

OPUNTIA

335

Leap Day 2016

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.

CHINESE NEW YEAR 2016: PART 3

2016-02-20

photos by Dale Speirs

The month-long Lunar New Year festivities in Calgary Chinatown concluded with a lantern festival at the Chinese Cultural Centre.











DBO ZPV SFBE UIJT NFFTBHF: QBSU 1.

by Dale Speirs

I've accumulated a number of books about cryptology but in looking over the cumulative subject index I keep for OPUNTIA (available at efanzines.com or fanac.org), I see that I have only reviewed one book on the subject, BATTLE OF WITS, in issue #52.1B.

The version I have of THE CODEBREAKERS by David Kahn is the 1973 paperback abridgement, about a third of the size of the original 1967 hardcover. Even so, it is a thick one at 476 pages. It excludes all the reference citations and detailed data that a generalist reader does not need. Although the book does eventually cover the history of cryptanalysis and cryptology in rough chronological order, it starts off with cryptanalysis's greatest triumph and, simultaneously, its greatest failure, the Pearl Harbor air raid.

The U.S. Navy and Army each had their own cryptanalysis bureaus going into 1941. While there were traditional inter-service rivalries (the Apple computer company wasn't the first to use the phrase "not invented here"), there was by that time considerable co-operation between the two agencies. After a number of years of work, they had broken almost all the Japanese codes. Because the Americans were short-staffed, they relied on machines and jury rigs to do much of their work, as a result of which they could read codes faster than the Japanese embassy in Washington, D.C., which relied on the human element. American codebreakers distributed copies of messages to their military personnel while the Japanese ambassador was still waiting on his staff to decode them.

The problem was that while the American codebreakers knew on December 7 that war was imminent within hours, they could only guess in a general way about the targets, presuming correctly that southeastern Asia would bear the brunt of the attacks. Pearl Harbor was never mentioned specifically as a target in any of the decoded messages. The codebreakers correctly identified the start of the war, but they could not find out where the Japanese aircraft carriers were or how their planes were targeted.

This illustrates the greatest problem of military espionage and warfare on the front line, that of trying to establish the enemy's actual intention and target. Cryptanalysis has often succeeded in doing so, but Pearl Harbor is a reminder that it is not infallible even if the codebreakers can read all the enemy's mail.

After going into great detail about the Pearl Harbor debacle from the codebreakers point of view, Kahn then starts from the beginning of cryptology. Several ancient civilizations had the idea of coded messages but they were seldom used and only as a clever parlor trick. These were substitution codes, with each letter replaced by another or a symbol. The Spartans are the earliest who were known to use codes for military purposes on a regular basis. From the Renaissance onward, governments, politicians, and monarchs regularly used clever men to intercept and decrypt messages from other nations or enemies within.

The Arabs developed cryptanalysis as a byproduct of intense textual study of the Koran. They were the first to notice that in every language certain letters occur frequently, and some letter combinations were very rare or impossible. “a” is the most common in Arabic, “e” the most common in English, and so forth. Once an encrypted word has a few letters filled in, it becomes possible to guess the others, a process known as cribbing. As an example, a partially decrypted word at the very beginning of a text, “*e**o” is probably “Hello”. On the other hand, if it reads “*e*r **r” then it must be “Dear Sir”.

In the 1400s, polyalphabetic codes were invented which were very secure but not in general use until the 1800s. Instead of one substitution code (a=v, b=f, etcetera), multiple codes were used. The first letter of a message would be encrypted by Code #1, the second letter by Code #2, and so forth. One could have dozens, hundreds, or thousands of such codes. The obvious problem is that manually coding such a message would take a loooooong time, and decrypting it even longer. The battle would be over by the time a field commander had decrypted such an order from his superior. Polyalphabetic codes had to wait until the machine era of the 1900s to make them practical.

The biggest boost to the use of codes was the telegraph. The codes were not necessarily secret, as they were often used to save money on expensive messages. “Send me a fresh shipment of coal, five tons” could be encoded as a two-word telegram “Newcastle five”, and “Your payment received, everything in good order” would be a single word “music”. Many companies had their own secret telegraphic codes, as they were well aware of how many people would read the message along the way.

By the 1800s, a Red Queen’s race had been touched off between cryptographers encoding messages and cryptanalysts breaking them. Military commands regularly changed codes, and standard practice was to have multiple codes, one

for each fleet, regiment, or other unit, so that if a given code was broken then it would not compromise the whole military. Diplomats had separate codes.

The book then considers the modern era in geographical terms, starting with British cryptanalysis during World War One, known as Room 40 after its humble beginnings. Their greatest success was intercepting and decoding the Zimmermann telegram, sent by the German government to Mexico to stir up trouble in southwestern USA just as the U-boats went to unrestricted warfare.

After the war, Room 40 faded away. Meanwhile, the American State Department had Herbert Osborne Yardley setting up a decrypt facility in the 1920s, named the Black Chamber. It concentrated on the Japanese until the newly-elected President Herbert Hoover shut down the Black Chamber. His decision was endorsed by Henry Stimson, the new Secretary of State, who famously said: “*Gentlemen do not read each other’s mail.*”

Yardley lost everything in the Great Depression, and as one way to survive, he wrote a tell-all book about the Black Chamber. It was a bestseller not only in the USA but also Europe and Japan, whose military intelligence units bought multiple copies and learned from it. Meanwhile, over at the Army Signal Corps, their decrypt unit struggled along under the guidance of the husband and wife team of William and Elizebeth (spelled with the extra “e”) Friedman. William invented the word “cryptanalysis”.

It was in the 1930s that coding machines began their rise, using multiple rotors to finally make the polyalphabetic system practical for field use. The most famous rotor machine was Enigma, used by the Germans. The Japanese machine was known as Purple to the Americans. Germany had many successes in decrypting Allied communications but the major problem was that Hitler refused to believe many of the decrypts. Added to that was interdepartmental feuding much worse than the American Army versus Navy. In Germany, the bureaucrats who lost a dispute were disposed of by the SS and Gestapo.

The British cryptanalysis unit at Bletchley Park became the most famous unit in history. Churchill read their decrypts daily, although again, as with the Germans, there was a problem with some field commanders refusing to use the decodes.

Censorship of civilian mails and telegrams was universal among all the combatant nations. Censors could read several languages, and if a letter written

in English or Spanish seemed to use German grammar, it would be tested. The best test for invisible writing was iodine vapours, which often revealed secret messages. If stamp collectors were trading stamps, it was common for censors to keep a stockpile and switch stamps for equal value. A three-cent British stamp sent from America to Spain could mean three Royal Navy ships at the letter's point of origin, so a one-cent Norwegian stamp would be substituted.

Telegrams would be altered by censors, who were careful to keep the meaning while using different words. One example that paid off was a message “*Father is dead*”, which the censor altered to “*Father is deceased*”. The reply came back the next day, “*Is Father dead or deceased?*”. That reply was never delivered and the police put the sender on a watch list.

Radio ads and programmes were monitored for unusual turns of phrase, as were newspaper classified ads. It was impossible to catch all spy messages sent that way but every little bit helped and some were snagged. Florists were prohibited from specifying flower types and quantities for international deliveries. Letters which used strained phrases or odd word combinations were suspect.

Spies used several types of codes or ciphers when sending by civilian channels. Jargon code substituted business phrases, such as “*Sending you 5,000 Corona cigars from Newcastle*” to indicate five cruisers in the harbour at that port. Null ciphers would have the message encoded in the first letter of every word or used every fifth word. Cardano grilles were grids overlain onto a text with cutouts to identify the code words. Steganography used physical methods such as invisible ink or microdots.

The book then jumps to the Pacific War, where the U.S. Navy decrypters were taken far more seriously after Pearl Harbor. The USN had good success in reading Japanese communications because the Imperial Navy delayed changing its existing code system. The Japanese knew it had to be done, but with their forces rapidly spreading over Asia, it was physically impossible to deploy all the new code books. They weren't too worried, however, because their overwhelming successes indicated to them that the Allies weren't reading their messages and thus not able to stymie them.

The real reason was that the Allies were woefully unprepared to fight a war, with material and personnel shortages and inept peace-time commanders. (Churchill once remarked that when a war began, the first six months were required to weed out the incompetent officers.)

Japanese over-confidence was responsible for the American victory at Midway. Thanks to the cyptanalysts, the USN knew the day of attack and were able to position their carrier fleet. June 4, 1942, was the turning point of the Pacific War. Prior to that date, the Japanese Navy was on the offensive, and thereafter always on the defensive. The first few American attacks were ineffectual, but in a later wave of planes, the Americans sank three Japanese aircraft carriers in six minutes, and got the fourth carrier later in the day.

Without the decoded messages, the American Navy would have stayed in a defensive perimeter around the Hawaiian Islands. If Midway had fallen, the invaders would have dominated the Pacific Ocean and turned it into a Japanese lake. In the reverse situation, Japanese cryptanalysts were terrible at their job and couldn't decrypt most of the American communications.

During World War One, the Russians were completely incompetent at coding messages. Most of their messages were radioed in the clear because so few units had codebooks. The Austrian and German commanders read all the messages, and relied on them to throw back the Russians out of Prussia. The Soviets learned the lesson well, and subsequently switched to one-time pads, as a result of which during the Cold War, the Americans were never able to listen in on them the way they did the Japanese.

The book then meanders from one topic to another in code-breaking and more or less fizzles out, no doubt due to it being an abridgement. All told though, it was a good read in history.

THE MAN FROM MONTENEGRO: PART 11

by Dale Speirs

[Parts 1 to 10 appeared in OPUNTIA #252, 253, 275, 278, 279, 289, 304, 307, 319, and 332.]

The Corpus.

CURTAINS FOR THREE compiles three novellas originally published by the author Rex Stout between 1948 and 1950. “The Gun With Wings” is about the apparent suicide of an opera tenor by self-inflicted gunshot. He had suffered a

serious injury to the larynx when an angry father confronted him over a young woman's dalliance with him. A lawsuit for damages was in the air, as the tenor had to undergo surgery and lost substantial income for not being able to sing. The story slings suspicion around like road salt from a snowplough, but the denouement names a man who was inconspicuous by his absence. The surgeon had botched the surgery and was about to be exposed by another doctor. Wolfe bluffs him into an inadvertent confession in the traditional J'accuse! meeting in the last three pages. The twist ending, while logical on the basis of facts revealed earlier in the story, seemed a bit forced.

"Bullet For One" is about the murder of a man named Keyes, one of those characters where the real mystery is why someone didn't finish him off years prior. Wolfe is visited by a group of five of Keyes's family members and work colleagues. The murder took place in Central Park, where Keyes was shot off his horse while on his usual early morning ride along the bridle paths. (I was interested to learn that the New York City Parks Dept. allows equestrians in parks, as Calgary, despite being a western rodeo city, does not.)

Wolfe's clients all have something to hide, to the point that when Goodwin is detailed to question them individually, he finds them being arrested on various charges faster than he can get to them. This is another story where the main suspect really did it, and is exposed by Wolfe during a re-enactment of the crime in the park. Wolfe wasn't there, of course, as he seldom leaves his brownstone, but Goodwin finds himself on foot in the middle of a melee as horse-mounted police chase the suspect hither and yon through the park.

"Disguise For Murder" is about the aftermath of an open house at the brownstone, with members of the Manhattan Flower Club viewing Wolfe's orchid collection. A young woman approaches Goodwin in the office and tells him she saw among the guests someone who murdered a woman a few months prior. Goodwin goes upstairs to the orchid greenhouse to tell Wolfe, but in the interval she is strangled to death in the office. Inspector Cramer goes to town on that, and Wolfe is forced to investigate for free, if only to erase the stigma. He flushes out the culprit with a note, and Goodwin meets him/her (a disguise was used for the previous murder) in a remote rendezvous. He just barely survives the encounter, and justice is done. A somewhat over-elaborated story.

PRISONER'S BASE (1952) is a novel beginning with the visit of a flighty young heiress to Wolfe who wants sanctuary until June 30th, when she comes into her inheritance, a large and successful cotton goods manufacturer called

Softdown. Wolfe does not run a rooming house and tosses her back out on the street, something he soon regrets when she and her maid are murdered a few hours later. Her father's will stated that if she died before inheriting, the directors of Softdown would receive various proportions of the company shares. In addition, she had a prior marriage to Eric Hagh, a South American lothario, which ended in divorce but not before she had signed a paper giving half her wealth to her ex-husband. He has now come out of the woodwork in search of half her fortune. This provides an ample supply of suspects for Goodwin and Wolfe to work their way through.

The murder of a third person, a Softdown shareholder, used the same M.O. as the first one, leaving no doubt that they are all connected. The police are working full out to find the culprit but are getting nowhere. There are two extensive J'accuse! meetings, and Wolfe finally fingers the culprit. The ex-husband was a faker, the real Hagh having died several months previous, but this was brought out as a surprise at the second meeting, preventing the reader from a fair guess.

There is a bit more violence than one usually reads in a Wolfe novel, although tame by today's standards. The meetings and the police investigation portray the turmoil of everyone but Wolfe, who then becomes able to identify the murderer. An average novel with good reading through the first 90% but brought down by a weak ending.

TRIPLE JEOPARDY is a collection of three novellas from 1951 and 1952, when the Red Menace and the Korean War were ramping up. The first story is "Home To Roost", about the murder of Arthur Rackell, a young man who died painfully when someone substituted poison pills for his vitamin tablets. His uncle and aunt, Benjamin and Pauline, had raised him after he was orphaned as a boy.

Arthur had been espousing the Communist line, much to the distress of his adoptive parents, and finally got them off his back by confiding that he was an FBI spy. After his death, the Rackells want justice done, but find that both the FBI and NYPD Homicide are silent about the investigation. They therefore hire Wolfe to look into the matter.

In a time when admitting to be a Communist was to endanger your liberty and job, Wolfe and Goodwin naturally have difficulty in trying to penetrate the cell that Arthur belonged to. They don't even try since the police and FBI were on

it and failed. It turns out that Arthur was never an FBI informant. Instead, Wolfe does an end run on the senior Rackells, as he has reason to wonder if Auntie was a fellow traveler who thought her nephew really was an informer. He bluffs Pauline into a meeting with a known member of Arthur's cell and exposes her as a closet Communist and the murderer.

The plot is barely on this side of plausibility, but Rex Stout did an excellent job of capturing the paranoia of the Red Menace. The characters on both sides of the law are more concerned about the Communists than the murder. The Red Menace is now boring history to the Millennials, even as we start a new chapter in history where the wrong post on a Facebook page can get you arrested as a terrorist.

"The Cop Killer" begins with the murder of a police officer in a barber shop, where he was conducting an investigation when someone got him with a pair of scissors. It happened to be the barber shop patronized by Wolfe and Goodwin. They are dragged into the case when Carl and Tina Vardas, a couple who work in the shop, a barber and his manicurist wife, panic and run, attempting to flee the city because they were illegal immigrants from the wreckage of war-torn Europe. They had arrived without the proper papers and lived in fear of being deported back to the Old Country, now behind the Iron Curtain. They go to Goodwin for help, but by then the damage has been done. If you want to attract the attention of the police, running from the scene where one of their officers was murdered will certainly do it.

Matters are not helped by the obstinacy of the Vardas, who are naive to the point of stupidity about their ability to make a run for it. They want to flee to the country somewhere, as if they could possibly blend in with country folk or travel inconspicuously. Goodwin has his hands full trying to impress upon them that they must listen to others more knowledgeable who can help them. Not much better is that most of the barber shop staff have criminal records or pasts they are trying to hide. One of them is a wholesale fabricator of lies, but so poorly done that no one will believe her about anything.

Nero Wolfe himself leaves his brownstone and travels to the barber shop because he considers that the investigation is overlooking a clue. That clue, while not entirely in plain sight like a purloined letter, is nonetheless still in the shop because the murderer did not have time to remove it. The dead cop had bragged of having the clue just before he was killed. Forensic technicians were dusting evidence for suspects' fingerprints, but Wolfe points out that the vital

clue could be easily identified because the dead man's fingerprints would be on it and not any other thing in the shop. A nice twist ending, yet one which is logically derived from the opening of the story and therefore fair game for the reader.

"The Squirt And The Monkey" didn't read well for me because of a major implausibility in the opening. Wolfe and Goodwin are hired by cartoonist Harry Koven for an elaborate plot to recover what he said was a stolen gun. Goodwin's gun is substituted and then used to murder an occupant of the house. Everyone in the house then denies they knew about Goodwin and keep lying to the police. Wolfe must first overcome the obstructors and then find the murderer, who turns out to be an even more stubborn liar. The plot is too elaborate for its own good, and the characters too unlikeable to do anything more than annoy the reader. Not one of Rex Stout's best efforts.

BEFORE MIDNIGHT (1955) is about a contest that turns ugly. The Pour Amour perfume company is publishing a series of puzzle jingles, each more difficult than the last and which identify an historical woman who used perfume. The contest is down to five finalists when the man who wrote the jingles and had the answers was murdered. The answers may or have may not been stolen, and Wolfe is hired by the advertising agency that devised the contest to find out. This would be the same thing as finding the murderer, which naturally irritates the police when they find they are once again in competition with Wolfe.

The big guy's first plan is to interview the five finalists. A more cantankerous bunch of people couldn't be found, and the initial interviews are exercises in frustration. Wolfe eventually plans an end run that was to culminate in a J'accuse! meeting in his office. Unfortunately, just as the meeting is about to start, one of the suspects takes a hearty drink that was spiked with cyanide, embarrassing Wolfe to no end to have another corpse in his office. He does, however, conclude that the real culprit is an advertising executive. The next meeting is at the ad agency, and this time the J'accuse! does work.

Most of the characters in this novel are obnoxious and obstructive, and those were just the innocent ones. Rex Stout does a good job of portraying Wolfe and Goodwin under pressure when no one will co-operate with them. The final evidence that proves the guilt of the murderer is logically deduced and leads to the denouement in a smooth narrative flow. A good read.

MIGHT AS WELL BE DEAD (1956) is a novel that begins with James Herold who, eleven years previously, wrongly accused his son Paul of stealing a substantial sum from the family business. Paul left home and came to New York City where he changed his name and cut off contact with his family. James recently discovered the true thief and has come to Manhattan to try and track down Paul and make amends.

The NYPD Missing Persons Bureau have had no luck, nor did newspaper ads placed by James of the “come home, all is forgiven” type. James therefore goes to Wolfe for help. The great detective notes that most aliases use the same initials as the real name, and runs a different type of newspaper ad seeking P.H.. Rex Stout then leaps about waving a giant red flag at the reader about the ongoing murder trial of Peter Hays. News reporters and police immediately conclude that Wolfe is working on behalf of the other P.H., who has just been found guilty of shooting his girlfriend’s husband, Michael Molloy.

There is only an 11-year-old photo to work with, but when Goodwin attends the sentencing of Peter Hays, he feels that this is Paul Herold. He confirms it later and the case then changes from finding the son to establishing his innocence on the appeal. P.H. is not helping much though; he is fatalistic about his coming execution. The net begins to spread. More people are dragged into the case as either witnesses or possible suspects. One of Wolfe’s legmen is killed by a hit-and-run driver while on the case, confirming everyone’s suspicion that Paul was framed. The murderer is trying to close off channels that might lead back to him. His next victim is the maid of the original victim’s widow. The net keeps getting wider.

The fourth and last murder is the girlfriend of Michael Molloy, which finally breaks the case wide open. One of the supporting characters in the early part of the novel now has the spotlight on him because he and Molloy are revealed to have been working a substantial fraud together. The two had a falling out concerning the loot, and the murderer had to clear away any connection to himself. The problem was that every time he thought he had tied off all the loose threads, someone else popped up who had to be taken care of, hence the steady flow of murders. The J’accuse! meeting in Wolfe’s office is a real barnburner, with physical violence but no further murders. A good read.

The novel progresses nicely, showing Wolfe and Goodwin casting about desperately trying to find something at the beginning. They create their own breaks in the case, and then, with increasing confidence, march to the climax.

THREE WITNESSES (1955) is another set of three novellas. “The Next Witness” is Nero Wolfe himself. As the story opens, he and Goodwin are waiting in a courtroom to testify, having been subpoenaed by the prosecutor in the trial of Leonard Ashe, accused of the murder of Marie Willis. She was a switchboard operator at an answering service who died on the job, strangled at the board. He was a client who had privately asked her to listen in on conversations directed to his wife, actress Robina Keane. Something in the testimony of the current witness prompts Wolfe to get up and leave the courtroom before being called, dragging Goodwin behind him like a canoe caught in the wake of a supertanker.

Needless to say, they can’t just walk out like that and not expect trouble. They first go to the answering service company and interview some of the dead woman’s co-workers. One of them gives a lead to another woman in Westchester County. Since the prosecutor’s office by that time is laying siege to Wolfe’s brownstone, they decide to go out for a drive in the country. They make their enquiries, return to the city, make some more enquiries, and then the story jumps back to the courtroom for a surprise ending.

It was a cheat, though, however ingenious it may have been, because the reader is deprived of the main facts. Those were that all the switchboard operators, the owner, and several others were listening in on private conversations to collect blackmail information. The data were then sold to outsiders so that the victims would not suspect the source. The dead woman had an attack of conscience and was going to quit, which led the owner of the company to kill her.

The legal pyrotechnics are spectacular when Wolfe finally gets up on the witness stand as a prosecution witness but instead gives evidence for the defendant. Rex Stout goes out of his way to answer objections from legally-trained readers who would think that no one could pull it off without being sentenced for contempt. The overall concept of the story is good, but Stout could have written the plot to be more believable and not cheat the reader.

“When A Man Murders” begins with the visit of Paul and Caroline Aubry to Wolfe. She had been married to Sidney Karnow, who was reported KIA in the Korean War. She had him declared legally dead and married Paul, not to mention inheriting \$900,000 from Sidney. His relatives on the other side of the family got the other half of the estate. Paul and Caroline invested her share wisely, while the Karnow heirs began to live large on the loot as if it would last forever.

Now Karnow has returned, the report of his death being false and he having been a POW in North Korea instead. They want Goodwin to act as an intermediary with Sidney. Caroline will return the inheritance in exchange for a divorce. Karnow never gets a speaking part though. The reader is not surprised when Karnow's body is found in his hotel room, shot in the back of the head. If Paul and Caroline didn't do it, then that throws suspicion on the other relatives, every one of them a ne'er-do-well.

The rest of the story seems a bit rushed. Goodwin tries unsuccessfully to deal with the Karnow heirs and fails. Wolfe dragoons Inspector Cramer into arranging a J'accuse! meeting. The information hidden from the reader is that there was another will by Sidney that gave all the money to Caroline, but the lawyer who handled the probate was part of the Karnow heirs conspiracy. The behaviour of those present at the meeting was implausible.

"Die Like A Dog" has a convoluted plot line that I won't try to describe. Goodwin is returning a raincoat accidentally left behind by a visitor to Wolfe's office. There is a murder in the visitor's apartment building, and Goodwin walks past without stopping when he sees the police cars, not wanting to become involved. A black Labrador dog sitting in front of the building attaches itself to Goodwin and follows him home, triggering the story to follow.

The various threads seem unrelated but are neatly tied up, including an unusual twist involving the raincoat and a good explanation as to why the dog followed Goodwin. There is a surprise ending, but it follows logically from events, with no hidden knowledge. Normally Rex Stout was so-so when it came to plotting, but this one works beautifully.

SEEN IN THE LITERATURE

Young, E.D., et al (2016) **Oxygen isotopic evidence for vigorous mixing during the Moon-forming giant impact.** SCIENCE 351:493-496

Authors' abstract: "*The Moon is thought to be the consequence of a giant collision between the proto-Earth and a planetary embryo (named Theia, "mother of the Moon") ~10⁸ years after the birth of the solar system.*"

"Earth and the Moon are shown here to have indistinguishable oxygen isotope ratios, with a difference in delta17 Oxygen of -1 ± 5 parts per million (2 standard error). On the basis of these data and our new planet formation simulations that include a realistic model for primordial oxygen isotopic reservoirs, our results favor vigorous mixing during the giant impact and therefore a high-energy, high-angular-momentum impact. The results indicate that the late veneer impactors had an average 17 Oxygen within approximately 1 per mil of the terrestrial value, limiting possible sources for this late addition of mass to the Earth-Moon system."

Speirs: Earth is often spoken of as a double planet. It is unique in the Solar System for having a satellite so proportionally large in relation to the planet size. Its origin as a thoroughly mixed remnant of two planets colliding is confirmed by this study.

Valdivia-Silva, J.E., et al (2016) **Microorganisms, organic carbon, and their relationship with oxidant activity in hyper-arid Mars-like soils: Implications for soil habitability.** PALAIOS 31:1-9

Authors' abstract: "*Soil samples from the hyper-arid region in the Atacama Desert in Southern Peru (La Joya Desert) were analyzed for total and labile organic carbon (TOC and LOC), phospholipid fatty acids (PLFA), quantitative real time polymerase chain reaction (qRT-PCR), 49,6-diamidino-2-phenylindole (DAPI)-fluorescent microscopy, culturable microorganisms, and oxidant activity, to understand the relationship between the presence of organic matter and microorganisms in these types of soils. ... Importantly, the concentration of microorganisms in hyper-arid soils did not show any correlation with the organic carbon content; however, there was a significant dependence on the oxidant activity present in these soil samples evaluated as the capacity to decompose sodium formate in 10 hours. We suggest that the analysis of oxidant activity could be a useful indicator of the microbial habitability in hyper-arid soils, obviating the need to measure water activity over time. This approach could be useful in astrobiological studies on other worlds.*"

"The search for life on Mars is one of the more important objectives for astrobiology, and Martian analogs give to us a better chance to understand where and how life could survive on that planet. Our results strongly suggest where the microorganisms in extreme dry environments, like the Atacama

Desert, and maybe Mars, can or could have survived despite the presence of different oxidants in the soil. Importantly, minimum levels of water and humidity could be beneficial for life in low oxidant activity environments, but harmful in settings with high chemical activity. Determining where to look and how to search for evidence of microorganisms on Mars is therefore a key task for astrobiology in the near future.”

Tang, M., Chen, K., and R.L. Rudnick (2016) **Archean upper crust transition from mafic to felsic marks the onset of plate tectonics.** SCIENCE 351:372-375

Authors’ abstract: *“The Archean Eon witnessed the production of early continental crust, the emergence of life, and fundamental changes to the atmosphere. The nature of the first continental crust, which was the interface between the surface and deep Earth, has been obscured by the weathering, erosion, and tectonism that followed its formation. We used Ni/Co and Cr/Zn ratios in Archean terrigenous sedimentary rocks and Archean igneous/metagneous rocks to track the bulk MgO composition of the Archean upper continental crust. This crust evolved from a highly mafic bulk composition before 3.0 billion years ago to a felsic bulk composition by 2.5 billion years ago. This compositional change was attended by a fivefold increase in the mass of the upper continental crust due to addition of granitic rocks, suggesting the onset of global plate tectonics at about 3.0 billion years ago.”*

Speirs: The origin of life is currently dated at about 3.5 gigayears (confirmed unicellular fossils) to 4.1 gigayears (doubtful biocarbon traces) ago. This would mean that life is older than the continents.

Retallack, G.J. (2015) **Late Ordovician glaciation initiated by early land plant evolution and punctuated by greenhouse mass extinctions.** JOURNAL OF GEOLOGY 123:509-538

Author's abstract: *“Late Ordovician (Hirnantian) [445 to 443 megayears ago] glaciation, indicated by periglacial paleosols, tillites, and glacial pavements in Saharan Africa, has been attributed to advances in weathering and carbon sequestration due to evolution of early land plants [465 megayears ago], in the same way that Devonian-Permian glaciation has been attributed to evolution*

offorests and Quaternary glaciations to evolution of grasslands. Two problems for carbon cycle explanations of this glaciation are an Hirnantian CO2 greenhouse estimated at 4035 ppmv [parts per million by volume] from mass balance models and possibly related Hirnantian mass extinctions. This estimate of high CO2 is a 10-m.yr. average, here evaluated against high-resolution sequences of paleosols that give estimates not only of CO2 but also of paleoclimate and vegetation through the Late Ordovician. Katian paleosols of the eastern United States show increases in depth and in degree of carbon consumption and storage comparable with those preceding glaciation of the Devonian-Permian and Quaternary. Early thalloid land plants with rhizoids may have drawn down atmospheric CO2 to only 166 +/- 83 ppmv during the Hirnantian, as estimated here from a pedogenic CO2 paleobarometer. Ordovician paleosols also reveal a short-term greenhouse spike to as much as 4670 ppmv immediately before Hirnantian glaciation. This greenhouse spike may be due to thermogenic methane release from a large igneous province and is comparable with greenhouse spikes during other mass extinctions, such as those of the Late Permian and Late Jurassic.”

Speirs: CO2 concentrations in the atmosphere have fluctuated violently many times in Earth’s history. Glaciations are triggered by stages in the evolution of plants. The first land plant colonization sucked out and sequestered large quantities of CO2, which dropped the atmospheric concentration low enough to trigger glaciation. This was repeated in a later era when the first massive forests developed, and finally the one we just came out of when the evolution of grasslands stored most of the remaining CO2 below ground in their root systems. We are currently in an interglacial, a random fluctuation of the ice. It is an inconvenient truth to mention this. The funny thing is that if all the carbon taxes and plant-a-tree campaigns are successful, they will sequester more CO2 and return Earth to a new ice age.

Marsicano, C.A., et al (2016) **The precise temporal calibration of dinosaur origins.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 113:509–513

Authors’ abstract: *“Many hypotheses have been put forth to explain the origin and early radiation of dinosaurs, but poor age constraints for constituent fossil assemblages make these scenarios difficult to test. Using precise radioisotopic ages, we demonstrate that the temporal gap between assemblages containing only dinosaur precursors and those with the first dinosaurs was 5–10 million*

years shorter than previously thought. Thus, these data suggest that the origin of dinosaurs was a relatively rapid evolutionary event. Combined with our synthesis of paleoecological data, we demonstrate there was little compositional difference between the dinosaur precursor assemblages and the earliest dinosaur assemblages, and thus, the initial appearance of dinosaurs was not associated with a fundamental shift in ecosystem composition, as classically stated.”

“Dinosaurs have been major components of ecosystems for over 200 million years. Although different macroevolutionary scenarios exist to explain the Triassic origin and subsequent rise to dominance of dinosaurs and their closest relatives (dinosauromorphs), all lack critical support from a precise biostratigraphically independent temporal framework. The absence of robust geochronologic age control for comparing alternative scenarios makes it impossible to determine if observed faunal differences vary across time, space, or a combination of both. To better constrain the origin of dinosaurs, we produced radioisotopic ages for the Argentinian Chañares Formation, which preserves a quintessential assemblage of dinosaurian precursors (early dinosauromorphs) just before the first dinosaurs. Our new high-precision chemical abrasion thermal ionization mass spectrometry U–Pb zircon ages reveal that the assemblage is early Carnian (early Late Triassic), 5- to 10-Ma younger than previously thought. Combined with other geochronologic data from the same basin, we constrain the rate of dinosaur origins, demonstrating their relatively rapid origin in a less than 5-Ma interval, thus halving the temporal gap between assemblages containing only dinosaur precursors and those with early dinosaurs. After their origin, dinosaurs only gradually dominated mid- to high-latitude terrestrial ecosystems millions of years later, closer to the Triassic–Jurassic boundary.”



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
Etobicoke, Ontario 2016-02-18

OPUNTIA #332: Mushrooms can be good, but as you say, you have to be choosy. I hate canned mushrooms, some fresh ones are tasteless, and for the most part, I do without. I know a couple of locals here who are quite familiar with the magic version. It is interesting to see how many different species there are, and which ones are quite poisonous.

[Last autumn a Calgary woman picked mushrooms in a park for a salad and died from her bad choices.]

I remember that on the anniversary of his death, some unknown person would come to Poe’s grave in Baltimore, often leave a rose, or be seen toasting Poe at the graveside with something alcoholic and old. That stopped some years ago, and people noticed it. People seem to dislike Poe the same way they dislike Lovecraft; the actual reasons, I don’t know.

Coming up next year in Toronto is Bouchercon 48, the annual World Mystery Convention, and Yvonne and I will be helping out, in minor roles. At the last meeting, we were told about the regular Nero Wolfe dinner that happens at Bouchercons, and I asked if they’d be eating tripe. I saw only a few episodes of the Nero Wolfe series from about 15 years ago, but the late Maury Chaykin was a great Wolfe.

[You should have asked if shad roe was going to be served to Wolfe fans. It was the big guy’s favourite meal but detested by Goodwin, who’d rather have a corned beef sandwich.]

Toronto has had a very mild winter so far, with the exception of this past weekend, the Family Day weekend, where we had wind chills down to about -35°C. That was also the NBA All-Star weekend. Many Americans came up to see it, and they just about froze, which only reinforced all the stupid stereotypes they have about coming up here. And now, it’s quite mild again.

[Still no -20°C days in Calgary yet as of February 25, as I type this. A record-breaking winter here so far. I often brag about Alberta's crystal clear air and the beauty of the Rocky Mountains adjacent to Calgary, but was rather embarrassed during the summer of 2015 when I couldn't even show visitors the foothills because the forest fire smoke from Washington State was so thick.]

OPUNTIA #333: Good to see David Thayer [aka Teddy Harvia] cartooning again.

While there was plenty in the media about Chinese New Year, I don't remember seeing much elsewhere. There are a number of Chinatowns in Toronto and area, and our closest one is the Chinese mall in Mississauga, where they are among the few with a paifang, or large decorative gate.



A ceremonial gate in Calgary Chinatown at 2 Avenue SW and Centre Street bridge.

Re: Sherlock. Baker Street will be one of our destinations when we go to England this coming August. I am sure we will do all the usual touristy things, but perhaps go to some places the usual tourist wouldn't go to, like the BBC main broadcast facility at Bush House.

OPUNTIA #334: Re: Chinese New Year dancers. Looks like that big dragon spotted your camera. The costumes are always a treat.

I often find Canlit, and those involved in it, as pretentious, with only a few exceptions.

It is good to see mention of APAs again. I haven't been in any in some years now, but even after all this time, there are still APAs extant. I think APAplexy in Ottawa is still on the go. And, there's FAPA and N'APA. There must be some more still plugging away. It would be great to see a current list of them, even if only for historical reasons.

ZINE LISTINGS

[I only list zines I receive from the Papernet. If the zine is posted on www.efanzines.com or www.fanac.org, then I don't mention it since you can read it directly.]

[The Usual means \$5 cash (\$6 overseas) or trade for your zine. Americans: please don't send cheques for small amounts to Canada or overseas (the bank fee to cash them is usually more than the amount) or mint USA stamps (which are not valid for postage outside USA). US\$ banknotes are still acceptable around the world.]

LAB FINDINGS #6 (The Usual from Kobb Labs, Box 30231, Florida 32503) Perzine with lots of capsule reviews of old movies. I will be looking for a few of them in the bargain bin. Also a history of the banned (in the USA) episode of THE AVENGERS, the original British television series, not the modern comic book heroes. "A Touch Of Brimstone" had Steed and Peel fighting the Hellfire Club. Mrs Peel, known for her tight leathers even in regular episodes, wears black lingerie and high-heeled boots in this one for the final fight scene. Incidentally, this show was one of the earliest to regularly use martial arts rather than fisticuffs in the fight scenes.