committed by the good guys, the Charles.

On with the episode. The woman's boyfriend was majoring in college in abnormal psychology. Well done, that man, certainly a useful skill. Nora found

a typewriter and checked it against the letters, finding they had been typed on the machine.

The woman snatched the gun back and locked the Charles in the apartment bedroom. They departed immediately out the fire escape and continued their investigation unhindered. Moving around in jazz circles, they collected more characters.

The death toll rose. Nora thought to telephone the police, who liked to be informed of shootings and such things. Supporting characters thinned each other out as fast as they were introduced.

Nick lectured Nora in the denouement, tying up assorted loose threads in the plot. Then they settled back in the café to listen to the jukebox.

"The Adventure Of The Passionate Palooka", no writer credited, aired on 1948-07-06. The scene opened with Nick and Nora arguing in their bedroom, clearly from separate beds. Hollywood morality on the air was different than in the private lives of actors and producers.

New York City was under a heat wave, so the Charles' decided they weren't going to get any more sleep. At 03h00, they went out for a stroll and found many other denizens had the same idea. A raucous group formed and began singing in the streets.

The Charles' met up with Scoops Gillett, who managed heavyweight boxer "Atom Bomber" Brickenhead. Gillett was worried because his fighter was out of sorts and wouldn't say why. Nick and Nora leaped into the matter but they couldn't get anything useful out of Brickenhead either.

Eventually they ascertained the boxer's mongrel dog Jojo had gone astray, and, almost as bad, so had his girlfriend Lulu. Worse yet, Brickenhead was scheduled for a big fight the next evening. He would lose it given his distractions.

The search for Jojo began. Nora decided to try Lulu. The latter had indeed swiped the pooch in a fit of pique after arguing with Brickenhead. When Lulu saw him losing the fight, she became remorseful and returned Jojo to the ringside just in time.

Alas the mighty Brickenhead struck out. Nora was shocked that life wasn't like the movies. Despite the inspiring presence of Jojo, the big guy was knocked out by his opponent.

The Norths.

MR AND MRS NORTH aired on radio from 1942 to 1955, based on the novels by Frances and Richard Lockridge. The protagonists were Jerry and Pam North, average citizens with a remarkable propensity for stumbling into murder cases.

Jerry was a publisher and Pam was a housewife. Lt Bill Weigand, NYPD Homicide, kept tripping across them during his investigations. He was a single man, so Pam was constantly trying matchmaking with him.

The series began as a sitcom, with no murders. Pam played a Dumb Dora part. The transition to murder mysteries occurred later in the series, a rather bizarre shift which did, however, boost the ratings.

"Premiere" was written by Howard Harris and Michael Dunne, and aired on 1942-12-30. As the title suggests, this was the first episode of the series. The opening sequence was domestic comedy revolving around Jerry's inclination to sleep in until noon. No murders, just mild comedy, the sort of stage play that closes after its second weekend.

Ellen and Harold Adams arrived. Jerry thought Pam invited them and vice versa. The neighbourhood butcher Senor Marconi arrived, wearing Jerry's brown tweed suit. Pam had given him the suit, neglecting to tell Jerry about the gift.

She had also neglected to tell Jerry that she had invited eight other couples to dinner, not to mention having failed to prepare food for 20 people. The complications and misunderstandings piled up. The audience chuckled frequently.

"The Missing Sparkler" aired on 1943-08-25. Jerry and Pam North were on a train when she found a diamond bracelet in their compartment. The engraving read "*To Angel Face from Lambie Pie*". The bracelet disappeared when Pam stepped out for a moment, but reappeared later on the wrist of a fat woman in the dining car. Pam made a fool of herself trying to get it back.

The Norths retired to their compartment, where they were visited by another woman wanting their services as detectives. Her diamond brooch had gone missing and she said her husband Brad Banning would be furious. Taking on the investigation, the Norths meandered up and down the train.

They found a dear old lady Harriet who was a kleptomaniac. She had stolen the bracelet from the fat lady, then returned it to the wrong compartment. Her daughter got it out of the North's compartment and made sure the fat lady received the bracelet. The brooch was a different matter. Harriet said she didn't steal it from Banning.

Jump cut to a pair of jewel thieves, Lily and Marty, working the train. Lily and Marty had with them an attack dog named Fifi. They were in an abusive relationship, as Marty beat her several times for things that weren't her fault.

They had stolen the brooch from Banning, and were indignant when they discovered Harriet had stolen it from them. Honour among thieves and all that. Guns were waved about, and the brooch became the MacGuffin.

Jerry planted the brooch in Marty's jacket pocket. Harriet tried to steal it back but Marty and Lily intercepted her. The police arrived but the brooch wasn't found and nothing could be done.

At journey's end, the Norths created a distraction at the railroad station. The brooch was hidden inside Fifi's collar. Marty tried to pull his gun but couldn't find it. Harriet had lifted it. The real difficulty was trying to get the collar off Fifi.

The Abbotts.

Pat and Jean Abbott were latecomers to the married sleuths subgenre, based on the novels by Frances Crane. On radio, ABBOTT MYSTERIES aired from 1945 to 1947. The series was revived for the 1954-55 season as THE ADVENTURES OF THE ABBOTTS. The radio episodes were written by Howard Merrill.

The Abbotts lived in San Francisco. Jean usually narrated the segues, while Pat, a private detective, did the action scenes. She was a jealous wife. They bickered anytime he went near a good-looking woman. Her main function was to have things explained to her and frequently be kidnapped.

"The Royal Purple Scooter" aired on 1955-01-23. The announcer bobbled the intro by calling them Jean and Pete Abbott but recovered in the next sentence with Pat and Jean.

The client was Mr King (first name never given) from an insurance company. He began with a lecture about unsafe drivers in shoddily maintained cars. He shilled for the poor downtrodden insurance companies and condemned all the used car dealers. Having padded out the opening of the episode, King got down to business.

The case was the death of Rick Macdonald, whose car had gone off a winding road into a canyon. The life insurance policy was $100,000. Call it $1 million in today's depreciated currency.

Macdonald was the ninth fatality in the last six months at that spot. One would have thought the municipality responsible for the road would be sued but no, King only wanted the car dealer investigated. Harry Tennite had sold Macdonald the car a few days previous to the wreck.

Pat Abbott had read the newspaper story about the crash, which mentioned a purple scooter had been found in the back seat of the wreckage. Macdonald and his wife Dottie were childless, so why was the scooter there? Jean picked up on that immediately, suggesting the death was murder. Quite a conclusion to jump to, but she continued to narrate.

The couple visited Tennite's car lot. Pat antagonized him, but elucidated that Tennite was friends with the Macdonalds. Pat sent Jean off on a side errand so that he could interrogate Dottie alone. She was a loose woman who came on to Pat, not at all the grieving widow. With difficulty, he kept the interview on track and learned that Tennite had been one of her boyfriends before the war.

Jean arrived abruptly and caught her husband having drinks with a woman barely dressed in a sleeping gown. Pat managed to explain himself, although the listener will suspect that he was going to sleep on the couch for the next few nights. He got back into the real investigating, finding the boy Billy Livingstone who owned the scooter.

Pat and Jean met with King. As they drove in King's car, Pat talked about the break in the case. Livingstone tried to sneak a free ride with Macdonald, hiding in the back seat of the car with his scooter. Hard to believe, but let it pass.

Waiting for Macdonald, the boy saw a man open the hood and sabotage the steering rod. That frightened him and he ran away, forgetting the scooter.

Pat said that Livingstone could identify King as the culprit. King stopped the car and pulled a gun. He blabbed a confession that he was in love with Dottie. King then tied up the couple with rope and sent his car down the road without anyone at the wheel. He followed on foot. He said after the wreck he would untie the deceased, scratch himself up, and tell the police it was a miracle he survived the wreck.

Guess who was hiding in the back seat? Pat told Livingstone to do what he was taught. The boy climbed into the front seat, held the steering wheel, and managed to reach the brake pedal. Even in 1955 the listeners would have wondered about a man who deliberately endangered a small boy. In our time, Pat would have been in the jail cell next to King.

"The Rickshaw Red Lipstick" aired on 1955-01-30. The Abbotts were slumming in a waterfront tavern looking for the owner Frank Svenson, who had asked them to make contact.

They made contact instead with a fortune teller named Ilona. She embarrassed Jean by describing a past boyfriend, then Pat by smothering him with sloppy kisses after he gave her a $5 tip ($50 in today's depreciated currency).

Jean kept her composure. When Pat wiped the lipstick off his face, she noted the lipstick was Rickshaw Red, which had streaks of purple in it. Given the title of the episode and the prominence of her description of the lipstick, the listener may presume this was a Chekhov's gun plot point.

A fight broke out in the bar, which escalated into gunshots and ended with a big guy getting a knife into his heart. The other combatant appealed to the Abbotts for help and the three fled out the back door. The young man Lee said he had to get to a ship where trouble abounded.

Something was on the freighter, a phony cargo. Ostensibly the ship was carrying food relief to Europe. They went on board to beard the captain in his lair. The interview did not go well. They departed and Pat insisted on returning back to the tavern to find Svenson. Lee stayed on board.

Svenson never got a speaking part, and was fished out of the water by the harbour police. There being nothing more to do for him, the Abbotts went back to the ship and snooped in the hold. They discovered the cargo was actually fountain pens, lipsticks, and cigarettes, hidden under a layer of relief food. The lipstick in the ship's hold was Rickshaw Red.

The contraband would be worth a fortune in Europe, small expensive items smuggled in duty free and then sold on the black market. Various alarums followed, mostly on the ship. Ilona was the leader of the ring and was good for more alarums.

The denouement was pillow talk. The episode then tapered off with some kissing noises and heavy breathing in rhythm. Pretty racy stuff for those days. I'm surprised the network censor let that go.

PEARLS OF GREAT PRICE: PART 3
by Dale Speirs

[Parts 1 to 2 appeared in OPUNTIA #450 and 508.]

THE STRANGE DR WEIRD was an anthology series that aired on radio during the 1944-45 season, written by Robert A. Arthur. It was produced by the same outfit that did THE MYSTERIOUS TRAVELER but was a 15-minute show instead of 30 minutes.

This and other old-time radio shows mentioned further on are available as free mp3s from the Old Time Radio Researchers at www.otrr.org/OTRRLibrary

"White Pearls Of Freedom" aired on 1944-12-19. The title was quoted at the beginning as given but when the episode came back after the opening commercial, the announcer quoted it as "White Pearls Of Terror".

The locale was an island in the South Pacific, in the harbour of Barota. Two mariners were resupplying. They were anxious to get away because the barometer was falling, which indicated a typhoon was coming. One of them had the idea that the shopkeeper had a bag of white pearls and robbed him.

They found six pearls the size of marbles. Meanwhile the natives were restless and put a curse on them. After killing the shopkeeper and the others, the mariners discovered they were too late to clear the harbour and escape the storm.

The typhoon sank the boat and stranded the mariners. The days became months and then years. The men lived on shellfish and coconuts, and waited for rescue.

One of them went bonkers and gave up in despair. White boils began growing on their faces, like pearls. They had leprosy. Even if a ship arrived, no one would take lepers on board.

ROCKY FORTUNE aired for the 1953-54 season. Writers were not credited in the episodes but references say they were George Lefferts and Ernest Kinoy. Frank Sinatra played the hero Rocky Fortune. The character was an odd-job man, sent out by his employment agency to a different job each week.

"Oyster Shucker At The Fifty Fathoms" was the first episode and aired on 1953-10-06. Fortune's arrival at a seafood restaurant got off to a rough start when he made a pass at the head waitress Iris while her boyfriend, the manager Barney, was standing behind him.

Soon enough, Fortune was ensconced in the kitchen, shucking oysters. He made friends with Ferdinand the waiter. The first order was for two double-shrimp cocktails, crab meat salad, lobster gumbo, a bowl of Boston baked beans, a bowl of Manhattan chowder, and a bucket of lobsters.

"*Who do you got out there, a Rotary luncheon?*", asked Fortune. Ferdinand told him the order was for Mr Abernathy, the local equivalent of Diamond Jim Brady. Fortune's attention was distracted when he kept finding pearls in the oysters he was shucking. A dozen good pearls, all told.

Mr Abernathy ordered two dozen unshucked oysters but Fortune made a mistake and provided regular oysters instead of those from the special barrel. Barney was furious and fired Fortune. Iris was sympathetic and agreed to date him after work.

Fortune stepped outside and was promptly mugged by someone who knew he had the pearls. Unfortunately Fortune's pocket had a hole in it and the pearls were gone. The mugger was a reasonable man and gave Fortune twelve hours to find them.

With Iris helping, Fortune searched for the pearls inside the restaurant but had no luck. The search went to the docks where the oysters came from. Fortune thought the pearls might have dropped into the empty bucket next to where he sat, and the bucket had been returned to the supplier.

Pier 22 was the next stop but they couldn't find the pearls. The mugger was there, so they hid inside the ship. Which promptly set sail to the oyster grounds. Except the ship wasn't fishing but retrieving a barrel with a marker buoy.

Fortune figured smugglers coming in on a ship dumped the barrel before docking so as to evade Customs. The trawler then picked up the barrel and since the ship never left home waters, there was no Customs inspection.

The barrel was delivered to the restaurant for final transhipment, where the pearls were extracted. Except that Fortune had used the wrong barrel. Abernathy was supposed to get those oysters with the pearls.

The finale took place at the restaurant where Abernathy was still eating. Between them, Fortune and Ferdinand figured out that the pearls must have landed in a pot of oyster stew which Abernathy had just consumed.

The twist was that Ferdinand was the ringleader and Fortune was now truly stewed. A ruckus broke out but Iris rendered Barney unconscious by slugging him with a frozen flounder. Fortune took care of Ferdinand. Abernathy said he thought the oyster stew seemed gritty.

Fortune tried a romantic interlude with Iris. She revealed she was an undercover Customs detective. So much for happy endings.

CURRENT EVENTS: PART 43
by Dale Speirs

[Parts 1 to 42 appeared in OPUNTIAs #474, 475, 479, 480, 483, 484, 488 to 503, and 507 to 526.]

As of June 17, COVID-19 killed 41,758 Canadians from a population of 38,000,000, The proportion of vaccinated Canadians is 86.2%.

As of 23h59, June 14, the Alberta provincial government removed the last COVID-19 restrictions. These rules were wearing masks on public transportation and self-isolating if ill with the disease.

The provincial Ministry of Health now treats COVID-19 as an endemic disease like influenza or the common cold. They will concentrate on vaccinations henceforth. Just as influenza never went away after the 1918 pandemic, so it is that COVID-19 will be with us for generations.

Accordingly, I'm going to stop abstracting papers on the subject. They will continue to be published for decades to come but now will be of no more interest to me than the current statistics for influenza and the common cold.

Seen In The COVID-19 Literature.

Leech, G., et al (2022) **Mask wearing in community settings reduces SARS-CoV-2 transmission.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 119:doi.org/10.1073/pnas.2119266119 (available as a free pdf)

Authors' abstract: *We resolve conflicting results regarding mask wearing against COVID-19. Most previous work focused on mask mandates. We study the effect of mask wearing directly.*

We find that population mask wearing notably reduced SARS-CoV-2 transmission (mean mask-wearing levels corresponding to a 19% decrease in R).

We use the largest wearing survey (n = 20 million) and obtain our estimates from regions across six continents. We account for nonpharmaceutical interventions and time spent in public, and quantify our uncertainty.

Factors additional to mask mandates influenced the worldwide early uptake of mask wearing. Our analysis goes further than past work in the quality of wearing data, 100 times the size with random sampling, geographical scope, a semimechanistic infection model, and the validation of our results.

The effectiveness of mask wearing at controlling severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) transmission has been unclear. While masks are known to substantially reduce disease transmission in healthcare settings, studies in community settings report inconsistent results.

Most such studies focus on how masks impact transmission, by analyzing how effective government mask mandates are. However, we find that widespread voluntary mask wearing, and other data limitations, make mandate effectiveness a poor proxy for mask-wearing effectiveness.

We directly analyze the effect of mask wearing on SARS-CoV-2 transmission, drawing on several datasets covering 92 regions on six continents, including the largest survey of wearing behavior (n = 20 million).

Using a Bayesian hierarchical model, we estimate the effect of mask wearing on transmission, by linking reported wearing levels to reported cases in each region, while adjusting for mobility and nonpharmaceutical interventions, such as bans on large gatherings.

Our estimates imply that the mean observed level of mask wearing corresponds to a 19% decrease in the reproduction number R. We also assess the robustness of our results in 60 tests spanning 20 sensitivity analyses. In light of these results, policy makers can effectively reduce transmission by intervening to increase mask wearing.

Beck, J.W., and A. Flow (2022) **The effects of contracting COVID-19 on cognitive failures at work: implications for task performance and turnover intentions.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-13051-1 (available as a free pdf)

Authors' abstract: *Individuals who contract COVID-19 often experience problems with memory, attention, and concentration, even after recovering from the initial illness.*

In the current manuscript, we argue that these symptoms are likely to manifest as cognitive failures in the workplace. Downstream, cognitive failures were expected to be associated with decreased task performance and increased turnover intentions.

We collected data from a sample of working adults who either had (n = 45) or had not (n = 49) contracted COVID-19 at least one month prior to the study. Both groups were matched on key demographic characteristics. As anticipated, individuals who had contracted COVID-19 reported significantly more cognitive failures at work, relative to individuals who did not.

More so, having contracted COVID-19 had significant indirect effects on task performance and turnover intentions via cognitive failure. These results indicate that beyond physical harm, COVID-19 can also have a detrimental influence on an individual's capacity to perform at work.

Barto, V., et al (2022) **Communicating doctors' consensus persistently increases COVID-19 vaccinations.** NATURE 606:doi.org/10.1038/s41586-022-04805-y (available as a free pdf)

Authors' abstract: *The reluctance of people to get vaccinated represents a fundamental challenge to containing the spread of deadly infectious diseases, including COVID-19. Identifying misperceptions that can fuel vaccine hesitancy and creating effective communication strategies to overcome them are a global public health priority.*

Medical doctors are a trusted source of advice about vaccinations, but media reports may create an inaccurate impression that vaccine controversy is prevalent among doctors, even when a broad consensus exists. Here we show that public misperceptions about the views of doctors on the COVID-19 vaccines are widespread, and correcting them increases vaccine uptake.

We implement a survey among 9,650 doctors in the Czech Republic and find that 90% of doctors trust the vaccines. Next, we show that 90% of respondents in a nationally representative sample (n = 2,101) underestimate doctors' trust; the most common belief is that only 50% of doctors trust the vaccines.

Finally, we integrate randomized provision of information about the true views held by doctors into a longitudinal data collection that regularly monitors vaccination status over 9 months. The treatment recalibrates beliefs and leads to a persistent increase in vaccine uptake.

The approach demonstrated in this paper shows how the engagement of professional medical associations, with their unparalleled capacity to elicit individual views of doctors on a large scale, can help to create a cheap, scalable intervention that has lasting positive impacts on health behaviour.

Chang, D., et al (2022) **The determinants of COVID-19 morbidity and mortality across countries.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-09783-9 (available as a free pdf)

Authors' abstract: *We identify 21 predetermined country-level factors that explain marked variations in weekly COVID-19 morbidity and mortality across 91 countries between January and the end of 2020.*

Besides factors commonly associated with infectious diseases (e.g., population and tourism activities), we discover a list of country characteristics that shape COVID-19 outcomes.

Among demographic-geographic factors, the male-to-female ratio, population density, and urbanization aggravate the severity of COVID-19, while education, temperature, and religious diversity mitigate the impact of the pandemic on morbidity and mortality.

For the political-legal dimension, democracy and political corruption are aggravating factors. In contrast, female leadership, the strength of legal systems, and public trust in government significantly reduce infections and deaths.

In terms of socio-economic aspects, GDP per capita, income inequality, and happiness (i.e., life satisfaction) lead to worse COVID-19 outcomes. Interestingly, technology advancement increases morbidity but reduces mortality.

For health care factors, SARS (severe acute respiratory syndrome) experience and healthcare infrastructure help countries perform better in combating the pandemic.

SEEN IN THE LITERATURE

Planets.

Daffern-Powell, E.C., et al (2022) **The Great Planetary Heist: theft and capture in star-forming regions.** MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 514:doi.org/10.1093/mnras/stac1392

Authors' abstract: *Gravitational interactions in star-forming regions are capable of disrupting and destroying planetary systems, as well as creating new ones.*

In particular, a planet can be stolen, where it is directly exchanged between passing stars during an interaction; or captured, where a planet is first ejected from its birth system and is free-floating for a period of time, before being captured by a passing star.

We perform sets of direct N-body simulations of young, substructured star-forming regions, and follow their evolution for 10 megayears in order to determine how many planets are stolen and captured, and their respective orbital properties.

We show that in high-density star-forming regions, stolen and captured planets have distinct properties. The semimajor axis distribution of captured planets is significantly skewed to wider orbits compared to the semimajor axis distribution of stolen planets and planets that are still orbiting their parent star (preserved planets).

However, the eccentricity and inclination distributions of captured and stolen planets are similar, but in turn very different to the inclination and eccentricity distributions of preserved planets.

In low-density star-forming regions these differences are not as distinct but could still, in principle, be used to determine whether observed exoplanets have likely formed in situ or have been stolen or captured.

We find that the initial degree of spatial and kinematic substructure in a star-forming region is as important a factor as the stellar density in determining whether a planetary system will be altered, disrupted, captured, or stolen.

Rzymski, P., et al (2022) **Screening the survival of cyanobacteria under perchlorate stress. Potential implications for Mars in situ resource utilization.** ASTROBIOLOGY 22:doi.org/10.1089/ast.2021.0100 (available as a free pdf)

[Algae could be a food source for Mars astronauts. The problem is that Martian soils are highly contaminated by perchlorates, inimical to most life forms.]

Authors' abstract: *Cyanobacteria are good candidates for various Martian applications as a potential source of food, fertilizer, oxygen, and biofuels. However, the increased levels of highly toxic perchlorates may be a significant obstacle to their growth on Mars.*

Therefore, in the present study, 17 cyanobacteria strains that belong to Chroococcales, Chroococcidiopsidales, Nostocales, Oscillatoriales, Pleurocapsales, and Synechococcales were exposed to 0.25–1.0% magnesium perchlorate concentrations (1.5-6.0 mM ClO_4 - ions) for 14 days.

The exposure to perchlorate induced at least partial inhibition of growth in all tested strains, although five of them were able to grow at the highest perchlorate concentration: Chroococcidiopsis thermalis, Leptolyngbya foveolarum, Arthronema africanum, Geitlerinema cf. acuminatum, and Cephalothrix komarekiana.

Chroococcidiopsis sp. and Chroococcidiopsis cubana demonstrated growth up to 0.5%. Strains that maintained growth displayed significantly increased malondialdehyde content, indicating perchlorate-induced oxidative stress, whereas the chlorophyll alpha/carotenoids ratio tended to be decreased.

The results show that selected cyanobacteria from different orders can tolerate perchlorate concentrations typical for the martian regolith, indicating that they may be useful in Mars exploration.

Origin Of Life.

Sahai, N., et all (2022) **Freshwater and evaporite brine compositions on Hadean Earth: Priming the origins of life.** ASTROBIOLOGY 22:doi.org/10.1089/ast.2020.2396

[The Hadean era is greater than 3,800 megayears ago. We know life originated back then but there are no fossils. The oldest undisputed fossils are Archaean, 3,800 megayears old from the Gunflint Chert of Ontario.]

Authors' abstract: *The chemical composition of aqueous solutions during the Hadean era determined the availability of essential elements for prebiotic synthesis of the molecular building blocks of life.*

Here we conducted quantitative reaction path modeling of atmosphere-water-rock interactions over a range of environmental conditions to estimate freshwater and evaporite brine compositions.

We then evaluated the solution chemistries for their potential to influence ribonucleotide synthesis and polymerization as well as protocell membrane stability.

Specifically, solutions formed by komatiite and tonalite (primitive crustal rocks) weathering and evaporation-rehydration (drying-wetting) cycles were studied assuming neutral atmospheric composition over a wide range of values of atmospheric partial pressure of CO2 (PCO2) and temperatures.

In summary:
(1) prebiotic RNA synthesis and membrane self-assembly could have been achieved even under neutral atmosphere conditions by atmosphere-water-komatiite rock interactions; and

(2) constraints on element availability for the origins of life and early PCO2 were addressed by a single, globally operating mechanism of atmosphere-water-rock interactions without invoking special microenvironments.

The present results support a facile origins-of-life hypothesis even under a neutral atmosphere as long as other favorable geophysical and planetary conditions are also met.

Jerome, C.A., et al (2022) **Catalytic synthesis of polyribonucleic acid on prebiotic rock glasses.** ASTROBIOLOGY 22:doi.org/10.1089/ast.2022.0027 (available as a free pdf)

[The only general agreement about the origin of life, in the absence of fossils, is that either RNA or proteins developed the ability to reproduce themselves. They didn't necessarily live in cells, but could have grown on surfaces.]

Authors' abstract: *Reported here are experiments that show that ribonucleoside triphosphates are converted to polyribonucleic acid when incubated with rock glasses similar to those likely present 4.3 to 4.4 billion years ago on the Hadean Earth surface, where they were formed by impacts and volcanism.*

This polyribonucleic acid averages 100 to 300 nucleotides in length, with a substantial fraction of 3¢,-5¢-dinucleotide linkages. Chemical analyses, including classical methods that were used to prove the structure of natural RNA, establish a polyribonucleic acid structure for these products.

The polyribonucleic acid accumulated and was stable for months, with a synthesis rate of 2 x10^{-3} pmoles of triphosphate polymerized each hour per gram of glass (25C, pH 7.5). These results suggest that polyribonucleotides were available to Hadean environments if triphosphates were.

As many proposals are emerging describing how triphosphates might have been made on the Hadean Earth, the process observed here offers an important missing step in models for the prebiotic synthesis of RNA.

Reyes-Rivera, J., et al (2022) **Nitric oxide signaling controls collective contractions in a colonial choanoflagellate.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2022.04.017 (available as a free pdf)

[Choanoflagellates are free-swimming unicellular algae that ingest food particles as well as photosynthesize. Although they are plants, they are considered the next closest thing to sponges, which in turn are considered the first animals to evolve.]

Authors' abstract: *Although signaling by the gaseous molecule nitric oxide (NO) regulates key physiological processes in animals, including contractility, immunity, development, and locomotion, the early evolution of animal NO*

signaling remains unclear. To reconstruct the role of NO in the animal stem lineage, we set out to study NO signaling in choanoflagellates, the closest living relatives of animals.

In animals, NO produced by the nitric oxide synthase (NOS) canonically signals through cGMP by activating soluble guanylate cyclases (sGCs). We surveyed the distribution of the NO signaling pathway components across the diversity of choanoflagellates and found three species that express NOS (of either bacterial or eukaryotic origin), sGCs, and downstream genes previously shown to be involved in the NO/cGMP pathway.

One of the species coexpressing sGCs and a bacterial-type NOS, Choanoeca flexa, forms multicellular sheets that undergo collective contractions controlled by cGMP. We found that treatment with NO induces cGMP synthesis and contraction in C. flexa.

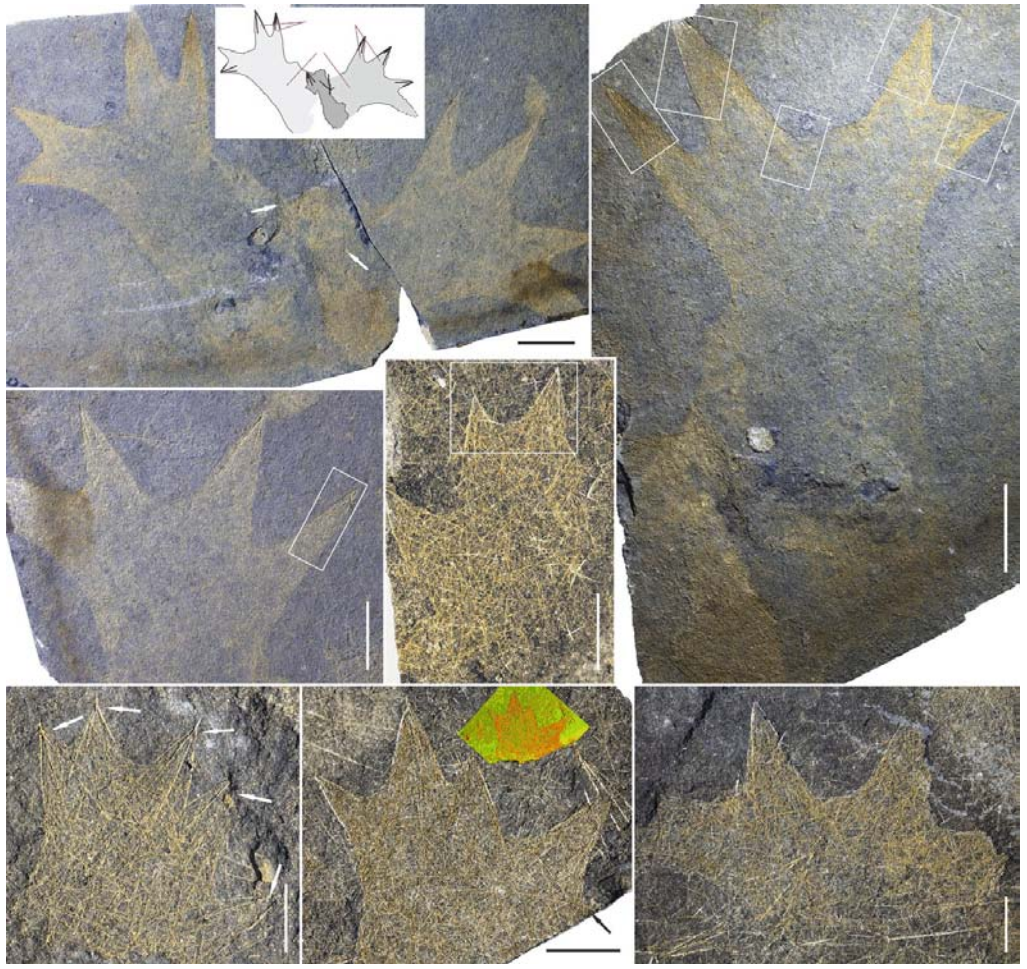
Biochemical assays show that NO directly binds C. flexa sGC1 and stimulates its cyclase activity. The NO/cGMP pathway acts independently from other inducers of C. flexa contraction, including mechanical stimuli and heat, but sGC activity is required for contractions induced by light-to-dark transitions.

The output of NO signaling in C. flexa, contractions resulting in a switch from feeding to swimming, resembles the effect of NO in sponges and cnidarians, where it interrupts feeding and activates contractility. These data provide insights into the biology of the first animals and the evolution of NO signaling.

Paleobiology.

Yun, H., et al (20220 **Adaptive specialization of a unique sponge body from the Cambrian Qingjiang biota.** PROCEEDINGS OF THE ROYAL SOCIETY OF LONDON 289B:doi.org/10.1098/rspb.2022.0804 (available as a free pdf)

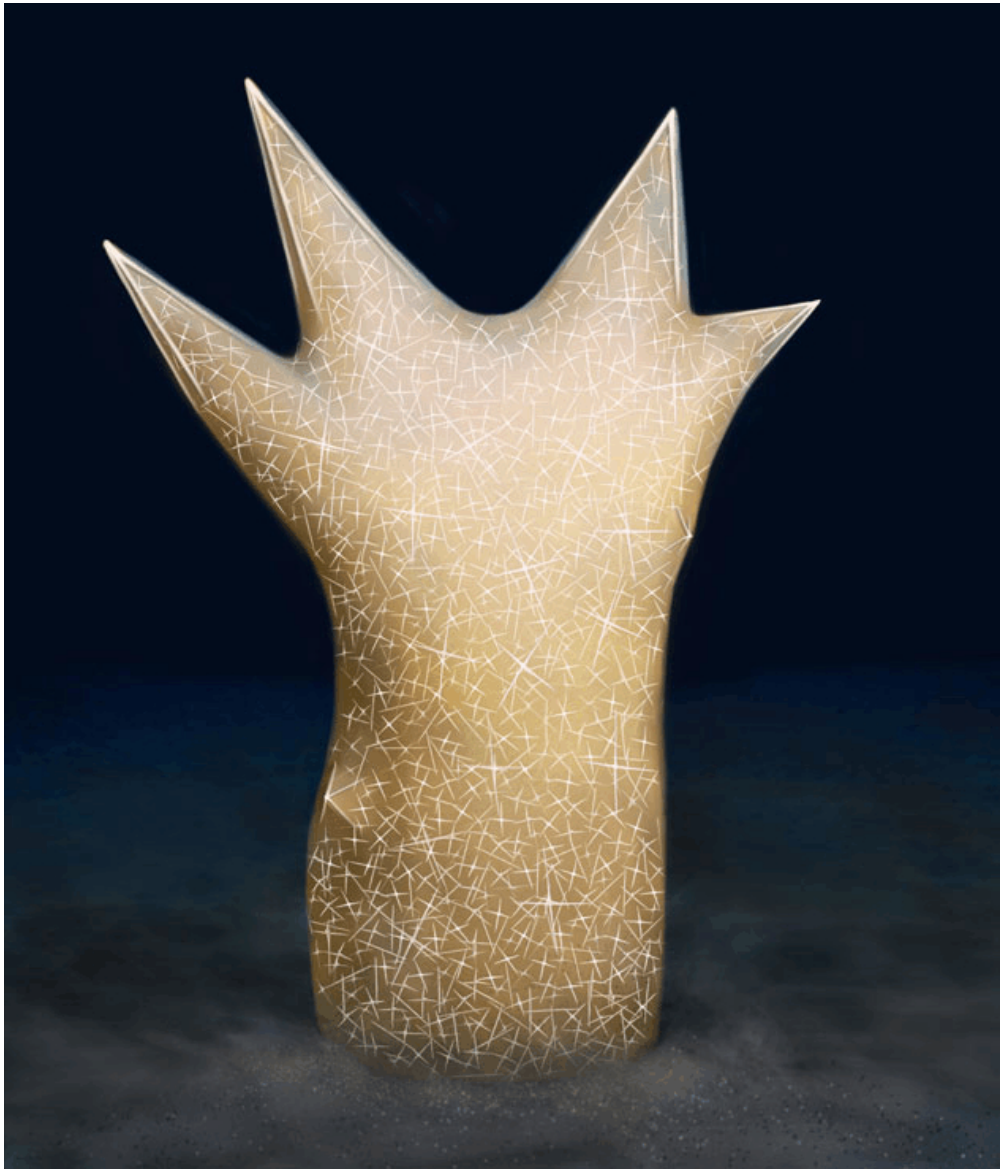
Authors' abstract: *Sponge fossils from the Cambrian black shales have attracted attention from both palaeontologists and geochemists for many years in terms of their high diversity, beautiful preservation and perplexing adaptation to inhospitable living environments. However, the body shape of these sponges, which contributes to deciphering adaptive evolution, has not been scrutinized.*



New complete specimens of the hexactinellid sponge Sanshapentella tentoriformis sp. nov. from the Qingjiang biota (black shale of the Cambrian Stage 3 Shuijingtuo Formation, ca 518 Ma) allow recognition of a unique dendriform body characterized by a columnar trunk with multiple conical high peaks and distinctive quadripod-shaped dermal spicules that frame each high peak.

The body shape of this new sponge along with other early Cambrian hexactinellids, is classified into three morpho-groups that reflect different levels of adaptivity to the environment.

The cylindrical and ovoid bodies generally adapted to a large spectrum of environments; however, the dendriform body of S. tentoriformis was restricted to the relatively deep-water, oxygen-deficient environment.



From a hindsight view, the unique body shape represents a consequence of adaptation that helps maintain an effective use of oxygen and a low energy cost in hypoxic conditions.

[Images are from this paper.]

Saito, R., et al (2022) **Biomarker evidence for the prolongation of multiple phytoplankton blooms in the aftermath of the end-Permian mass extinction.** PALAEOGEOGRAPHY, PALAEOCLIMATOLOGY, PALAEOECOLOGY 600:doi.org/10.1016/j.palaeo.2022.111077

[The end-Permian mass extinction killed 97% of all species. So much rotting organic matter was in the oceans that massive blooms of algae and fungi erupted.]

Authors' abstract: *The end-Permian mass extinction was the most catastrophic event for life in the Phanerozoic eon because it impacted numerous organisms, from micro-sized photosynthetic organisms to large (meter-long) animals and fundamentally altered marine and terrestrial ecosystems.*

C_{33} n-alkyl cyclohexane (C_{33}-ACH), an angstrom-size molecular fossil of phytoplankton, has been widely found in Permian-Triassic (P-Tr) marine sediments, associated with the collapse of the marine ecosystems at the end-Permian mass extinction.

Here, we describe multiple C_{33}-ACH spikes in the Lower Triassic succession at the Chaohu section of the South China Block, which imply that phytoplankton blooms occurred repeatedly during the early-middle Early Triassic.

Comparison with previous studies shows that C_{33}-ACH was not only globally enriched at the P-Tr boundary, but also abundant at the Induan-Olenekian boundary and middle Smithian in both the South China and Boreal seas. In addition, the Chaohu section record reveals a C_{33}-ACH peak at the Smithian-Spathian boundary.

Moreover, the C_{33}-ACH spikes were synchronous with the peaks of mercury and the pristane/phytane (Pr/Ph) ratio.

Since the peaks in mercury and the Pr/Ph ratio indicate increased volcanic activity and large influxes of terrestrial source material into the ocean, the correspondence between the high abundance of C_{33}-ACH with mercury and Pr/Ph ratio peaks implies that volcanism and riverine nutrient input fertilized the surface phytoplankton, which triggered the expansion of anoxia that in turn delayed the benthic metazoan recovery.

Brownstein, C.D., and T.R. Lyson (2022) **Giant gar from directly above the Cretaceous-Palaeogene boundary suggests healthy freshwater ecosystems existed within thousands of years of the asteroid impact.** BIOLOGY LETTERS 18:doi.org/10.1098/rsbl.2022.0118

[Garpike fish still exist today and are popular game fish in freshwater habitats.]

Authors' abstract; *The Cretaceous-Palaeogene (K-Pg) mass extinction was responsible for the destruction of global ecosystems and loss of approximately three-quarters of species diversity 66 million years ago.*

Large-bodied land vertebrates suffered high extinction rates, whereas small-bodied vertebrates living in freshwater ecosystems were buffered from the worst effects.

Here, we report a new species of large-bodied (1.4 to 1.5 metres) gar based on a complete skeleton from the Williston Basin of North America. The new species was recovered 18 cm above the K-Pg boundary, making it one of the oldest articulated vertebrate fossils from the Cenozoic.

The presence of this freshwater macropredator approximately 1.5 to 2.5 thousand years after the asteroid impact suggests the rapid recovery and reassembly of North American freshwater food webs and ecosystems after the mass extinction.

Miller, J.H., et al (2022) **Male mastodon landscape use changed with maturation (late Pleistocene, North America).** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 119:doi.org/10.1073/pnas.2118329119 (available as a free pdf)

Authors' abstract: *Fossil remains usually reveal little about lifetime landscape use beyond place of death, but evergrowing tusks of American mastodons (Mammut americanum) record this fundamental aspect of paleobiology.*

Using oxygen and strontium isotopes from a serially sampled malemastodon tusk, we reconstruct changing patterns of landscape use during his life.

We find clear shifts in landscape use during adolescence and following maturation to adulthood, including increased monthly movements and development of a summer-only range and mating ground. The mastodon died in his inferred summer mating ground, far from landscapes used during other seasons.

Mastodons had long gestation times, and late Pleistocene populations lived in harsh, rapidly changing environments. Seasonal landscape use and migration were likely critical for maximizing mastodon reproductive success.

We used a spatially explicit movement model that coupled strontium and oxygen isotopes from two serially sampled intervals (5+ adolescent years and 3+ adult years) in a male mastodon tusk to test for changes in landscape use associated with maturation and reproductive phenology.

The mastodon's early adolescent home range was geographically restricted, with no evidence of seasonal preferences. Following inferred separation from the matriarchal herd (starting age 12 years), the adolescent male's mobility increased as landscape use expanded away from his natal home range (likely central Indiana).

As an adult, the mastodon's monthly movements increased further. Landscape use also became seasonally structured, with some areas, including northeast Indiana, used only during the inferred mastodon mating season (spring/summer).

The mastodon died in this area (>150 km from his core, non-summer range) after sustaining a craniofacial injury consistent with a fatal blow from a competing male's tusk during a battle over access to mates.

Northeast Indiana was likely a preferred mating area for this individual and may have been regionally significant for late Pleistocene mastodons.

Similarities between mammutids and elephantids in herd structure, tusk dimorphism, tusk function, and the geographic component of male maturation indicate that these traits were likely inherited from a common ancestor.

Dinosaurs.

Wiemann, J., et al (2022) **Fossil biomolecules reveal an avian metabolism in the ancestral dinosaur.** NATURE 606:doi.org/10.1038/s41586-022-04770-6

[Dinosaurs were long considered as reptiles, which are cold-blooded or ectothermic. Nowadays dinosaurs are considered separate from reptiles, in part because they were found to be warm-blooded or endothermic.]

[Furthermore, not all dinosaurs became extinct after the asteroid. A single line of dinosaurs, known as avian theropods, survived into our present-day world. We call them birds.]

Authors' abstract: *Birds and mammals independently evolved the highest metabolic rates among living animals. Their metabolism generates heat that enables active thermoregulation, shaping the ecological niches they can occupy and their adaptability to environmental change.*

The metabolic performance of birds, which exceeds that of mammals, is thought to have evolved along their stem lineage. However, there is no proxy that enables the direct reconstruction of metabolic rates from fossils.

Here we use in situ Raman and Fourier-transform infrared spectroscopy to quantify the in vivo accumulation of metabolic lipoxidation signals in modern and fossil amniote bones. We observe no correlation between atmospheric oxygen concentrations and metabolic rates.

Inferred ancestral states reveal that the metabolic rates consistent with endothermy evolved independently in mammals and plesiosaurs, and are ancestral to ornithodirans, with increasing rates along the avian lineage.

High metabolic rates were acquired in pterosaurs, ornithischians, sauropods and theropods well before the advent of energetically costly adaptations, such as flight in birds.

Although they had higher metabolic rates ancestrally, ornithischians reduced their metabolic abilities towards ectothermy. The physiological activities of such ectotherms were dependent on environmental and behavioural thermoregulation, in contrast to the active lifestyles of endotherms.

Giant sauropods and theropods were not gigantothermic, but true endotherms. Endothermy in many Late Cretaceous taxa, in addition to crown mammals and birds, suggests that attributes other than metabolism determined their fate during the terminal Cretaceous mass extinction.

Dhiman, H., et al (2022) **First ovum-in-ovo pathological titanosaurid egg throws light on the reproductive biology of sauropod dinosaurs.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-13257-3 (available as a free pdf)

Authors' abstract: *Pathologic eggs have been documented in the amniote eggs of birds, turtles, and dinosaurs. These eggs occur either in the form of one egg within another egg, a condition known as ovum-in-ovo or multi-shelled eggs showing additional pathological eggshell layer/s besides the primary shell layer.*

Though multi-shelled eggs and eggshells were previously recorded only in reptiles and ovum-in-ovo eggs in birds, now it has been shown that multi-shelled egg pathology occurs in birds as well. However, no ovum-in-ovo egg has been reported in dinosaurs or for that matter in other reptiles.

Here we describe an ovum-in-ovo pathological egg from a titanosaurid dinosaur nest from the Upper Cretaceous Lameta Formation of western Central India which makes it the first report of this pathology in dinosaurs.

Birds possess a specialized uterus while other amniotes have a generalized uterus. However, alligators and crocodiles retain a specialized uterus like birds along with a reptilian mode of egg-laying.

The discovery of ovum-in-ovo egg from a titanosaurid dinosaur nest suggests that their oviduct morphology was similar to that of birds opening up the possibility for sequential laying of eggs in this group of sauropod dinosaurs.

This new find underscores that the ovum-in-ovo pathology is not unique to birds and sauropods share a reproductive behavior very similar to that of other archosaurs.

Botany.

Clark, J.W., et al (2022) **The origin and evolution of stomata.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2022.04.040 (available as a free pdf)

[Stomata are the breathing pores of plants. They are ringed by guard cells, which expand or contract to open or close the stomata. Bryophytes are mosses and liverworts. Tracheophytes are plants with vascular systems, such as ferns, gymnosperms (conifers), and flowering plants.]

Authors' abstract: *The acquisition of stomata is one of the key innovations that led to the colonisation of the terrestrial environment by the earliest land plants. However, our understanding of the origin, evolution and the ancestral function of stomata is incomplete.*

Phylogenomic analyses indicate that, firstly, stomata are ancient structures, present in the common ancestor of land plants, prior to the divergence of bryophytes and tracheophytes and, secondly, there has been reductive stomatal evolution, especially in the bryophytes (with complete loss in the liverworts).

From a review of the evidence, we conclude that the capacity of stomata to open and close in response to signals such as ABA, CO2 and light (hydroactive movement) is an ancestral state, is present in all lineages and likely predates the divergence of the bryophytes and tracheophytes.

We reject the hypothesis that hydroactive movement was acquired with the emergence of the gymnosperms. We also conclude that the role of stomata in the earliest land plants was to optimise carbon gain per unit water loss.

Abbas, M., et al (2022) **An oxygen-sensing mechanism for angiosperm adaptation to altitude.** NATURE 606:doi.org/10.1038/s41586-022-04740-y (available as a free pdf)

[A clade is a line of evolutionary descent, not necessarily species to species but also genus to genus or variety to variety.]

Authors' abstract: *Flowering plants (angiosperms) can grow at extreme altitudes, and have been observed growing as high as 6,400 metres above sea leve; however, the molecular mechanisms that enable plant adaptation specifically to altitude are unknown. One distinguishing feature of increasing altitude is a reduction in the partial pressure of oxygen (pO_2).*

Here we investigated the relationship between altitude and oxygen sensing in relation to chlorophyll biosynthesis, which requires molecular oxygen, and hypoxia-related gene expression. We show that in etiolated seedlings of angiosperm species, steady-state levels of the phototoxic chlorophyll precursor protochlorophyllide are influenced by sensing of atmospheric oxygen concentration.

In natural populations representing diverse angiosperm clades, we find oxygen-dependent altitudinal clines for steady-state levels of protochlorophyllide, expression of inactivation complex components and hypoxia-related genes.

Finally, Arabidopsis thaliana, accessions from contrasting altitudes display altitude-dependent ERFVII activity and accumulation. We thus identify a mechanism for genetic adaptation to absolute altitude through alteration of the sensitivity of the oxygen-sensing system.

Around 25% of the Earth's land surface, containing at least 30% of plant species diversity, is mountainous. Although the altitude at which an individual plant grows may never change, it is critical that individuals (and populations) are adapted to survive at that altitude, and this is an important component of plant ecology.

Altitude and latitude have been considered collectively to impart a syndrome of developmental and physiological characteristics linked mostly to climatic adaptation (including dwarfism, resistance to ultra-violet light, low temperature tolerance, flowering time and others).

Tang, D., et al (2022) **Genome evolution and diversity of wild and cultivated potatoes** NATURE 606:doi.org/10.1038/s41586-022-04822-x (available as a free pdf)

[Ploidy is the number of duplicate sets of chromosomes a plant has. Humans and other animals have only one set, but many plants are polyploids. Extra sets of chromosomes provide hybrid vigour and reduce the effect of corrupted genes causing health problems, but only in plants reproducing by seeds.]

[Because crop potatoes are clones and propagated vegetatively instead of by seeds, they are more susceptible to diseases and pests. There are hundreds of cultivars but 55% of all potatoes grown in the field are Russet potatoes.]

Authors' abstract: *Potato (Solanum tuberosum L.) is the world's most important non-cereal food crop, and the vast majority of commercially grown cultivars are highly heterozygous tetraploids. Advances in diploid hybrid breeding based on true seeds have the potential to revolutionize future potato breeding and production.*

So far, relatively few studies have examined the genome evolution and diversity of wild and cultivated landrace potatoes, which limits the application of their diversity in potato breeding.

Here we assemble 44 high-quality diploid potato genomes from 24 wild and 20 cultivated accessions that are representative of Solanum section Petota, the tuber-bearing clade, as well as 2 genomes from the neighbouring section, Etuberosum.

Extensive discordance of phylogenomic relationships suggests the complexity of potato evolution. We find that the potato genome substantially expanded its repertoire of disease-resistance genes when compared with closely related seed-propagated solanaceous crops, indicative of the effect of tuber-based propagation strategies on the evolution of the potato genome.

The Petota section consists of more than 100 tuber-bearing species, and is sister to the non-tuber-bearing Etuberosum section and the Lycopersicon section that comprises tomato species. Commercial production of potato is dominated by autotetraploid cultivars that are propagated using seed tubers.

Reinventing potato from a clonally propagated tetraploid to a true seed-propagated diploid has the potential to considerably accelerate genetic improvement, and would enable the genome design of a crop that has been highly recalcitrant to the use of molecular breeding and genomics approaches.

Diploid potatoes represent around 70% of the wild and landrace potato species, and the vast diversity among them has not been fully characterized or made use of in previous breeding programs. Furthermore, the effects of the evolution of a clonal reproduction strategy on potato genomes and the evolutionary mechanisms of tuberization are largely unexplored.

Nilsson, O. (2022) **Winter dormancy in trees.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2022.04.011

Author's abstract: *Plants growing in temperate and boreal regions of the world have to face strikingly different environmental conditions during summer and winter.*

Being sessile organisms, plants have had to develop various strategies to adapt to these changes in light, temperature, and water availability, thereby optimizing their 'economy of growth'.

While annual plants can endure unfavorable winter conditions in the form of a seed, or under a protective cover of thick snow, perennial plants such as trees adapt by going into a stage of deep sleep called winter dormancy.

To enter dormancy, vegetative growth is stopped in the late summer or early autumn and the shoots are converted into buds, where the shoot apical meristems are protected by tightly closed and hardened bud scales. At the same time, cold hardiness develops and the need for water and nutrient uptake is drastically reduced.

Deciduous trees also go through leaf senescence whereby the leaves develop their autumn colors and are shed. The trees then spend the beginning of the winter in a state of deep sleep in which they are completely unreceptive to any environmental signals telling them to wake up.

However, as winter progresses, the trees are gradually released from this slumber and will eventually flush their buds in the spring.

Vegetative growth then resumes with the formation of new leaves and shoots during summer until the trees again go into growth cessation and the cycle is closed. This cycle of growth and dormancy is central for the ability of trees to adapt to growth at different latitudes and elevations.

The further north, or the higher the elevation at which the trees grow, the earlier in the season the trees enter growth cessation and the later they flush their buds in the spring. This is because meteorological winter arrives earlier in the season and lasts longer into the spring.

The trees therefore have to stop growth earlier in the season to ensure that they have enough time to complete bud formation and to develop cold hardiness and dormancy. They also have to be sure that winter is really over before flushing their buds.

Winter dormancy is therefore a clear case of a trade-off between the length of the growing season and the protection against winter damage, a nice example of 'economy in biology'.

Zoology.

Wang, Z.Y., et al (2022) **Steroid hormones of the octopus self-destruct system.** CURRENT BIOLOGY 32:doi.org/10.1016/j.cub.2022.04.043

Authors' abstract: *Among all invertebrates, soft-bodied cephalopods have the largest central nervous systems and the greatest brain-to-body mass ratios, yet unlike other big-brained animals, cephalopods are unusually short-lived.*

Primates and corvids survive for many decades, but shallow-water octopuses, such as the California two-spot octopus (Octopus bimaculoides), typically live for only 1 year. Lifespan and reproduction are controlled by the principal neuroendocrine center of the octopus: the optic glands, which are functional analogs to the vertebrate pituitary gland.

After mating, females steadfastly brood their eggs, begin fasting, and undergo rapid physiological decline, featuring repeated self-injury and leading to death. Removal of the optic glands completely reverses this life history trajectory, but the signaling factors underlying this major life transition are unknown.

Here, we characterize the major secretions and steroidogenic pathways of the female optic gland using mass spectrometry techniques. We find that at least three pathways are mobilized to increase synthesis of select sterol hormones after reproduction.

One pathway generates pregnane steroids, known in other animals to support reproduction. Two other pathways produce 7-dehydrocholesterol and bile acid intermediates, neither of which were previously known to be involved in semelparity.

Our results provide insight into invertebrate cholesterol pathways and confirm a remarkable unity of steroid hormone biology in life history processes across Bilateria.

Human Prehistory.

Scott, A., et al (2022) **Emergence and intensification of dairying in the Caucasus and Eurasian steppes.** NATURE ECOLOGY AND EVOLUTION 6:doi.org/10.1038/s41559-022-01701-6 (available as a free pdf)

Authors' abstract: *During the early to mid-Holocene (ca. 9.0 to 3.5 thousand years ago (kya)), dairying played a vital role in the development of human food systems across Europe, Africa and Asia.*

Early agropastoral societies raised livestock animals that could provide them with milk, meat, wool, leather and traction, and milk rose to prominence as an especially important, nutrient-rich food source.

Milk is rich in protein, fat, sugar (lactose), vitamins and minerals, such as calcium, and the water content in milk can be relied on in times of drought or scarcity.

Although milk itself is highly perishable, it can be transformed through microbial fermentation and other forms of manipulation into more stable products, such as yogurt, butter, ghee, cheese and curds, that can be stored for longer periods in surplus.

First attested in Anatolia during the seventh and sixth millennia BC, ruminant dairying subsequently spread to both Europe and Africa by the late sixth millennium BC, but less is known about its initial dispersals into Asia.

One major vector by which dairying spread was the Eurasian steppe, an enormous expanse of grasslands stretching 6,000 km from the Carpathian Basin to Mongolia.

Archaeological and archaeogenetic evidence points to the Pontic-Caspian steppe zone between the Caucasus and the Black Sea as the crucible from which the earliest steppe pastoralist societies arose and spread, ultimately influencing populations from Europe to Inner Asia.

However, little is known about their economic foundations and the factors that may have contributed to their extensive mobility. Here, we investigate dietary proteins within the dental calculus proteomes of 45 individuals spanning the Neolithic to Greco-Roman periods in the Pontic-Caspian Steppe and neighbouring South Caucasus, Oka-Volga-Don and East Urals regions.

We find that sheep dairying accompanies the earliest forms of Eneolithic pastoralism in the North Caucasus. During the fourth millennium bc, Maykop and early Yamnaya populations also focused dairying exclusively on sheep while reserving cattle for traction and other purposes.

We observe a breakdown in livestock specialization and an economic diversification of dairy herds coinciding with aridification during the subsequent late Yamnaya and North Caucasus Culture phases, followed by severe climate deterioration during the Catacomb and Lola periods.

The need for additional pastures to support these herds may have driven the heightened mobility of the Middle and Late Bronze Age periods. Following a hiatus of more than 500 years, the North Caucasian steppe was repopulated by Early Iron Age societies with a broad mobile dairy economy, including a new focus on horse milking.

Peters, J., et al (2022) **The biocultural origins and dispersal of domestic chickens.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 119:doi.org/10.1073/pnas.2121978119 (available as a free pdf)

Authors' abstract: *Though chickens are the most numerous and ubiquitous domestic bird, their origins, the circumstances of their initial association with people, and the routes along which they dispersed across the world remain controversial.*

In order to establish a robust spatial and temporal framework for their origins and dispersal, we assessed archaeological occurrences and the domestic status of chickens from ~600 sites in 89 countries by combining zoogeographic, morphological, osteometric, stratigraphic, contextual, iconographic, and textual data.

Our results suggest that the first unambiguous domestic chicken bones are found at Neolithic Ban Non Wat in central Thailand dated to ~1650 to 1250 BCE, and that chickens were not domesticated in the Indian Subcontinent. Chickens did not arrive in Central China, South Asia, or Mesopotamia until the late second millennium BCE, and in Ethiopia and Mediterranean Europe by ~800 BCE.

To investigate the circumstances of their initial domestication, we correlated the temporal spread of rice and millet cultivation with the first appearance of chickens within the range of red junglefowl species.

Our results suggest that agricultural practices focused on the production and storage of cereal staples served to draw arboreal red junglefowl into the human niche.

Thus, the arrival of rice agriculture may have first facilitated the initiation of the chicken domestication process, and then, following their integration within human communities, allowed for their dispersal across the globe.

Prümers, H., et al (2022) **Lidar reveals pre-Hispanic low-density urbanism in the Bolivian Amazon.** NATURE 606:doi.org/10.1038/s41586-022-04780-4 (available as a free pdf)

Authors' abstract: *Archaeological remains of agrarian-based, low-density urbananism have been reported to exist beneath the tropical forests of Southeast Asia, Sri Lanka and Central America. However, beyond some large interconnected settlements in southern Amazonia, there has been no such evidence for pre-Hispanic Amazonia.*

Here we present lidar data of sites belonging to the Casarabe culture (around AD 500 to AD 1400) in the Llanos de Mojos savannah-forest mosaic, southwest Amazonia, revealing the presence of two remarkably large sites (147 ha and 315 ha) in a dense four-tiered settlement system.

The Casarabe culture area, as far as known today, spans approximately 4,500 km2, with one of the large settlement sites controlling an area of approximately 500 km2.

The civic-ceremonial architecture of these large settlement sites includes stepped platforms, on top of which lie U-shaped structures, rectangular platform mounds and conical pyramids (which are up to 22 m tall).

The large settlement sites are surrounded by ranked concentric polygonal banks and represent central nodes that are connected to lower-ranked sites by straight, raised causeways that stretch over several kilometres. Massive water-management infrastructure, composed of canals and reservoirs, complete the settlement system in an anthropogenically modified landscape.

Our results indicate that the Casarabe-culture settlement pattern represents a type of tropical low-density urbanism that has not previously been described in Amazonia.

During the Late Holocene epoch, pre-Hispanic agriculturalists in the Llanos de Mojos, Bolivia, transformed the most-extensive, seasonally flooded, Amazonian savannahs (120,000 km2, roughly the size of England) into productive agricultural and aquacultural landscapes with an apparent diversity in sociopolitical organization, water-control systems and economic bases.

The southeast sector of the Llanos de Mojos (our study region) benefits from soils that have advantageous agricultural properties because of the deposition of a mid-Holocene sedimentary lobe that creates a slightly more elevated topography than the surrounding Llanos de Mojos, which in turn, provides base-rich, Andean-derived, well-drained soils.

Excavations and bioarchaeology indicate that monumental sites were not unoccupied ceremonial centres but inhabited throughout the year by agriculturalists who cultivated a diversity of crops, with maize (Zea mays) as the primary staple, and who met their protein needs by hunting and fishing.

Speirs: There is a myth that the Amazon jungles were pristine wilderness before the arrival of the Europeans. We now know the area was extensively modified by early humans for agriculture, then reverted to jungle when European diseases outran the earliest explorers and killed off the original inhabitants.

Modern Humans.

Jastreboff, A.M., et al (2022) **Tirzepatide once weekly for the treatment of obesity.** NEW ENGLAND JOURNAL OF MEDICINE 386:doi.org/10.1056/NEJMoa2206038

Authors' abstract: *In this phase-3 double-blind, randomized, controlled trial, we assigned 2,539 adults with a body-mass index (BMI; the weight in kilograms divided by the square of the height in meters) of 30 or more, or 27 or more and at least one weight-related complication, excluding diabetes, in a 1:1:1:1 ratio to receive once-weekly, subcutaneous tirzepatide (5 mg, 10 mg, or 15 mg) or placebo for 72 weeks, including a 20-week dose-escalation period.*

At baseline, the mean body weight was 104.8 kg, the mean BMI was 38.0, and 94.5% of participants had a BMI of 30 or higher. The mean percentage change in weight at week 72 was -15.0% with 5-mg weekly doses of tirzepatide, -19.5% with 10-mg doses, and -20.9% with 15-mg doses and -3.1% with placebo.

The percentage of participants who had weight reduction of 5% or more was 85%, 89%, and 91% with 5 mg, 10 mg, and 15 mg of tirzepatide, respectively, and 35% (95% CI, 30 to 39) with placebo; 50% and 57% of participants in the 10-mg and 15-mg groups had a reduction in body weight of 20% or more, as compared with 3% in the placebo group. Improvements in all prespecified cardiometabolic measures were observed with tirzepatide.

The most common adverse events with tirzepatide were gastrointestinal, and most were mild to moderate in severity, occurring primarily during dose escalation. Adverse events caused treatment discontinuation in 4.3%, 7.1%, 6.2%, and 2.6% of participants receiving 5-mg, 10-mg, and 15-mg tirzepatide doses and placebo, respectively.

In this 72-week trial in participants with obesity, 5 mg, 10 mg, or 15 mg of tirzepatide once weekly provided substantial and sustained reductions in body weight.

Technology.

Marchini, M., et al (2022) **Exploring the ancient chemistry of mercury.** PROCEEDINGS OF THE NATIONAL ACADEMYS OF SCIENCES USA 119;doi.org/10.1073/pnas.2123171119 (available as a free pdf)

Authors' abstract: *Alchemy is often described as a pseudoscience, whereas it would be better described as a protoscience; indeed, we have reported procedures that never found their way into modern laboratories along with the formalization and translation of these procedures into the modern language of chemistry.*

This paper explores the chemistry of mercury as described in ancient alchemical literature. Alchemy's focus on the knowledge and manipulation of natural substances is not so different from modern chemistry's purposes. The great divide between the two is marked by the way of conceptualizing and recording their practices.

Our interdisciplinary research group, composed of chemists and historians of science, has set off to explore the cold and hot extraction of mercury from cinnabar.

The ancient written records have been perused in order to devise laboratory experiments that could shed light on the material reality behind the alchemical narratives and interpret textual details in a unique perspective. In this way, it became possible to translate the technical lore of ancient alchemy into the modern language of chemistry.

In this study, we propose a suite of experiments that apply a circular hermeneutical approach to ancient recipes. We read the sources, propose chemical interpretations, test these hypotheses in the laboratory, and return to the sources.

We followed the instructions of ancient recipes and used synthetic reagents, which enabled us to characterize the products and detect the roles played by the different ingredients.

Then, we reproduced the recipes using mineral ores to confirm the possibility of the reaction with substances closer to those that were used by the ancients.

In terms of equipment, we did not opt for historical reconstructions. Without affecting the results of the tested reactions, we adapted modern labware, thus significantly reducing the experiments' durations and conforming to modern safety protocols.

Rodrigues, F.M., et al (2022) **E-learning is a burden for the deaf and hard of hearing.** SCIENTIFIC REPORTS 12:doi.org/10.1038/s41598-022-13542-1 (available as a free pdf)

Authors' abstract: *When considering deaf and hard of hearing (DHH) population, research recognizes that fatigue due to communication challenges and multi-focal attention allocation is a significant concern.*

Given the putative heightened demands of distance learning on deaf and hard of hearing students, we investigate how an online environment might differently affect deaf and hard of hearing participants, compared to hearing participants, Portuguese Sign Language (PSL) users and non-users.

Our findings show that the deaf and hard of hearing group present higher values in the post-task fatigue rates with significant differences from the hearing group (non-PSL users).

Furthermore, our results revealed an association between post-task fatigue rates and lower performance scores for the deaf and hard of hearing group, and the gap is significantly bigger when compared with the hearing group (non-PSL users).

We also found evidence for high levels of post-task fatigue and lower performance scores in the hearing group PSL users.

These novel data contribute to the discussion concerning of the pros and cons of digital migration and help redesign more accessible and equitable methodologies and approaches, especially in the DHH educational field, ultimately supporting policymakers in redefining optimal learning strategies.

Tamor, M.A., and E.B. Stechel (2022) **Electrification of transportation means a lot more than a lot more electric vehicles.** iSCIENCE 25:doi.org/10.1016/j.isci.2022.104376 (available as a free pdf)

Authors' abstract: *A hidden barrier to the electrification of transportation is a lack of recognition of what it implies. Although the increasing popularity of battery electric vehicles (BEV) is heartening, the replacement of all personal vehicles with BEV would reduce US transportation emissions of CO2 by only about half.*

Aircraft and many ground vehicles are difficult or impossible to electrify. In meeting the ''electrification challenge,'' electricity is a medium for delivering fossil-carbon-free energy in a form suitable for each application whether mobile or stationary.

This article synthesizes data from multiple sources to estimate how much biomass and GHG-free electricity will be needed to achieve carbon-neutrality in the US by 2050.

Although subject to assumptions for growth and innovation, the resulting need for almost four times the electricity we use today and over 150 billion gallons per year of hydrocarbon fuel and feedstock are so striking as to provide meaningful policy guidance.

WORLD WIDE PARTY 2022
by Dale Speirs

Founded by Benoit Girard (Quebec) and Franz Miklis (Austria) in 1994, the World Wide Party is held on June 21st every year. 2022 was the 29th year of the WWP.

I celebrated in the usual way with a hearty glass of caffeine-free diet cola (still fighting to keep my weight down). At 21h00, I faced to the east and saluted those who have already celebrated. Then I faced north, then south, to toast those in my time zone (Mountain Daylight). Finally, I faced west and raised a glass to those who would celebrate the WWP in the several next hours.

FREE STUFF ONLINE

You will have noticed that I provide sources for the pdfs and mp3s reviewed in this zine. Here is a summary of some good resources, all of which are free.

In particular, the "Seen In The Literature" column cites only peer-reviewed papers. For topics such as COVID-19 or social media effects, more people should be reading these papers instead of blogs where commentators confuse their opinions as being facts.

For scientific papers for which free pdfs are available, the easiest method is to Google either the title of the paper or its digital object identifier, the phrase beginning with doi.org. Most papers are behind a paywall, so unless you have access to a university library computer, you can only get the abstract. However, the abstract is often enough to understand the gist of the article.

For zines, www.efanzines.com provides current pdf zines as well as some older ones. A club called Fanac at www.fanac.org does the reverse; they provide thousands of old zines from the 1930s to date, with a few current zines. Both sites have a free email notification service you can subscribe to.

The Old Time Radio Researchers have thousands of old-time radio shows (1930s to 1950s) covering all the genres, such as comedy, science fiction, fantasy, and mystery. Visit www.otrr.org/OTRRLibrary.

They also publish a bulletin OLD RADIO TIMES, available at www.otrr.org/?c=times, with a free email notification service. Don't pay money for audio books and listen to a droning voice when you can listen for free to full-cast shows such as Jack Benny or Inner Sanctum from the OTRR.

For pulp fiction magazines from all genres, visit www.archive.org/details/pulpmagazinearchive?&sort=-downloads&page=2
Books in the public domain are free from www.gutenberg.org

LETTERS TO THE EDITOR

[Editor's remarks in square brackets. Please include your name and town when sending a comment. Email to opuntia57@hotmail.com]

FROM: Lloyd Penney 2022-06-14
Etobicoke, Ontario

OPUNTIA #524: I have seen pysanky and other Ukrainian artforms here and there in my neighbourhood. Etobicoke has a very high Eastern European population. Where I am, just down the road from the old Etobicoke City Hall, now the Civic Centre, there is an Eastern European food shop to the north of me, and another to the south, both an easy walk away. We sometimes go to a nearby location of a chain of Eastern European supermarkets called Starsky's.

[Re: television show filming in Calgary as Kansas City] Toronto's been masquerading as various American cities for decades in lots of films. There used to be a patch of land near the studio district, southeast of downtown, which held a fleet of police cars with markings from the police departments of New York, Boston, Chicago and others.

A corner of that lot also held about 20 to 30 United States Postal Service boxes, to add to the masquerade. I think that lot has been long ago developed, and I have no idea where the cars and mailboxes have gone.

I have never heard of any of the Nero Wolfe radio episodes with Sydney Greenstreet. I really should look them up. I do remember a short-lived Wolfe television series, and I also remember liking Maury Chaikin in the title role.

[The radio episodes are available as free mp3s from the Old Time Radio Researchers website at www.otrr.org/OTRRLibrary]

As the research on the many symptoms and impairments of COVID-19 continues, all I can say is the long-term impairments we suffer from are: Yvonne always smells cigarette smoke, even if there are no smokers anywhere, but that is starting to fade. I have had tinnitus for many years, but it's gotten a little louder. I am not sure if that's connected to COVID, but it wouldn't surprise me.

[I doubt it. I haven't seen it listed in the scientific literature as a symptom.]

My previous letter: I've heard that COVID-19 may never really go away, so they may add the vaccines to our regular flu shots. Our 41,000 dead of COVID is terrible to consider, but compared to the million+ Americans who have died, our figures may be testimony to the vaccines and masking really working.

[Influenza never went away after the 1918 pandemic. Alberta's Ministry of Health stated that COVID-19 vaccine shots will henceforth be an annual affair.]

We have so many friends who never got vaccinated, and some of them believed it was a hoax. We miss them, and may never see them again. The Ontario chief medical officer has announced that he will get things prepared for a third booster/fifth shot total in the fall.

[Alberta just ended all pandemic rules on June 14. I have three vaccinations. Albertans widely expect the provincial Ministry of Health will announce the fourth shot to be available this autumn. Natural selection will weed out the anti-vaxxers.]

Monetizing your fandom: Some companies have cashed in on us, and our interests, especially in media interests. Doing some poking about, I found Fandom.com, and Amino.com. Each caters to just about any media interest you can imagine, with hundreds of thousands of pages each.

[And just as many pop-up ads if you visit their sites.]

We've had our election [in Ontario] (on my birthday), and the Progressive Conservative Party, led by Doug Ford, won again. I have read our all-time low voting rate (43%) was due to none of the parties catching the public interest. As a result, many voters felt disenfranchised and disinterested.

Ford mostly ignored the media, offered projects no one really wanted (major highway through valuable farmland that his cronies had purchased so they could truly cash in), and he generally kept his mouth shut so nothing stupid or insulting could come out.

[In Alberta, Premier Jason Kenney just couldn't keep his big fat mouth shut, as a result of which the United Conservative Party turfed him as party leader this month. He is staying on as Premier until a new leader is chosen.]

The 43% turnout meant that Ford increased his majority while getting 450,000 fewer votes. We ran a small poll in the west side of Etobicoke. Like I wrote above, there are a huge number of Eastern Europeans who live in Etobicoke, so the Eastern Europeans in the poll voted for the candidate with the Eastern European name.

This riding will go Liberal or Conservative, depending on the last name of the candidate. Sure enough, PC candidate Kinga Surma was handily re-elected. In the past four years, she has been largely invisible.

[In Calgary, you need a Muslim or Punjabi name to be elected in the northeast wards where immigrants initially settle. City-wide however, the white vote does go to the ethnics for mayor because Calgarians are leery about establishment types. Our previous mayor for 12 years was Naheed Nenshi (Muslim) and our current mayor is Jyoti Gondek (Punjabi), both of whom won with a broad vote against right-wingers.]

Any PC MPs in this riding have been invisible as well, while Liberal MPs have been out there, leading the discussions for various issues. As a result of this election, both provincial opposition leaders (Stephen del Duca for the Liberals, and Andrea Horwath for the NDP) have resigned the leadership of their parties.

OPUNTIA #525: [Re: The NHL playoffs] Well, both Alberta teams have been eliminated in the playoffs, Edmonton eliminated by Colorado.

[For my non-Canadian readers, the Calgary Flames were eliminated by the Edmonton Oilers in the second round of the Stanley Cup playoffs. Therefore we need not fear the Apocalypse had the Flames finally won the Cup.]

The Toronto Maple Leafs made their traditional exit from the playoffs in the first round, even though this year's Leafs were the best in ages. This is tempered by the fact the Tampa Bay Lightning, the defending Stanley Cup champions, are in this year's Cup final against Colorado.

Once again, there are no Canadian teams in the playoffs. This may be Canada's game, but it now America's league. I have heard that there is once again a movement to move the Hockey Hall of Fame from Toronto to New York. Sometimes, I just think we should be give the USA the NHL, withdraw all Canadian teams into a Canadian National Hockey League, add a few franchises, like Quebec City, Regina, and Halifax, and compete for a new cup.

[The Stanley Cup is a declared heritage treasure by federal law and belongs to Canada.]

[Re: Calgary readercon When Words Collide cancelling their live convention and going to Zoom for 2022] Ad Astra has cancelled itself for 2022, but to stay in the public eye, it's sponsoring a toycon, just recently postponed to August 6.

I am really not seeing the logic of this, but it's not my convention to direct any more. There's no discussions about anything online. We bailed on one event that was supposed to be on last weekend, and was a faint version of what was planned and promised, so our next event is as vendors at the Forest City Comicon in London, Ontario, in two weeks or so.

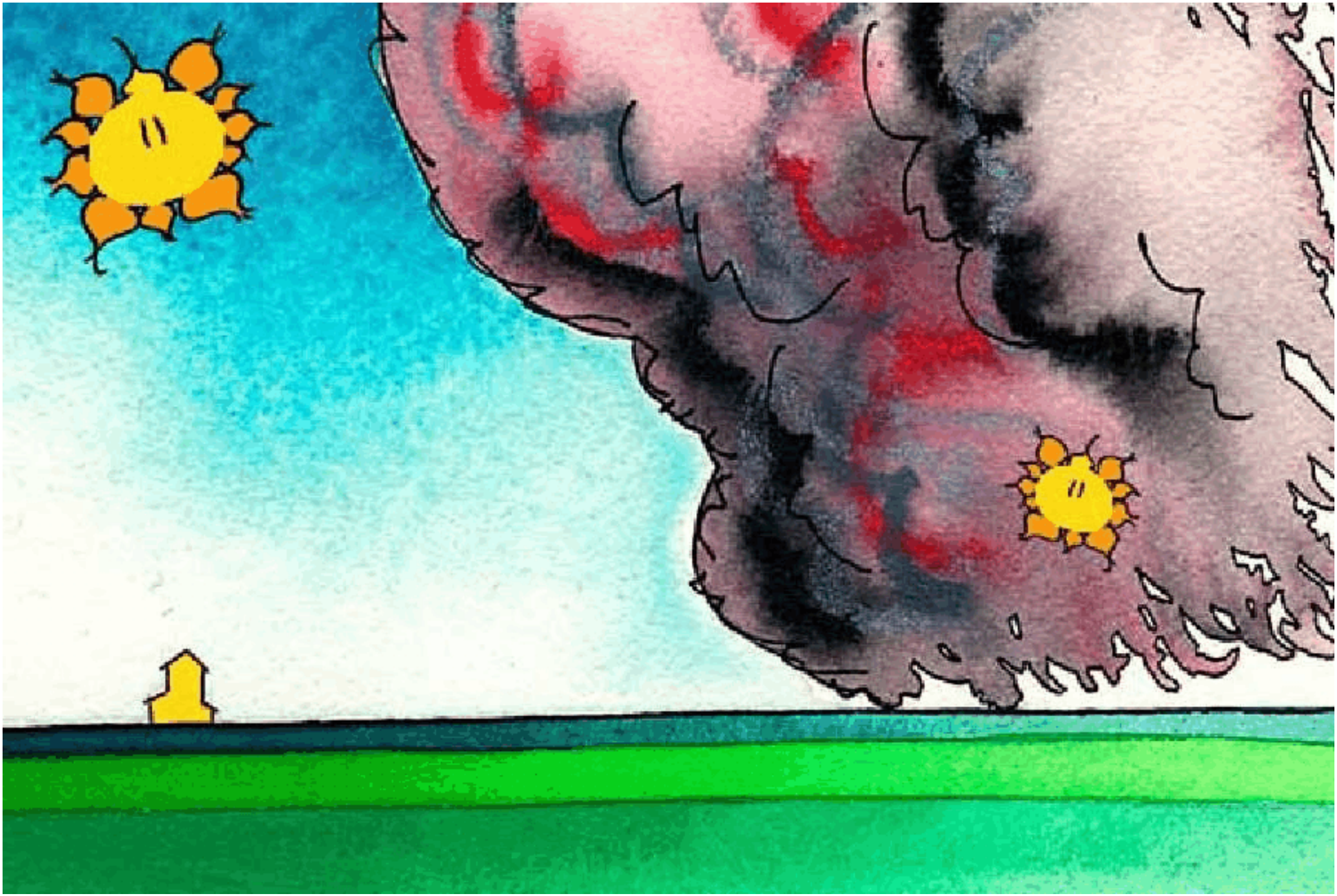
[In philately, stamp shows everywhere have returned as live events, including Calgary. The Calgary Philatelic Society resumed its Spring Bourse in April. Toronto hosted CAPEX 2022 from June 9 to 12, an international show. Calgary is hosting CPS 2022 BNAPEX on the coming Labour Day weekend, a national-level convention. In the unlikely event that any of my readers are interested, more information is available at www.calgaryphilatelicsociety.com]

I always liked Peter Lorre in horror movies, or acting with Humphrey Bogart or the afore-mentioned Sydney Greenstreet, in just about any movie the three appeared in. I don't think Lorre got to do much else, other than ham-act on command.

[Movie fans generally do not appreciate how much radio work their favourite stars did back in the 1940s to early 1950s. Search at either www.archive.org or www.otrr.org/OTRRLibrary]

FROM: Theo Nelson 2022-06-21
Calgary, Alberta

[On the next two pages are the two sides of Theo's quarterly postcard, this one for the summer solstice. His artwork, by the way, shows a thunderstorm crossing the prairies. A familiar summertime sight for flatlanders.]



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Days have been lengthening,
The north has been warming,
The plants and the animals
Have been luxuriating
In the glow of our sun.

Around our amazing home
Spins a companion,
That long ago bumped us
And left us tilting,
So the seasons came to be.

Summer arrives in the north,
Winter beckons in the south,
This tiny biped looks up
And says, "Thank you Sister Moon,
For this Mother Earth."

"Seasonal Greetings!"

To:

Dale -

May good fortune

shine as well.