OPUNTIA 492

Edgar Allan Poe's Birthday 2021

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.

AROUND COWTOWN

photos by Dale Speirs

The cover photo was taken on New Year's Day in Fort Calgary Park, at the east end of the downtown core. The park is where the original Fort Calgary was built in 1875 by the North West Mounted Police (as the Mounties were then known). A pioneer village grew up to the west where the skyscrapers now are.

Cross-country skiing is a lost cause for most Calgary winters because the chinooks keep removing the snow as fast as it falls, but this holiday season the winds didn't come.

Turning the camera about to look the other way, the view on this page is looking north from Fort Calgary across the Bow River to the Bridgeland toboggan hill on the far bank. The river won't freeze over completely unless we get cold weather below -20°C for at least a week.

The following day I walked along Glenmore Reservoir. Because it is still water, it was completely frozen over, as you will see on the next page. These photos were taken from the northeast segment of the reservoir. For views of other segments, refer to OPUNTIAs #478, 483, and 485.

Lots of cross-country skiers taking their chances out on the ice. All the photos on the next page were taken from a peninsula looking in different directions.

Below: Looking east-southeast.. Bottom: Same photo, enlargement of skiers.

Below: Looking northeast. Rockyview General Hospital on the far shore.
Bottom: Looking southwest. The Tsuu T'ina Reserve is on the far shore.

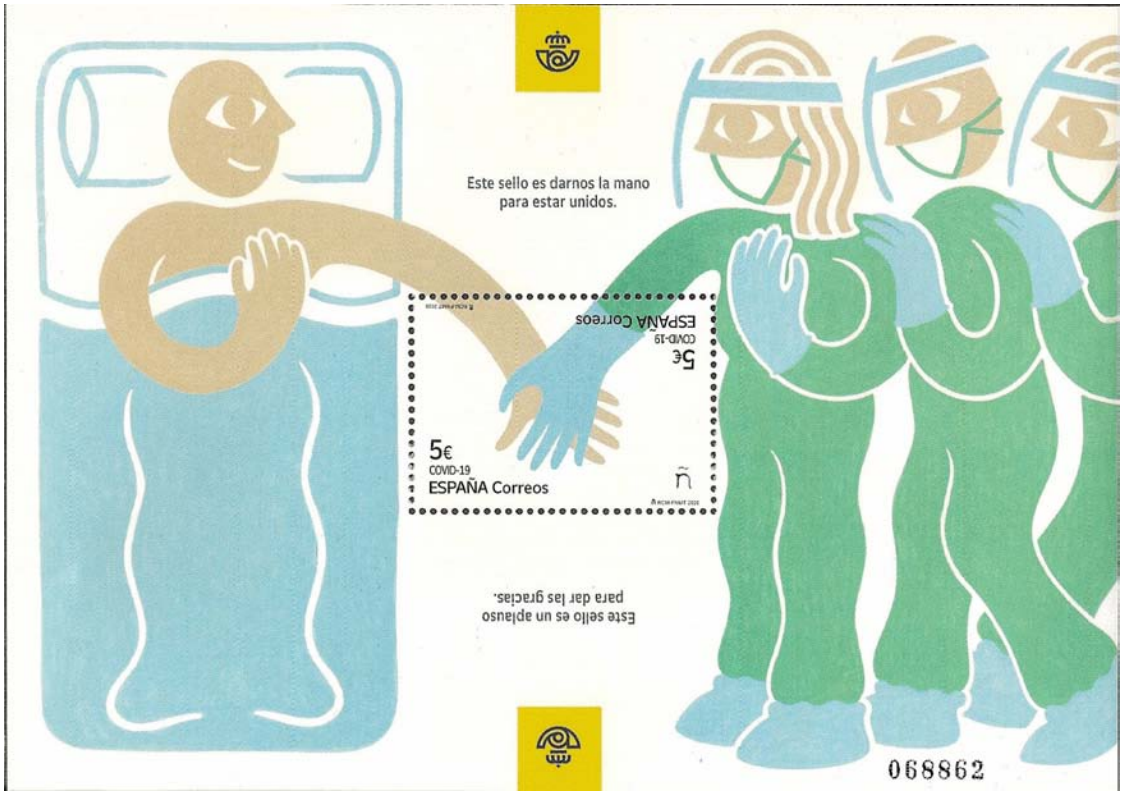
A pickup hockey game at North Glenmore Community Centre not far from the reservoir. Social distancing apparently doesn't count in hockey.

The Garrison Woods district, once the married quarters before CFB Calgary closed in 1997, is adjacent to my neighbourhood. I saw these snow caves the children made, which brought back memories of my childhood in Red Deer where we did the same thing. I don't ever remember building snowmen, just my brother and I digging out snow forts from which to rule the world.

CURRENT EVENTS: PART 11
photos by Dale Speirs

[Parts 1 to 10 appeared in OPUNTIAs #474, 475, 479, 480, 483, 484, and 488 to 491.]

Continuing to add to my COVID-19 topical stamp collection. Some more items added in January (not to same scale).



Continuing with my neighbour's yarnbombing. I've shown close-ups of the trunk but it occurred to me the entire tree, a green ash, hadn't been shown before. It's just a small tree, about one storey high.

As of January 15, Canada had 688,878 cases of COVID-19 coronavirus, 17,539 deaths therefrom, and 459,492 vaccinations. Our population is 38,000,000.

COVID-19 Literature.

I'm going to segregate COVID-19 articles into this series rather than the usual "Seen In The Literature" column. I think it important that peer-reviewed papers such as these should be the ones that people should be reading, not sensational news reports or the outright lies of conspiracy theorists and anti–vaxxers. Assuming, of course, that anyone reads these papers, which are available as free pdfs. By all means please download copies and decide for yourself.

Crenn, V., et al (2020) **Impact of the COVID-19 lockdown period on adult musculoskeletal injuries and surgical management: a retrospective monocentric study.** SCIENTIFIC REPORTS 10:doi.org/10.1038/s41598-020-80309-x (available as a free pdf)

Authors' abstract: *The coronavirus disease 2019 (COVID-19) pandemic has led to the worldwide implementation of unprecedented public protection measures. On the 17th of March, the French government announced a lockdown of the population for 8 weeks.*

This monocentric study assessed the impact of this lockdown on the musculoskeletal injuries treated at the emergency department as well as the surgical indications. We carried out a retrospective study in the Emergency Department and the Surgery Department of Nantes University Hospital from 18 February to 11 May 2020.

We collected data pertaining to the demographics, the mechanism, the type, the severity, and inter-hospital transfer for musculoskeletal injuries from our institution. We compared the 4-week pre-lockdown period and the 8-week lockdown period divided into two 4-week periods: early lockdown and late lockdown.

There was a 52.1% decrease in musculoskeletal injuries among patients presenting to the Emergency Department between the pre-lockdown and the lockdown period (weekly incidence: 415.3 ± 44.2 vs. 198.5 ± 46.0, respectively, p < .001). The number of patients with surgical indications decreased by 33.4% (weekly incidence: 44.3 ± 3.8 vs. 28.5 ± 10.2, p = .048).

The policy for inter-hospital transfers to private entities resulted in 64 transfers (29.4%) during the lockdown period. There was an increase in the incidence of surgical high severity trauma (Injury Severity Score > 16) between the pre-lockdown and the early lockdown period (2 (1.1%) vs. 7 (7.2%), respectively, p = .010) as well as between the prelockdown and the late lockdown period (2 (1.1%) vs. 10 (8.3%), respectively, p = .004).

We observed a significant increase in the weekly emergency department patient admissions between the early and the late lockdown period (161.5 ± 22.9, 235.5 ± 27.7, respectively, p = .028). A pronounced decrease in the incidence of musculoskeletal injuries was observed secondary to the lockdown measures, with emergency department patient admissions being halved and surgical indications being reduced by a third.

The increase in musculoskeletal injuries during the late confinement period and the higher incidence of severe trauma highlights the importance of maintaining a functional trauma center organization with an inter-hospital transfer policy in case of a COVID-19s wave lockdown.

Chen, M.K., et al (2021) **Nursing home staff networks and COVID-19.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 118:doi.org/10.1073/pnas.2015455118 (available as a free pdf)

Authors' abstract: *Nursing homes and other long-term care facilities account for a disproportionate share of COVID-19 cases and fatalities worldwide. Outbreaks in US nursing homes have persisted despite nationwide visitor restrictions beginning in mid-March.*

An early report issued by the Centers for Disease Control and Prevention identified staff members working in multiple nursing homes as a likely source of spread from the Life Care Center in Kirkland, WA, to other skilled nursing facilities.

The full extent of staff connections between nursing homes, and the role these connections serve in spreading a highly contagious respiratory infection, is currently unknown given the lack of centralized data on cross-facility employment.

We perform a large-scale analysis of nursing home connections via shared staff and contractors using device-level geolocation data from 50 million smartphones, and find that 5.1% of smartphone users who visited a nursing

home for at least 1 h also visited another facility during our 11-week study period, even after visitor restrictions were imposed.

We construct network measures of connectedness and estimate that nursing homes, on average, share connections with 7.1 other facilities. Traditional federal regulatory metrics of nursing home quality are unimportant in predicting outbreaks, consistent with recent research.

Controlling for demographic and other factors, a home's staff network connections and its centrality within the greater network strongly predict COVID-19 cases.

Speirs: The same thing was found to be true in Canada, that the rapid spread between nursing homes was because caregivers worked for several different homes and commuted back and forth.

Jain, A., et al (2020) **Analysis of vitamin D level among asymptomatic and critically ill COVID-19 patients and its correlation with inflammatory markers.** SCIENTIFIC REPORTS 10:doi.org/10.1038/s41598-020-77093-z (available as a free pdf)

Authors' abstract: *COVID-19 is characterized by marked variability in clinical severity. Vitamin D had recently been reviewed as one of the factors that may affect the severity in COVID-19. The objective of current study is to analyze the vitamin D level in COVID-19 patients and its impact on the disease severity.*

After approval from Ethics Committee, M.L.B Medical College the current study was undertaken as continuous prospective observational study of 6 weeks. Participants were COVID-19 patients of age group 30 to 60 years admitted during the study period of 6 weeks.

Study included either asymptomatic COVID-19 patients (Group A) or severely ill patients requiring ICU admission (Group B). Serum concentration of 25 (OH)D, were measured along with serum IL-6; TNFa and serum ferritin.

Standard statistical analysis was performed to analyze the differences. Current Study enrolled 154 patients, 91 in Group A and 63 patients in Group B. The mean level of vitamin D (in ng/mL) was 27.89 ± 6.21 in Group A and 14.35 ± 5.79 in Group B, the difference was highly significant. The prevalence of vitamin D deficiency was 32.96% and 96.82% respectively in Group A and Group B.

The fatality rate was high in vitamin D deficient (21% vs 3.1%). Vitamin D level is markedly low in severe COVID-19 patients. Inflammatory response is high in vitamin D deficient COVID-19 patients.

This all translates into increased mortality in vitamin D deficient COVID-19 patients. As per the flexible approach in the current COVID-19 pandemic authors recommend mass administration of vitamin D supplements to population at risk for COVID-19.

Freud, E., et al (2020) **The COVID-19 pandemic masks the way people perceive faces**. SCIENTIFIC REPORTS 10:doi.org/10.1038/s41598-020-78986-9 (available as a free pdf)

Authors' abstract: *The unprecedented efforts to minimize the effects of the COVID-19 pandemic introduce a new arena for human face recognition in which faces are partially occluded with masks. Here, we tested the extent to which face masks change the way faces are perceived.*

To this end, we evaluated face processing abilities for masked and unmasked faces in a large online sample of adult observers (n = 496) using an adapted version of the Cambridge Face Memory Test, a validated measure of face perception abilities in humans.

As expected, a substantial decrease in performance was found for masked faces. Importantly, the inclusion of masks also led to a qualitative change in the way masked faces are perceived. In particular, holistic processing, the hallmark of face perception, was disrupted for faces with masks, as suggested by a reduced inversion effect. Similar changes were found whether masks were included during the study or the test phases of the experiment.

Faces are among the most informative and significant visual stimuli in human perception. Brief presentation of a person's face readily exposes their identity, gender, emotion, age, and race.

The unprecedented efforts to minimize the effects of the novel coronavirus include a recommendation (and in most countries, a requirement) to wear face

masks in public to reduce virus transmission. Around the globe, mask-wearing is being introduced as a new requirement as governments ease restrictions to reopen the economy.

This new constraint introduces a whole new arena for face recognition in which typical and commonly encountered faces are partially occluded. Given the importance of intact face processing to everyday life and to social interactions, it is imperative to characterize how wearing masks might hamper these abilities.

A reduction in recognition of masked faces is predicted by previous research. In one such study, a small sample of human participants were found to be impaired in recognition of masked faces. In a separate study, recognition accuracy was similarly reduced when different features (eyes, mouth, nose) of the face were systemically removed.

Other studies showed that the recognition of facial expressions is modulated if the lower part of the face is occluded by a scarf or ethnic related headdresses. More recently, it was found that surgical masks impair face perception of familiar and unfamiliar faces.

These findings are also consistent with experiments in which Gaussian masks (i.e., bubbles) were parametrically added to face images, revealing that the mouth and eye regions are among the most important sources of information that support face identification.

Chang, S., et al (2021) **Mobility network models of COVID-19 explain inequities and inform reopening.** NATURE 589:doi.org/10.1038/s41586-020-2923-3 (available as a free pdf)

Authors' abstract: *The coronavirus disease 2019 (COVID-19) pandemic markedly changed human mobility patterns, necessitating epidemiological models that can capture the effects of these changes in mobility on the spread of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).*

Here we introduce a metapopulation susceptible–exposed–infectious–removed (SEIR) model that integrates fine-grained, dynamic mobility networks to simulate the spread of SARS-CoV-2 in ten of the largest US metropolitan areas.

Our mobility networks are derived from mobile phone data and map the hourly movements of 98 million people from neighbourhoods (or census block groups) to points of interest such as restaurants and religious establishments, connecting 56,945 census block groups to 552,758 points of interest with 5.4 billion hourly edges.

We show that by integrating these networks, a relatively simple SEIR model can accurately fit the real case trajectory, despite substantial changes in the behaviour of the population over time. Our model predicts that a small minority of 'superspreader' points of interest account for a large majority of the infections, and that restricting the maximum occupancy at each point of interest is more effective than uniformly reducing mobility.

Our model also correctly predicts higher infection rates among disadvantaged racial and socioeconomic groups solely as the result of differences in mobility: we find that disadvantaged groups have not been able to reduce their mobility as sharply, and that the points of interest that they visit are more crowded and are therefore associated with higher risk.

Rosti, M.E., et al (2020) **Fluid dynamics of COVID-19 airborne infection suggests urgent data for a scientific design of social distancing.** SCIENTIFIC REPORTS 10:doi.org/10.1038/s41598-020-80078-7 (available as a free pdf)

Authors' abstract: *The COVID-19 pandemic is largely caused by airborne transmission, a phenomenon that rapidly gained the attention of the scientific community. Social distancing is of paramount importance to limit the spread of the disease, but to design social distancing rules on a scientific basis the process of dispersal of virus-containing respiratory droplets must be understood.*

Here, we demonstrate that available knowledge is largely inadequate to make predictions on the reach of infectious droplets emitted during a cough and on their infectious potential. We follow the position and evaporation of thousands of respiratory droplets by massive state-of-the-art numerical simulations of the airflow caused by a typical cough.

We find that different initial distributions of droplet size taken from literature and different ambient relative humidity lead to opposite conclusions:

(1) most versus none of the viral content settles in the first 1 to 2 metres;
(2) viruses are carried entirely on dry nuclei versus on liquid droplets;
(3) small droplets travel less than 2.5m versus more than 7.5m.

We point to two key issues that need to be addressed urgently in order to provide a scientific foundation to social distancing rules:
(I1) a careful characterisation of the initial distribution of droplet sizes;
(I2) the infectious potential of viruses carried on dry nuclei versus liquid droplets.

The airborne transmission route of SARS-CoV-2 certainly deserves the numerous ongoing efforts aimed at fighting the COVID-19 pandemic. It is well known that SARS-CoV-2 infection relies on the spreading of small virus-containing respiratory droplets that the infected person exhales when coughing or sneezing or even simply talking or breathing. However, at least two unresolved key issues remain open and need urgent attention.

First (I1): we need to better characterize the sizes of the exhaled droplets for all the expulsion processes, coughing, speaking, breathing and sneezing.

Wells and Duguid were the first to propose systematic measurements of droplet sizes. After their seminal papers, many investigators have grappled with issue I1. A careful analysis of the state of the art on the subject reported in Seminara et al. shows broad differences in the experimental results of the different investigators.

For example, Zayas et al state that the droplets in the sub-micron range represent 97% of the exhaled droplets for each single cough event; for the same type of expulsion, Yang et al report a much smaller percentage of less than 4% while not even a single droplet within this subrange was measured by Duguid.

On the one hand, the physics underpinning the formation of respiratory droplets is not completely understood. On the other hand, experiments exploit different techniques under different ambient conditions.

Finally, a rigorous presentation of data is not always provided. This lack of a systematic analysis, in addition to the natural variability across individuals, may explain the striking inconsistency of available information on the size distribution of exhaled droplets.

Second (I2): we need to establish whether viruses lingering on dry nuclei upon droplet evaporation retain their full potential of infection. There is evidence supporting that viruses coated by a lipid membrane tend to retain their infectivity longer at low relative humidity. The coated SARS-CoV-2 virus is thus expected to best thrive in dry conditions. However, the opposite is true in relevant counterexamples as discussed by Yang and Marr.

The two issues listed above cause considerable uncertainty in the expected efficiency of disease transmission. This uncertainty stems from a rather simple concept: smaller liquid droplets are lighter, hence remain airborne for longer times and are more likely to shrink to their dry residual nuclei under sufficiently dry ambient conditions.

Hence the infection potential of a single cough or sneeze depends critically on the size distribution of exhaled droplets and the likelihood of disease transmission through viruses carried on dry nuclei versus liquid droplets.

Gamble, L.H., et al (2021) **Finding archaeological relevance during a pandemic and what comes after.** AMERICAN ANTIQUITY 86:2-22 (available as a free pdf)

Authors' abstract: *This article emerged as the human species collectively have been experiencing the worst global pandemic in a century. With a long view of the ecological, economic, social, and political factors that promote the emergence and spread of infectious disease, archaeologists are well positioned to examine the antecedents of the present crisis.*

In this article, we bring together a variety of perspectives on the issues surrounding the emergence, spread, and effects of disease in both the Americas and Afro-Eurasian contexts.

Recognizing that human populations most severely impacted by COVID-19 are typically descendants of marginalized groups, we investigate pre- and post-contact disease vectors among Indigenous and Black communities in North America, outlining the systemic impacts of diseases and the conditions that exacerbate their spread.

We look at how material culture both reflects and changes as a result of social transformations brought about by disease, the insights that paleopathology

provides about the ancient human condition, and the impacts of ancient globalization on the spread of disease worldwide.

By understanding the differential effects of past epidemics on diverse communities and contributing to more equitable sociopolitical agendas, archaeology can play a key role in helping to pursue a more just future.

The ongoing COVID-19 global pandemic provides the most recent example of the economic devastation and human suffering caused by the rapid spread of infectious disease, exposing long-term weaknesses in infrastructure.

Irrational behaviors, such as berating construction workers installing 5G networks because of the belief that they cause the virus, or suggestions by world leaders that the ingestion of bleach could be a cure for the disease, materialize as people cast blame, unable to believe or cope with scientific explanations.

This pandemic illustrates how people do not always do the safest or most sensible things. Instead, long-term societal fractures are exposed and amplified.

The archaeological and historical records from the Americas demonstrate the abundance of past epidemics, especially during the colonial era, and the often transformative societal inequities that emerged from these epidemics, as well as their effects on material culture.

Green, M.H. (2020) **The four Black Deaths.** AMERICAN HISTORICAL REVIEW 125:1601-1631

Author's abstract: *The Black Death, often called the largest pandemic in human history, is conventionally defined as the massive plague outbreak of 1346 to 1353 C.E. that struck the Black Sea and Mediterranean, extended into the Middle East, North Africa, and western Europe, and killed as much as half the total population of those regions.*

Yet genetic approaches to plague's history have established that Yersinia pestis, the causative organism of plague, suddenly diverged in Central Asia at some point before the Black Death, splitting into four new branches, a divergence geneticists have called the "Big Bang."

Drawing on a biological archive of genetic evidence, I trace the bacterial descendants of the Big Bang proliferation, comparing that data to historical human activities in and around the area of plague's emergence.

The Mongols, whose empire emerged in 1206, unwittingly moved plague through Central Eurasia in the thirteenth, not the fourteenth, century. Grain shipments that the Mongols brought with them to several sieges, including the siege of Baghdad, were the most likely mechanism of transmission.

The fourteenth century plague outbreaks represent local spillover events out of the new plague reservoirs seeded by the military campaigns of the thirteenth century.

L. F. Buss, L.F., et al (2020) **Three-quarters attack rate of SARS-CoV-2 in the Brazilian Amazon during a largely unmitigated epidemic.** SCIENCE 371:doi.org/10.1126/science.abe9728 (available as a free pdf)

Authors' abstract: *SARS-CoV-2 spread rapidly in the Brazilian Amazon and the attack rate there is an estimate of the final size of a largely unmitigated epidemic. We use a convenience sample of blood donors to show that by June, one month after the epidemic peak in Manaus, capital of Amazonas state, 44% of the population had detectable IgG antibodies.*

Correcting for cases without a detectable antibody response and antibody waning, we estimate a 66% attack rate in June, rising to 76% in October. This is higher than in São Paulo, in southeastern Brazil, where the estimated attack rate in October is 29%. These results confirm that, when poorly controlled, COVID-19 can infect a high fraction of the population causing high mortality.

In conclusion, our data show that >70% of the population has been infected in Manaus approximately seven months after the virus first arrived in the city. This is above the theoretical herd immunity threshold. However, prior infection may not confer long-lasting immunity. Indeed, we observed rapid antibody waning in Manaus, consistent with other reports that have shown signal waning on the Abbott IgG assay. However, other commercial assays, with different designs or targeting different antigens, have more stable signal, and there is evidence for a robust neutralizing antibody response several months out from infection. Rare reports of reinfection have been confirmed, but the frequency of its occurrence remains an open question.

Mathai, V., et al (2021) **Airflows inside passenger cars and implications for airborne disease transmission.** SCIENCE ADVANCES 7:doi.org/10.1126/sciadv.abe0166 (available as a free pdf)

Authors' abstract: *Transmission of highly infectious respiratory diseases, including SARS-CoV-2, is facilitated by the transport of exhaled droplets and aerosols that can remain suspended in air for extended periods of time. A passenger car cabin represents one such situation with an elevated risk of pathogen transmission.*

Here, we present results from numerical simulations to assess how the in-cabin microclimate of a car can potentially spread pathogenic species between occupants for a variety of open and closed window configurations. We estimate relative concentrations and residence times of a noninteracting, passive scalar, a proxy for infectious particles, being advected and diffused by turbulent airflows inside the cabin. An airflow pattern that travels across the cabin, farthest from the occupants, can potentially reduce the transmission risk. Our findings reveal the complex fluid dynamics during everyday commutes and nonintuitive ways in which open windows can either increase or suppress airborne transmission.

[One of the many useful illustrations from this paper. If you're a taxi driver, this is worth studying in detail.]

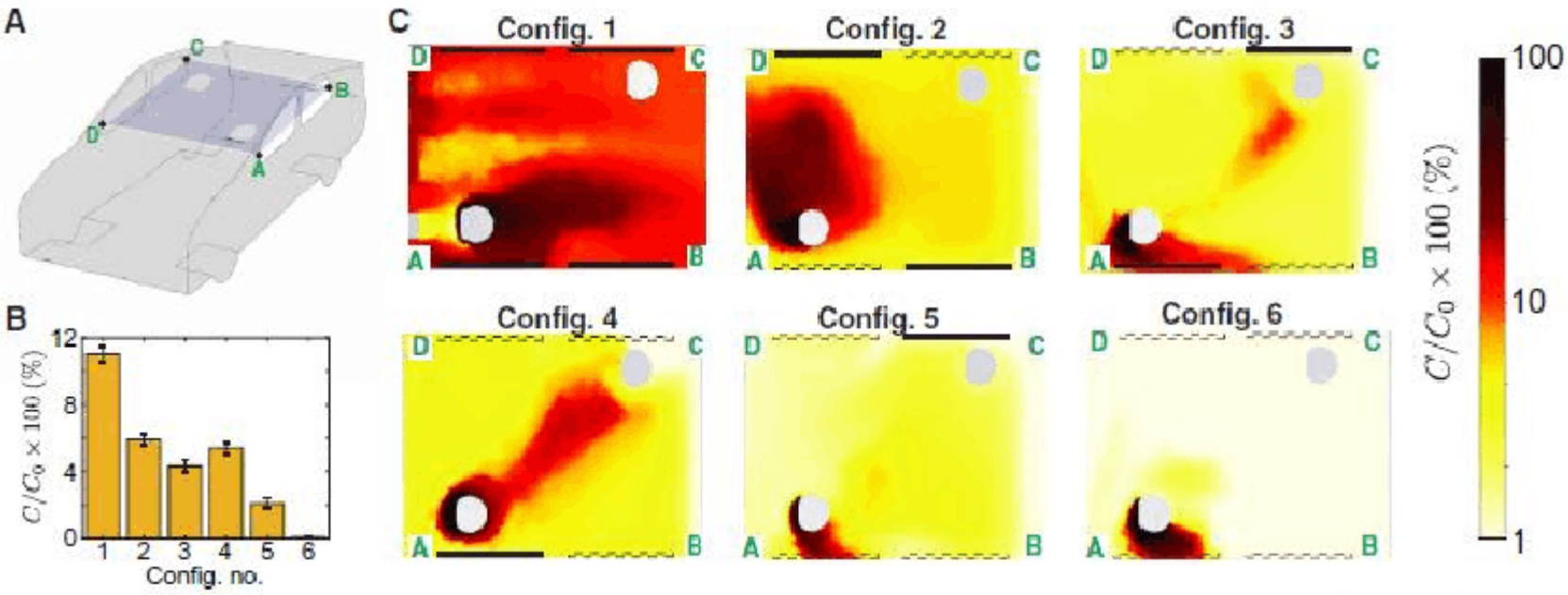


Fig. 5. Driver-to-passenger transmission. (A) Schematic of the vehicle with a cut plane passing through the center of the inner compartment on which the subsequent concentration fields are shown. (B) The bar graph shows the mass fraction of air reaching the passenger that originates from the driver. (C) Heatmaps showing the concentration field of the species originating from the driver for different window cases. Note that the line segment A–D is at the front of the car cabin, and the flow direction in C is from left to right. Dashed lines represent open windows, and solid lines indicate closed windows. Here, C_0 is the initial mass fraction of passive scalar at the location of the injection, where $C/C_0 = 1$. Error bars in (B) are 1 SD of the concentration field around the passenger.

Signs Of The Pandemic.

Seen in the Altadore district on January 9. I don't know if Zoom Painting had the name before the virus or picked up on the now-popular software. I attend about three Zoom meetings per month.

Seen on Stephen Avenue pedestrian mall in downtown Calgary during the lunch hour on January 14, a regular weekday. Normally the mall would be shoulder-to-shoulder with pedestrians but the second lockdown has made it a desert.

EDGAR GALLOPING POE: PART 8
by Dale Speirs

[Parts 1 to 7 appeared in OPUNTIAs #325, 332, 344, 356, 370, 433, and 465.]

Pastiches.

"When It Was Midnight" by Manly Wade Wellman (1940 February, UNKNOWN, available as a free pdf from www.archive.org) was about how Edgar Allan Poe got his inspiration for a couple of his stories.

He saw a newspaper story about a husband who had gone to lay flowers on his recently buried wife's tomb. He heard movement within and had the tomb opened up. She was still alive, having been buried in a catatonic state.

Poe thought that would make a good story but first decided to investigate. He discovered the woman was a vampire. She was now sucking the life's blood out of her husband. Poe helped the husband deal with her. Since she was unkillable, the alternative was to wall her up alive where no one would find her.

Returning home, Poe had the genesis for two stories, which the knowledgeable EAP reader can guess. A clever twist.

SHERLOCK HOLMES: ADVENTURES IN THE REALM OF EDGAR ALLAN POE (2019) was an anthology of 14 original stories edited by Brian and Derrick Belanger. The brothers compiled this anthology based on the connection between Poe's detective Auguste Dupin and Sir Arthur Conan Doyle's Sherlock Holmes. Poe is recognized as the founder of detective fiction, which Doyle always acknowledged.

Many people have noticed that the characters of the two authors could be interpolated into each other's stories with little difficulty. Upon this premise the anthology was created. As the title suggests, Holmes investigates cases about ravens and casks of amontillado, from the Rue Morgue to the steamy swamps of South Carolina.

The concept worked quite well, and this book is recommended not just to diehard Sherlockians and EAP readers but to anyone who enjoys the mystery genre. I won't review all the stories but will pick out a few.

"The Barrel Of Lagavulin" by Craig Stephen Copland should be an easy pastiche to guess. The great Auguste Dupin, now an elderly and tired man, visited Baker Street where Holmes and Watson were just starting their careers.

Dupin had heard rumours that the story by Poe was based on fact. There really was a man walled up. Dupin was able to deduce the murderer's true name Diletto but the culprit constantly moved from country to country. In America, he had been drunk in a bar when he met another drunk who was not so far gone that he didn't recognize a good story worth stealing for publication.

Dupin traced Diletto to London, England, but at 75 years of age he wasn't as vigourous as he used to be, hence his appeal for Holmes to conclude the case. Holmes located Diletto and then set him up bound hand and foot in a steamer trunk to die in the same manner as his victim. The difference was the beverage in question was Lagavulin whiskey. A twist ending wimped out the resolution of the story though. A clever pastiche nonetheless.

EAP published a story in 1845 that gave us the phrase about inmates in charge of the asylum. "The Strange Case Of Dr Tarr And Professor Fether" by Katie Magnusson is a straightforward rewrite of that story.

Dr Watson visited an out-of-the-way insane asylum where he met the man in charge, Monsieur Maillard. The staff seemed peculiar, which perturbed Watson. Maillard assured him the asylum worked well in soothing the patients.

When screaming was heard from the dungeon, Watson quickly deduced that the real psychiatrists were trapped in the cells down below. The staff were the patients, and Maillard was the head lunatic. They had staged a coup and taken over the asylum.

Holmes had been elsewhere. He realized that Watson was in trouble when he did not return for supper, and came to the rescue. The storyline was obvious to anyone who has read the original by EAP, so there wasn't much substance in the plot. It did, however, demonstrate how easily the characters could be transposed between authors.

"Nevermore, Or The Mystery Of The Albino Raven" by Richard Paolinelli took Holmes and Watson out to the manor of Lord Haynesworth, a recent widower still mourning his beloved Lenore. An albino raven had come tapping, tapping at his window. Haynesworth being an ornithologist, he let it in.

The raven perched on a bust of the late Lady Lenore. To every question it answered "Nevermore!". Holmes and Watson were summoned to the manor by Horace Applewhite, an American alchemist who was staying there in a nearby cottage fitted out for experiments in prolonging life. His Lordship was much interested and subsidized the cost of Applewhite's experiments.

Applewhite was not who he said he was. Holmes' investigation revealed he was wanted by Baltimore police for murdering his wife. With the assistance of Haynesworth a trap was set. There were a couple of twists, one not plausible, but Applewhite was brought to justice, to be sent back to an American gallows.

"The Gold Bug Legacy" by Joseph S. Walker was the sequel to EAP's original story of hidden treasure on a South Carolina island. That story, incidently, was one of the earliest to use cryptograms as a plot element and first popularized them as puzzles. It is also where the term "gold bug" comes from, which today is used to refer to investors who favour physical gold or mining stocks.

The narrator of this story was Michael Jacobs, who was traveling secretary to Samuel Clemens. They arrived at a brand-new hotel on Sullivan's Island, where the original story had taken place. The owner was Dalton Legrand, son of William, who had discovered the gold. The treasure was rich enough to keep the son in the good life even after paying for construction of the hotel.

Among the guests at the hotel was an English clergyman, soon revealed to Clemens and Jacobs as Sherlock Holmes in disguise. This was during The Great Hiatus, after Holmes was reported dead at Reichenbach Falls. He was still wandering the world in disguise before his eventual return to Baker Street where he was to give Watson the worst shock of his life.

One of the Negro servants at the hotel was Callisto. She was the grand-niece of Jupiter, who had been William's servant. She felt he had been cheated of his share of the treasure and got revenge by killing Dalton. She made it look like suicide and stole the remaining treasure.

Holmes, Clemens, and Jacobs tracked her to her lair on the other side of the island. After hearing her relate a different version of EAP's story and the unsavoury biography of Dalton, the three men let her go. As they recognized, justice had been served, even if it wasn't according to law. This story tied in nicely with EAP's story and was an excellent sequel.

"Sherlock Holmes And The Case Of Amontillado" by Jen Matteis was a sequel to EAP's cautionary tale about drinking too much wine. Montresor had just died, fifty years after walling up Fortunato Giordano alive. A letter confessing the crime had been found.

The Giordano family hired Holmes and Watson to determine the facts of the crime. What came to light was more than the remains of the unfortunate Fortunato. The revenge of Montresor was for a crime of negligence committed by the Giordano family.

He left the letter to provoke the Giordanos and shame them unto the future. A couple of twists ended the story. One was brought out of nowhere and was too, too convenient in shifting the blame to the Giordanos.

In real life, EAP died in mysterious circumstances, possibly murdered. No one will ever know but that hasn't stopped generations of writers from speculating. "What The Raven Knew" by Elizabeth Varadan was the latest surmise.

The ghost of EAP, with a raven sitting on his shoulder, appeared at 221B asking Holmes to solve his murder. In a meandering conversation, EAP told Holmes and Watson of his final hours. The culprits were identified, but after 40 years not much could be done.

Mostly this story was one of mood and characterization, sometimes veering into pathos. The raven kept croaking that one word at intervals. The mystery was beside the point, as EAP's ghost wanted to be reunited with his beloved Virginia. For that to happen, he needed surcease from the mystery.

Adaptations.

From the beginning of cinema, radio, and television, Poe was popular for adaptations. The stories were good and had a ready-made audience. I suspect another major reason was that they were in the public domain and thus the producers didn't have to pay royalties.

Many of the stories were altered in the retelling, sometimes because it was difficult to adapt them into a visual medium but often because the producers liked to meddle because they could. The quality of the adaptations varied, from using only the title and creating a completely new story to modifications that made sense in their own way.

INNER SANCTUM was an old-time radio mystery anthology series that aired from 1941 to 1952. (This and other episodes are available as free mp3s from www.otrrlibrary.org or www.archive.org) The host was a smarmy man who liked to make ghoulish puns.

"The Wailing Wall" was a 1945 adaptation of Edgar Allan Poe's "The Black Cat". It starred Boris Karloff and was written by Milton Lewis. The story was changed somewhat but was very well done.

Karloff played Gabrielle Hornell, a man who murdered his wife Agnes and then stuffed her corpse into a wall of the house. At the time of the murder, their cat began howling, but that was as far as the script copied Poe.

Between Hornell's mistress Dorothy and the cat, he had no surcease. He killed Dorothy after she learned Agnes was dead and hid the body in a trunk. Nothing more was said of the cat. From thereafter Hornell began hearing Agnes' voice wailing, constantly haunting him.

He became a recluse, afraid to have visitors who might hear the wailing and investigate. For 40 years he listened to the wailing. His money, originally Agnes' wealth, ran out. The sole solution was to sell the house. He opened the crypt and only then realized the wailing was caused by a small hole in the outer wall. In his anger, he set fire to the house, which had been his prison for four decades.

Said the host at the end of this episode: *Everybody's dead but the cat and we overlooked it because we couldn't find it.*

IF YOU AREN'T SQUAMOUS,
THEN WHY ARE YOU TRYING TO BE ELDRITCH?: PART 14
by Dale Speirs

[Parts 1 to 13 appeared in OPUNTIAs #298, 333, 340, 352, 365, 395, 410, 415, 422, 443, 465, 480, and 486. Issues #22 and 63.1A have related articles on H.P. Lovecraft.]

Lovecraftiana.

The Fanac Website has been doing stellar work in scanning tens of thousands of old fanzines from the 1930s to date and making them available as free pdfs from www.fanac.org They have a free email notification service of new additions to the Website.

Recently the Fanac site added the first three issues of the zine THE LOVECRAFT COLLECTOR, a well-printed (not mimeographed) publication from 1949. The issues contain articles about HPL based on personal acquaintance with him. He had died only 12 years previous and there were still many people around who had known him. Well worth downloading.

The Sincerest Form Of Flattery.

"The Distortion Out Of Space" by Francis Flagg (pseudonym of Henry George Weiss (1934 August, WEIRD TALES, available as a free pdf from www.archive.org) was a borrowing from Lovecraft's 1927 story "The Colour Out Of Space".

The plots were basically the same, about a meteorite crashing down in a rural area and the alien contained within giving all sorts of trouble. Nor could it be coincidence, since Flagg published a story in 1927 in the same magazine that Lovecraft's story appeared.

Be that as it may, the setting was a cattle ranch out west when two men observed a meteorite crashing to earth. Following the trail, they found it had lodged into a farmhouse. The rancher came stumbling out with a story of eldritch dimensions in an upstairs room. The meteorite had crashed into it and then unfolded itself into what a later generation would call a stargate.

The men investigated and walked into another dimension, one of empty spaces and impossible angles. They got lost and couldn't find their way back out. One

of them saw a giant arachnid and shot it with a gun. In a flash, they were back in the room, this time with a dying alien, who had only come to explore strange new worlds and found itself in a deadly one.

Pastiches: Novels.

THE ADVENTURE OF THE DEADLY DIMENSIONS (2017) by Lois H. Gresh was the first novel set in the series "Sherlock Holmes vs Cthulhu". I might have considered this as Sherlockiana but will file the book as Lovecraftiana.

The time was 1890, when an acolyte of the Old Ones had succeeded in raising one of them. Holmes and Watson would therefore have to spend the next 420 pages cleaning up the mess.

Something was killing people at random in London. Their remains were left behind as bones stacked in geometric arrangements, with a hand-sized hollow sphere in the middle. The bones were covered with strange geometric symbols.

The London of Holmes and Watson was an incipient steampunk world. They visited Willie Jacobs, who had developed an electric tram. The rails and power lines were spreading out over the city. The electricity came from a machine hidden away in a warehouse, a machine which Jacobs couldn't understand.

The giant device, house sized, was all piston rods and boilers and appetite. When Holmes and Watson viewed the machine, it threw a hissy fit, whipping out cables and pipes. It also spit out a bone, another hollow sphere covered with magic symbols. Jacobs said the machine was growing, becoming larger and disobedient.

The machine had been financed by Professor Henry Fitzgerald, who had a private income. The device was based on ancient texts and was now using the tram lines as tentacles, so to speak. Scotland Yard Detective Harold Bentley was looking for Jacobs on charges of everything, while Holmes insisted he concentrate on cutting all the tram lines.

The plot became progressively more complicated as more characters and eldritch incidents were added. Mythos critters showed up here, there, and everywhere. Ambulatory furniture with strange sigils carved in them annoyed homeowners.

Even dear old Professor Moriarty showed up. What would pastiche writers do without that man?

The search for answers took Holmes and Watson out to the countryside to visit assorted manor houses. The lords and ladies thereof had strangely carved furniture, bad manners ill becoming their social status, and familial connections to the Order of the Dagon. The furniture seemed to have much to do with the goings-on. A table, for example, with only two legs but solid and immovable as a giant boulder. The carvings of the furniture seemed to be summoning eldritch influences.

As the novel proceeded, the point of view shifted from one character to the next. Initially the context was standard Victorian gaslight era but by the halfway mark the Mythos came to the fore. Not just a suspicion of the eldritch but the actual thing itself. Batrachian devotees of the Order of Dagon splashed about hither and yon. Moriarty kept barging into the plot and seemed trivial by comparison.

As the novel reached the final quarter of the book, the pace sped up. The Dagon acolytes became busier with their chanting and summoning. They weren't perfect. One of them got his math wrong and was crushed to death when his underground lair collapsed because spaces between the dimensions he opened cracked the bedrock.

Professor Moriarty sent his brother as an emissary to Holmes. His criminal empire was being displaced by the Order of the Dagon, who were co-opting his henchmen and disrupting operations. Holmes saw no point in helping his archenemy.

Holmes and Watson attended a Dagon ceremony in darkest Wiltshire, thinking they would find criminals and psychotics. Instead they had their first encounter with inhabitants of the spaces between dimensions. The shock and the slaughter which followed left them stunned.

Returning to London, events followed rapidly. Holmes found a way to slow down the eldritch machine using science, not Dagonistic rituals. The next step was to intercept Fitzgerald and destroy him before he could summon Yog-Sothoth. They did that in the nick of time.

Since this was the first novel in a series, numerous threads were left dangling.

Pastiches: Short Stories.

WELCOME TO MISKATONIC UNIVERSITY (2019) is an anthology of 14 stories, edited by Scott Gable and C. Dombrowski. Campus life was never like that when I was at the University of Alberta (Edmonton) during the middle 1970s. Some selections from the anthology herewith.

"Some Muses Are Not Gentle" by Brandon O'Brien led off the anthology. An Eng. Lit. student was having trouble writing poetry. It was a painful process, real physical pain caused by the ghost of a century-dead poet. The ghost was haunting him from the next dimension, angry and determined to get her words on paper through him.

"Glory Night" by Bennett North was about the holiday season on the Miskatonic campus. Not Christmas trees and eggnog but batrachian gods and human sacrifices out in the surf.

The story alternated between a lapsed disciple who knew all the rituals, and a new lecturer who was hysterical with fright because his art class kept drawing things with tentacles. Nagging mothers wanted their daughters home for the holidays to help decorate with traditional ornaments such as fishing nets and lobster pots.

"The Long Hour" by Kristi DeMeester was about a forthcoming sorority dance at Zeta Omicron Zeta. The president of the chapter Evangeline Murphy was ticked off at the membership, a narcisstic bunch of airheads. Their self-centred performance at the last social resulted in a letter from the fraternity stating they would not have any more mixers with them.

The problem was that the standard of Greek-letter societies at Miskatonic University was not the usual. Determined to avoid a repetition, Murphy photocopied a packet of advice from an eldritch book in the library. The material was the kind that induced changes in the co-eds when they read it. Nightmares of living underwater in the ocean and batrachian mating rituals.

"The Needle's Eye Of Nothingness" by Elliot Cooper was about a couple of students translating texts from the Sogothian language. The texts wouldn't stand still. Ultimately there was a trip to the other side to meet an Old One. Unfortunately the story ended without resolution, just one of those fade to black oblivion futility struggles.

"Through Cryptic Caverns, The Shoggoths Come At Night" by Liz Schriftsteller was about three students in the Waite Hall women's residence (not the same thing as a sorority).

One of them was researching ancient tunnels underneath the campus, which connected to the ocean. When mapped, they had the shape of a sigil. Traversing such tunnels made it easier to summon shoggoths. Such critters were dangerous to meet, as the protagonist learned.

"Official Inquiry Into The Waite-Gilman-Carter Antarctic Expedition" by K.G. McAbee was a humourous account of the aforesaid inquiry. Expeditions sent out by Miskatonic University seldom came back with more than a fraction of those who went out.

Consequently the university was pleased when most of the WGC expedition survived to return home for a debriefing. They had been sent out to learn what happened to the Starkweather expedition, which was to confirm reports of a city embedded in Cambrian strata in Antarctica.

Waite brought along some artifacts to show the committee. Unfortunately he activated a wormhole that sucked in most of the people in the boardroom, himself included.

Such happenstances were common enough at MU, which explained why tenure was so easy to get. One just had to survive a couple of years on campus until the next position suddenly opened up. An hilarious story and well recommended.

"Wyrd Science" by Brenda Kezar was an interesting story which reflected on modern American life as much as it is was a creepy critters plot. The protagonist was Diane, a lab technician at MU's animal research facility.

As the reader might expect, the test subjects weren't just white rats. Not so much the big Mythos horrors but the smaller ones. The species that were very difficult to round up after they escaped because they could hide under the cage racks or slide down a sewer drain.

Diane was a single mother with five children, numerous debts, a mortgage, and a daughter with an expensive disease. She had to work at a job filled with horrors because it paid very well and had a medical plan. The alternative was being a shopgirl at minimum wage and no benefits.

She stuck with her job. The story was about a bad day in the laboratory when there was a containment breach. She and her surviving co-workers managed to collect all the escapees, all of them eldritch with tentacles or exoskeletons. None of them appeared squamous.

"From The Inbox Of Madness" by Gina Marie Guadagnino was formatted as a series of three email threads dealing with the daily troubles of MU administrators. A student was too involved with the space between dimensions and was bothering his roommate. Another student vanished from her bathroom as if by magic, then reappeared days later unconscious on the campus quad.

The funniest thread was the demand by politically correct weepers that the statue of Philip L. Howard be removed from campus and the Howard building be renamed after a lesbian. The two students eventually wound up in a closed ward as a result of their eldritch studies. The university administration waffled about Howard but seemed to cave in eventually.

"Beyond The Surface" by Joseph S. Pulver Sr was about a janitor at MU, an ex-soldier who mopped the floors, scrubbed toilets, and watched the students. No one paid attention to janitorial staff, which made them excellent surveillance agents to eliminate students and staff who wanted to summon the Old Ones.

The agency the janitor worked for was on a mission to keep the Outsiders outside. Not by direct attack, for they weren't strong enough to fight the Old Ones, but by making certain no acolytes would invite them across the threshold. This could be the pilot episode of a television series.

"A Lost Student's Handbook For Surviving The Abyss" by Gwendolyn Kiste was MU's cheerful guide for freshmen on a campus like no other. The narrator related her problems adjusting, before finally returning home. To the sea.

Dormitory halls had a tendency to change their entrances. What was the front door in the morning would be a blank brick wall upon returning from the day's classes.

As with every other university, avoid the cafeteria. The food at MU was often motile and might crawl off the plate. (Reminds me of the University of Alberta student residence cafeteria where I lived.)

The final story of this anthology was "My Miskatonic: A Who's Who Of Arkham" by Matthew H. Bartlett which was exactly that. The brief biographies were of local residents, most of whom would cross the street to avoid you. Not a few of them went wrong summoning wet sloppy creatures.

There were a few clunker stories but all told the anthology was a good one.

SHERLOCKIANA: PART 35
by Dale Speirs

[Parts 32 to 34 appeared in OPUNTIAs #470, 474, and 486.]

The original Sherlock Holmes stories written by Sir Arthur Conan Doyle are referred to as the canon, while stories written by other authors are called pastiches.

Anthologies: Pastiches.

SHERLOCK HOLMES AND DOCTOR WATSON: THE EARLY ADVENTURES: VOLUME 1 (2019) is an anthology of 11 pastiches edited by David Marcum. They are set between 1881 and 1883 when Holmes and Watson were young men in their 20s. I'll mention a few stories as samples. There are two more volumes, to be reviewed in future issues of this zine.

In his editorial foreword, Marcum emphasized that most of the canon stories took place when the pair were younger men. Only two canonical stories depict them in their 50s and 60s. The majority of films and television series used middle-aged or elderly actors to portray the duo. As a result, the general public had and still has the wrong impression about their ages.

Nigel Bruce did everlasting damage to the image of Watson, portraying him as a doddering old fool. In the canon, Watson was a battle-hardened army surgeon, retired on a disability pension after the Battle of Maiwand. He was not a blithering idiot as Bruce made him out to be.

The volume opened with a brief extract from Doyle's A STUDY IN SCARLET, the scene where Holmes and Watson meet for the first time as young men. From there to the lead-off pastiche by Thomas A. Burns Jr, titled "The Adventure Of The Persistent Pugilist". Holmes had been called in by Inspector Lestrade about the death of Lord Redthorne.

The deceased was an enthusiastic amateur boxer, although never good enough to win a prize fight. He attended several fights per week all over London. His hobby was walking home at night and challenging passersby to street fights. On the night in question, he met his match and was beaten to death.

The story proceeded to Redstone's club, whose membership were united by a love of gambling. Holmes' working hypothesis was that a group of punters arranged for Redstone to be intercepted by a professional boxer on his way home. It was all a lark, until Redstone got one blow too many. None would admit the event, so Holmes used psychology to break one of them, dressing up as Redstone's ghost and then haunting him.

"Brother's Keeper" by Robert Perret began with an army buddy of Watson's calling on him for aid in searching for an errant brother. The trail led to a private club called The Galahad, whose members believed they held the Holy Grail.

They operated in catacombs below the club, where the Grail was kept at an underground spring. If the waters were drunk directly, they quickly killed the imbiber. If first poured into the Grail, they did no harm. The catch was that the Grail was lined with pure copper, which neutralized the poison.

For those who didn't know the trick, that is, the gullible marks, they were happy to pay well for the salvation. The proprietor did not stint on his fees for leading the chosen ones. Holmes and Watson, after some snooping in the catacombs, resolved all concerns.

"Bad Blood At Barts" by Harry DeMaio rotated points of view between Stamford (the man who introduced Watson to Holmes), Watson, Lestrade, and Holmes. A murder had been done in St Bartholomew Hospital, in the very laboratory where Holmes worked.

The victim was eventually connected to a previous murder of a surgeon on Harley Street. An obvious suspect was dealt with but it wasn't until the final paragraph that everything tied up. The twist ending was one of the most brilliant I have read in any fiction.

In general, the anthology was well done. At worst, some of the pastiches were routine but many had good ideas and were well written. The editor organized the anthology properly, a point I mention because the majority of themed anthologies I have read in recent years had off-topic stories and/or were poorly sorted in chronological or thematic order.

Old-Time Radio.

Sherlock Holmes was very successful on radio. He aired on several networks with several sets of actors from 1930 to 1956, encompassing the entire lifespan of old-time radio. Basil Rathbone and Nigel Bruce had a long run, but others played the parts before and after. (These and other old-time radio shows are available as free mp3s from www.otrrlibrary.org.)

"Queue For Murder" was a 1947 episode set in the Limehouse slum of London. No writer was credited although everyone else was. Watson had attended a patient in Limehouse when he was ensnared in an opium smuggling case. Constable Merriweather visited the scene. He recognized Watson and said he was a big fan of the Holmes stories.

The name Dr Henry Sturgeon was mentioned as the distributor, so the next morning Watson went to his office. After tangling with the battleaxe receptionist Miss Stark, Watson was about to leave defeated when they both heard cries from the inner office. Running in, they found Sturgeon in his death throes.

It was murder, so Holmes was fetched. He found an address in Limehouse on the doctor's desk. The two men put on disguises for an investigation. At the address they crossed paths with Merriweather, who was attending another murder, the decapitation of a Chinese resident.

The episode paused a moment for a commercial by Kreml Hair Tonic. Their spokesman earnestly advised listeners to keep better care of their head with Kreml. Assuming you have a head of hair still attached to your neck, of course.

Merriweather identified the victim as shopkeeper Li Ming. He could identify the headless corpse because Li was missing a finger from a long-ago accident.

Whatever his English nickname was, it wasn't Lucky. The three investigators barged about opium dens and merchant rooms.

Much fake Chinese philosophy was spouted. Holmes announced the killer with a dramatic flourish. Merriweather was a bent copper who was silencing anyone who could identify his part in the opium smuggling. Upon accusation, Merriweather dived out the window without first opening it and fell to his death. The episode wrapped up with some more ah-so Chinese sayings and advice for women to use Kreml shampoo.

"The Scarlet Worm" was a 1947 episode, again with no writer credited although everyone else was. Sherlock Holmes was requested by his brother Mycroft to help the Foreign Office by visiting Paris. A spy ring was peddling state secrets hither and yon. Two FO men had died under mysterious circumstances, supposedly suicides.

The brothers asked Watson to be the bait worm (and he was specifically referred to as such), supposedly entrusted with secrets to entice forth the controller of the spies. One of the agents was a femme fatale named Madamoselle Elvira, so they started with her.

The Paris police were not enthusiastic about Holmes and Watson but the two men were allowed by Inspector Rigeaux to proceed. Watson became Sir William Norton but Holmes operated in the open. They began at a casino owned by Sam Slater where Elvira was known to loiter. Also loitering there was Andre Plandon, a poet who annoyed them with his bad poems.

Elvira quickly latched on to Watson qua Norton. The relationship bloomed since both sides were anxious to take advantage of each other. Watson was a complete blithering idiot and blabbed his real identity to Elvira. In an unbelievable turn of events, she became remorseful about her spying and promised to expose the head of the ring. The mastermind objected of course, and she was kidnapped at gunpoint. The search for her began.

Not to worry, as she turned up in disguise at another casino called The Scarlet Worm. So did Plandon. Watson rescued Elvira and they departed on the sly but ran into a troublemaker. After a few alarums they met up with Holmes and Rigeaux. The head of the spy ring was identified as Plandon, an Englishman posing as a Frenchman.

Holmes retroactively identified him as a faker when he realized that Plandon had quoted a French poem translated into English. The translation contained two puns that could not have existed in the French original and only made sense to an anglophone.

Revival Radio.

"The Adventure Of The Lefthanded Corpse" aired on the Canadian Broadcasting Corporation network Radio Canada in 1984. It was an hour-long episode of the SUNDAY MATINEE series and was written by Laurence Gough of CBC's Vancouver station. The mp3 from www.otrrlibrary.org was made from a tape running just a bit slow, as a result of which all the male characters were baritones and the women all spoke as contraltos.

The story began with Watson arriving at 221B in disheveled condition and much out of sorts. Holmes deduced that Watson had been set upon by ruffians. The doctor disagreed, saying that his train had broken down and he had a long rough hike to make his way home.

A client appeared, a young woman whose brother Morton Roberts had gone missing. Sarah had received a threatening note, bidding her to visit a pub in the East End. The trio followed instructions and found the disassembled corpses of her brother and five other men.

Morton had been a member of a poetry appreciation club whose members included Oscar Wilde and other delicate young men of very refined tastes. One of the corpses had two left hands. Inspector Lestrade was dragged out to investigate, his only appearance, more of a cameo.

Holmes identified the deceased as artists. The next morning he called upon Wilde at his house. From there, not an awful lot happened. Holmes and everyone else spoke elegantly at great length about very little. By the 40-minute mark of the episode, various excursions had taken place but no alarums.

However, Holmes finally began narrowing down the list of suspects. He visited the castle of Lord Candlemere to shout J'accuse! or at least sternly intone it. His Lordship's son Edward had been mixed up in the group, much to his father's disgust.

With no evidence to convict him, Lord Candlemere then began blabbing all to Holmes. Yes, he did it. And he'd gladly do it again. He didn't want Edward to consort with such men and had sent him away. Holmes told him that His Lordship had misjudged the men. They were poets and radicals, not poofters, and their association with Wilde was because of his politics and nothing more. Candlemere had murdered six anarchists and nothing more.

Considering how anarchists were viewed back then, this didn't seem much of a difference. Holmes preferred justice to the court system. He insisted Candlemere make out a cheque for £21,000 to Sarah, another for £79,000 to charity, and then clean his gun collection carelessly.

Holmes pointed out it would be better if Candlemere died accidently rather than by the noose via the Old Bailey. The Candlemere family name would not be tarnished, and Edward would inherit as a respectable man.

Justice was served. In the epilogue, Watson went courting after Sarah. Holmes stopped by the Wilde residence to warn him that if he didn't change his ways then he would run afoul of a certain law. Obviously Wilde didn't listen.

THE NEWLY DISCOVERED CASEBOOK OF SHERLOCK HOLMES was a radio comedy series that aired on BBC in early 1999 (available as free mp3s from www.otrrlibrary.org) The shows were well done spoofs of the canon performed before a live audience. All six episodes were written by Anthony Hare. Enjoyable and worth repeated listening.

Holmes was played in the style of a music hall comedian. Dr Watson narrated the episodes like a clichéd poofter but not a blithering idiot like Nigel Bruce. Mrs Hudson was a much put-upon housekeeper always grumbling about Holmes, whom she and Watson called a toffee-nose ponce.

"The Glorious Doppelganger" aired on 1999-02-06 and was, in my opinion, the funniest episode of the series. The case took place in 1886 when Holmes and Watson were vacationing in the Scottish Highlands. They were summoned to Balmoral to render assistance to Queen Victoria.

The dottie old gal had received a threatening letter. She briefed the duo using a ventriloquist dummy dressed like a Prussian. She referred to it as her husband Albert (the Prince Consort had been dead 25 years by then), sat it on her knee, and began doing an act.

Albert was cantankerous but Holmes and Watson humoured the Queen and talked with him. She mentioned he had also gotten letters, one of them having just the alphabet on it. In a parody of the clichéd ventriloquist routine, she asked him to read it while she drank a glass of water. The audience fell into the aisles as she/it recited the alphabet: "*A, B, C, glug, glug, glug, G, H, ...*"

Holmes asked Watson for his professional opinion in medical terms, to which he replied: "*She's stark raving bonkers, Holmes.*" The men asked leave to withdraw, which the Queen granted on the condition that Holmes first sing the Scottish ditty "Put A Bit Of Treacle On My Pudding, Mary Ann".

That being done, they withdrew. As they left the throne room they heard Albert arguing with the Queen that he didn't want to go back into the suitcase. Outside the room Holmes and Watson agreed her material was terrible.

From there they went back to London to trace the source of the threatening letters. At 221B there were assorted scenes with Mrs Hudson and a kilted Scottish visitor who was Holmes in disguise. He revealed himself, then told Watson and Hudson to sit down because here comes the long bit.

It was indeed a lengthy infodump, with ridiculous details such as an intercepted communication from the Arsenal Anarchists. (That would be funnier to Brits: I had to Google it to learn that Arsenal is an English soccer team.)

The letter was numerically coded with the Prussian alphabet in groups of three, with Mongolian punctuation marks. All words with four or more letters were mirror-reversed.

Mrs Hudson solved it by sight reading. She read out the letter as easily as if it was plain text. The letter was to Professor Moriarty about a plot to kidnap the Queen from Buckingham Palace during a royal barbecue.

Off to the palace, where they met more Scots and the Queen. After a handbag joke, Holmes ripped off her disguise to expose Moriarty. The villain escaped as usual. The search for the Queen went on. They found her bound and gagged in the wine cellar at 221B. With Albert the dummy.

Movies.

Sherlock Holmes was popular in movies as soon as they were invented. In the canon, Holmes and Watson were young men, but because most of the actors who played them were middle-aged or even elderly, that was the impression the public had of them for decades. Since the turn of the Millennium, a number of movies and television shows have depicted them at younger age.

All the old black-and-white movies are in the public domain, and there are many DVD box sets of them available. The movie mentioned here was from a metal box set issued by Allegro Corporation, titled "Best Of Sherlock Holmes Collection".

THE SPECKLED BAND (1931) was the third talkie to feature Sherlock Holmes in a movie. The Canadian actor Raymond Massey played the great detective. The screenplay was by William Lipscomb, who based it on Doyle's stage play version, not the canon story.

Some character names were changed for no apparent reason. The most ridiculous change was Holmes having a business office at 107 Baker Street, replete with secretarial staff. The basic plot was about the same. The evil stepfather wanted to kill his stepdaughters so as to inherit the manor house and family fortune. His method was to introduce a poisonous snake into their bedroom.

The manor house was the most impressive I have seen in any movie. The interior doors were 10 feet tall and the bedchambers had ceilings twice that. Everyone slept in 4-poster beds that could fit four adults in comfort. The vestibule was the size of a modern suburban house lot. The balconies surrounding it would take several minutes to circumambulate in a brisk jog.

Holmes' office was a model of business efficiency. Two typists steadily pounded away on their machines at full speed, typing up cases. A secretary operated not one but two Hollerith punchcard sorting machines, which were the ancestors of today's mainframe computers. In 1931, they were cutting edge technology. Holmes lounged around his office in an oriental robe. Strangely, his chemical workbench was still at 221B as per the canon.

One nifty SFX took place while Holmes and Watson were seated at opposite ends of a couch while discussing the case. As they reviewed who the characters were, the faces of those people appeared in midair between them by the magic of double exposure. An interesting method of infodumping.

Holmes was out of character, romancing one of the stepdaughters. All the actors were still performing to the rules of silent movies, only four years in the past. They used exaggerated facial expressions and posed like waxworks. The pacing of the scenes often dragged, not helped by frequent flashbacks.

Leaping forward more than a half-century brings us to the comedy WITHOUT A CLUE (1988), written by Gary Murphy and Larry Strawther. The premise was that Dr Watson was the real brains of the duo. Because he was not good at human relations, he hired a down-and-out actor Reginald Kincaid to play the part of Sherlock Holmes. Kincaid was a booze-soaked roisterer who was a blithering idiot when sober, but he did know how to perform for the public.

The facade cracked when the two men got on each other's nerves and they separated in anger. In the meantime, Professor Moriarty had stolen the printing plates for £5 banknotes and was cranking out duplicates in a secret hideout. A cast of characters and several changes of scenery out to the Lake Country and back kept the action going.

Watson and Kincaid qua Holmes re-united in time for the grand climax in Moriarty's hideout. It all ended in fire and destruction, plus the presumed death of Moriarty, with the printing plates recovered. The cinematography was top quality and a stable of veteran British actors put in good performances. An enjoyable movie worth repeated viewing.

Television.

In 1954 and 1955, a television series SHERLOCK HOLMES was aired on NBC. It was written and produced by Sheldon Reynolds in France, where production costs were much lower. Ronald Howard was Holmes and H. Marion Crawford played Watson. Howard was relatively young and fit the canon better than the more famous Rathbone. Crawford was well into middle age but played Watson as an intelligent man, not the blithering idiot that Nigel Bruce did.

The episodes are in the public domain and therefore available in several different box sets. The collection I'll cite here is from the metal box set issued by Allegro Corporation, "Best Of Sherlock Holmes Collection".

Most of the episodes were pastiches but some were based on canon stories, however loosely. Interestingly there was some continuity between episodes when characters referred back to previous events. That was unusual for the times, as most television show episodes were zero-reset.

"The Case Of Henry Crocker" was written by Harold Jack Bloom and first aired on television on 1954-12-13. The aforementioned Crocker was a fast-talking Cockney who worked on the stage as an escapologist. His fear, which brought him to 221B, was that he would not escape a murder charge.

Several times during this episode, publicity posters of him were shown which spelled his name Croker. However the episode title and end credits used Crocker. The episode was played as slapstick comedy. Lestrade and the constabulary had difficulty keeping him in custody. Crocker spent more time at liberty than in handcuffs.

Sally King was a chorus girl and the murder victim, last seen in Crocker's company. She had been his girlfriend but they were seen together quarreling just before the crime and apparently on the verge of breaking up.

Holmes wandered about backstage at the theatre, but did little investigating. The stage manager did it. No real evidence was presented, just a hunch by Holmes, but the culprit confessed he killed her in a jealous rage.

"The Mother Hubbard Case" aired on 1954-12-20 and was written by Lou Morheim. The episode began with a young woman and her father visiting 221B after her fiancé disappeared one night. He had sent a message that he would be delayed because he had found a little lost girl and was taking her to her home.

Holmes noted that seven men had vanished in London during the last two weeks, and presumed the disappearances were related. The missing men were all of good character and had no reason to drop out of sight. Holmes and Watson went investigating in the usual style, break-and-enter, which did however uncover the body of the missing fiancé in a vacant house.

Eventually all the dead men were found in unoccupied houses, whose owners were vacationing or on business trips. The common factor was the cleaning lady, a dear old granny who had known the houses were empty. She used her 7-year-old granddaughter as the lost child to lure the victims to one of the houses.

Granny pretended to be the occupant, and served them tea and strychnine-laced fudge. After they were dead, she stole their cash and valuables. She needed the money because her cupboard was bare.

The Sincerest Form Of Flattery.

RICHARD DIAMOND, PRIVATE DETECTIVE aired on radio from 1949 to 1952 as a star vehicle for singer Dick Powell, who was trying to make a transition from crooner to actor. Private detective Richard Diamond, supported by his rich girlfriend Helen Asher, was an average investigator.

His gimmick was that at the end of each episode he would serenade Asher with a romantic ballad in his rich voice. If they were in his apartment, the next-door neighbour would complain in loud counterpoint to Diamond's singing, a very funny running gag through the series. Diamond and Asher were night people, so they constantly woke up the neighbour out of his sleep.

"Mr Walker's Problem" was written by Ty Cobb and aired on 1952-03-28. A plumber named Thomas Walker asked Richard Diamond to investigate Joseph Carter for suspicious behaviour. Walker didn't want to go to the police because he thought they might laugh at him.

What the suspicion was remained obscure until Diamond found out Carter's business office was located next to a bank. Walker departed this world suddenly by order of Carter.

Diamond was on good terms with the local police, so they staked out the bank vault. The Carter gang, the police, and Diamond had all read the Sherlock Holmes story "The Red-Headed League".

Sure enough, the gang blew through the bank wall and entered into the waiting arms of the police. As to why Walker had been murdered, he had been called in by Carter to fix a broken water pipe. The gang had damaged it while digging. After Walker had come and gone, Carter got to thinking and decided to tie off at least one loose thread. A straightforward rewrite of Doyle's story.

SEEN IN THE LITERATURE

Schoettler, C., and R.J. Parker (2020) **Double trouble: Gaia reveals (proto)planetary systems that may experience more than one dense star-forming environment.** MONTHLY NOTICES OF THE ROYAL ASTRONOMICAL SOCIETY 501:doi.org/10.1093/mnrasl/slaa182 (available as a free pdf)

Authors' abstract: *Planetary systems appear to form contemporaneously around young stars within young star-forming regions. Within these environments, the chances of survival, as well as the long-term evolution of these systems, are influenced by factors such as dynamical interactions with other stars and photoevaporation from massive stars. These interactions can also cause young stars to be ejected from their birth regions and become runaways.*

We present examples of such runaway stars in the vicinity of the Orion Nebula Cluster (ONC) found in Gaia DR2 data that have retained their discs during the ejection process. Once set on their path, these runaways usually do not encounter any other dense regions that could endanger the survival of their discs or young planetary systems.

However, we show that it is possible for star-disc systems, presumably ejected from one dense star-forming region, to encounter a second dense region, in our case the ONC. While the interactions of the ejected star-disc systems in the second region are unlikely to be the same as in their birth region, a second encounter will increase the risk to the disc or planetary system from malign external effects.

Kaiser, B.C., et al (2021) **Lithium pollution of a white dwarf records the accretion of an extrasolar planetesimal.** SCIENCE 371:168-172 (available as a free pdf)

Authors' abstract: *White dwarfs are remnants of main sequence stars that have exhausted their available nuclear fuel and have expelled their outer layers to leave a hot, planet-sized object, which cools over billions of years.*

Their high surface gravities cause stratification of elements by mass, so undisturbed white dwarf atmospheres should exhibit spectral lines of only the lightest element present, usually hydrogen or helium. However, many white dwarf spectra show evidence of atmospheric contamination by heavier elements (referred to as pollution), which in some cases is accompanied by an excess in infrared emission caused by a surrounding dust disk.

These are attributed to the tidal disruption and accretion of extrasolar planetesimals. Surveys indicate that up to half of hot white dwarfs show atmospheric pollution by elements that are expected to sink below the surface on time scales of approximately days to approximately millions of years, so planetesimal disruption and accretion must be a frequent event.

In white dwarf atmospheres where the abundances of all major rock-forming elements have been measured, the extrasolar planetesimal compositions resemble those of the bulk Earth or other rocky Solar System bodies.

Tidal disruption and subsequent accretion of planetesimals by white dwarfs can reveal the elemental abundances of rocky bodies in exoplanetary systems. Those abundances provide information on the composition of the nebula from which the systems formed, which is analogous to how meteorite abundances inform our understanding of the early Solar System.

We report the detection of lithium, sodium, potassium, and calcium in the atmosphere of the white dwarf Gaia DR2 4353607450860305024, which we ascribe to the accretion of a planetesimal. Using model atmospheres, we determine abundance ratios of these elements, and, with the exception of lithium, they are consistent with meteoritic values in the Solar System.

Lockley, A., and D. Visioni (2021) **Detection of pre-industrial societies on exoplanets.** INTERNATIONAL JOURNAL OF ASTROBIOLOGY 20:73-80

Authors' abstract: *Approximately 22% of sun-like stars have Earth-like exoplanets. Advanced civilizations may exist on these, and significant effort has been expended on the theoretical analysis of planetary systems, and accompanying practical detection instruments.*

The longevity of technological civilizations is unknown, as is the probability of less advanced societies becoming technological. Accordingly, searching for pre-industrial extra-terrestrial societies may be more productive. Using the earth as a model, a consideration of possible detectible proxies suggests that

observation of seasonal agriculture may be possible in the near future, particularly in ideal circumstances, for which quantitative analysis is provided.

More speculatively, other detectible processes may include: species introduction; climate change; large urban fires and land-use or aquatic changes. Primitive societies may be both aware that their activities may be observed from other planets, and may deliberately adjust these activities to aid or conceal detection.

Speirs: I find that last sentence difficult to believe. Medieval humans certainly did no such thing, and I doubt that primitive alien societies would either.

Cheptsov, V., et al (2021) **Survival and growth of soil microbial communities under influence of sodium perchlorates.** INTERNATIONAL JOURNAL OF ASTROBIOLOGY 20:36-47 (available as a free pdf)

Authors' abstract: *Previously conducted space missions revealed the presence of perchlorates, which are known to have a high oxidizing potential in Martian regolith, at the level of 0.5%. Due to hygroscopic properties and crystallization features of perchlorate-containing solutions, assumptions leading to the possibility of the existence of liquid water in the form of brines, which can contribute to the vital activity of microorganisms, have been made.*

At the same time, high concentrations of perchlorates can inhibit the growth of microorganisms and cause their death. Previously performed studies have discovered the presence of highly diverse microbial communities in terrestrial perchlorate-containing soils and have also demonstrated the stability and activity of some prokaryotes cultured on highly concentrated perchlorates media (over 10%).

Nevertheless, the limits of microbial tolerance to perchlorates and whether microbial communities are able to withstand the effects of high concentrations of perchlorates remain uncertain. The aim of this research was to study the reaction of microbial communities of hot-arid and cryo-arid soils and sedimentary rocks to the adding of a highly concentrated solution of sodium perchlorate (5%) in situ.

An increase in the total number of prokaryotes, the number of metabolically active Bacteria and Archaea, and the variety of the consumed substrates were revealed. It was observed that in samples incubated with sodium perchlorate, a high taxonomic diversity of the microbial community is preserved at a level comparable to control sample.

The study shows that the presence of high concentrations of sodium perchlorate (5%) in the soil does not lead to the death or significant inhibition of microbial communities.

Billi, D., (2021) **Exploiting a perchlorate-tolerant desert cyanobacterium to support bacterial growth for in situ resource utilization on Mars.** INTERNATIONAL JOURNAL OF ASTROBIOLOGY 20:29-35 (available as a free pdf)

Authors' abstract: *The presence of perchlorate in the Martian soil may limit in-situ resource utilization (ISRU) technologies to support human outposts. In order to exploit the desiccation, radiation-tolerant cyanobacterium Chroococcidopsis in Biological Life Support Systems based on ISRU, we investigated the perchlorate tolerance of Chroococcidopsis sp. CCMEE 029 and its derivative CCMEE 029 P-MRS.*

This strain was obtained from dried cells mixed with Martian regolith simulant and exposed to Mars-like conditions during the BIOMEX space experiment. After a 55-day exposure of up to 200mM perchlorate ions, a tolerance threshold value of 100mM perchlorate ions was identified for both Chroococcidopsis strains. After 40-day incubation, a Mars-relevant perchlorate concentration of 2.4mM perchlorate ions, provided as a 60 and 40% mixture of Mg- and Ca-perchlorate, had no negative effect on the growth rate of the two strains.

A proof-of-concept experiment was conducted using Chroococcidopsis lysate in ISRU technologies to feed a heterotrophic bacterium, i.e. an Escherichia coli strain capable of metabolizing sucrose. The sucrose content was fivefold increased in Chroococcidopsis cells through air-drying and the yielded lysate successfully supported the bacterial growth.

This suggested that Chroococcidopsis is a suitable candidate for ISRU technologies to support heterotrophic BLSS components in a Mars-relevant perchlorate environment that would prove challenging to many other cyanobacteria, allowing a 'live off the land' approach on Mars.

Van Kranendonk, M.J., et al (2021) **Elements for the origin of life on land: A deep-time perspective from the Pilbara Craton of Western Australia.** ASTROBIOLOGY 21:doi.org/10.1089/ast.2019.2107 (available as a free pdf)

Authors' abstract: *For decades, deep sea hydrothermal vents have been a preferred setting for the origin of life, but ''The Water Problem'' as relates to polymerization of organic molecules, together with a propensity to dilute critical prebiotic elements as well as a number of other crucial factors, suggests that a terrestrial hot spring field with the capacity for wet-dry cycling and element concentration may represent a more likely candidate.*

Here, we investigate a 3.5 billion-year-old, anoxic hot spring setting from the Pilbara Craton (Australia) and show that its hydrothermal veins and compositionally varied pools and springs concentrated all of the essential elements required for prebiotic chemistry (including B, Zn, Mn, and K, in addition to C, H, N, O, P, and S).

Temporal variability (seasonal to decadal), together with the known propensity of hot springs for wet-dry cycling and information exchange, would lead to innovation pools with peaks of fitness for developing molecules.

An inference from the chemical complexity of the Pilbara analogue is that life could perhaps get started quickly on planets with volcanoes, silicate rocks, an exposed land surface, and water, ingredients that should form the backbone in the search for life in the Universe.

Speirs: Some nice colour illustrations in this paper, relating 3.8 gigayear old hot springs to modern day springs. Worth reading.

Shore, A.J., et al (2021) **Ediacaran metazoan reveals lophotrochozoan affinity and deepens root of Cambrian Explosion.** SCIENCE ADVANCES 7:doi.org/10.1126/sciadv.abf2933 (available as a free pdf)

Authors' abstract: *Exceptional preservation of fossils from the Ediacaran-Cambrian, ca. 570 to 500 million years (Ma) ago, provides great insight into the first radiation of metazoans.*

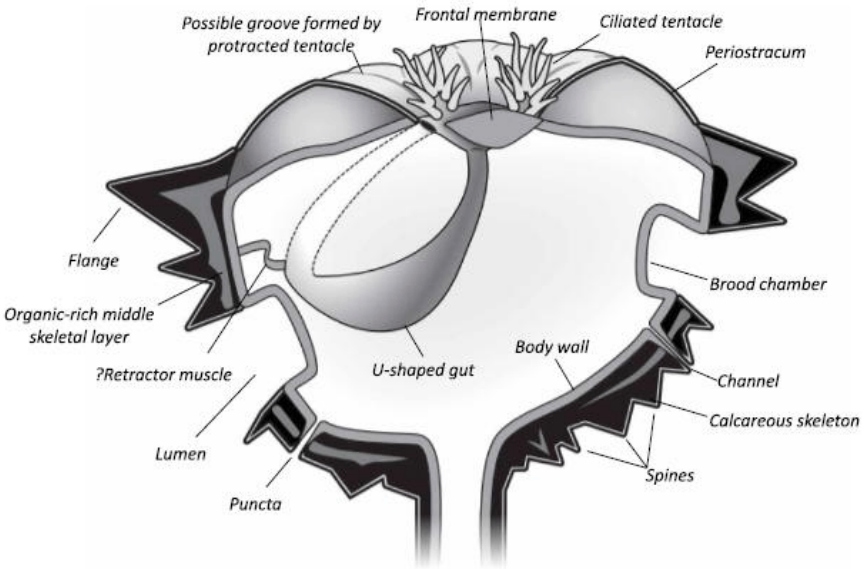
While the oldest putative skeletal metazoans known are from the terminal Ediacaran, the general absence of both definitive skeletal characteristics and soft-tissue preservation has precluded clear assignment of affinity and, hence, an understanding of the origin of major metazoan groups.

Here, we describe the first, three-dimensional, pyritized preservation of soft tissue in the Ediacaran skeletal metazoan Namacalathus hermanastes, from the Nama Group, Namibia, where new features support a bilaterian, lophotrochozoan affinity. In so doing, we also establish a strong evolutionary link between terminal Ediacaran and early Cambrian taxa.

Through exceptional preservation, we establish a phylogenetic connection between Ediacaran and Cambrian metazoans. We describe the first three-dimensional, pyritized soft tissue in Namacalathus from the Ediacaran Nama Group, Namibia, which follows the underlying form of a stalked, cup-shaped, calcitic skeleton, with six radially arranged lobes projecting into an apical opening and lateral lumens.

A thick body wall and probable J-shaped gut are present within the cup, and the middle layer of the often-spinose skeleton and skeletal pores are selectively pyritized, supporting an organic-rich composition and tripartite construction with possible sensory punctae.

These features suggest a total group lophotrochozoan affinity. These morphological data support molecular phylogenies and demonstrates that the origin of modern lophotrochozoan phyla, and their ability to biomineralize, had deep roots in the Ediacaran.



Reconstruction of *N. hermanastes* as a total group lophotrochozoan.

[Image is from this paper.]

Poncelet, G., and S.M. Shimeld (2020) **The evolutionary origins of the vertebrate olfactory system.** OPEN BIOLOGY 10:doi.org/10.1098/rsob.200330 (available as a free pdf)

Authors' abstract: *Olfaction is a form of chemosensation. It is colloquially equated to the sense of smell, the specific sensing of chemicals in the air via the nose and the relaying of this information to the brain via olfactory nerves. However, the precise evolutionary and developmental delineation of the olfactory system becomes blurry when one considers the details.*

Many vertebrates have a related chemosensory system in the vomeronasal organ, which shares a developmental origin with the main olfactory system but has generally been thought to be devoted to chemical communication between conspecifics.

In aquatic vertebrates, such as fish and amphibians, a homologous olfactory system to that of terrestrial vertebrates detects waterborne rather than airborne chemicals, while insects possess a well-described system in their antennae that senses airborne chemicals and is usually called an olfactory system, but is convergently evolved at the system level.

Furthermore, the development of the vertebrate olfactory system includes the formation of cells associated with other functions, including that of the pituitary, and there are many vertebrate chemosensory cells that relay information to the brain but that are not part of olfactory systems in the conventional sense. Taste is an obvious example.

Sensing chemicals on the outer side of the cell membrane is a fundamental feature of all cells and sensing environmental chemicals has obvious adaptive advantages. It is therefore not surprising that a diversity of chemosensory mechanisms and systems have evolved in animals.

Vertebrates develop an olfactory system that detects odorants and pheromones through their interaction with specialized cell surface receptors on olfactory sensory neurons.

During development, the olfactory system forms from the olfactory placodes, specialized areas of the anterior ectoderm that share cellular and molecular properties with placodes involved in the development of other cranial senses. The early-diverging chordate lineages amphioxus, tunicates, lampreys and hagfishes give insight into how this system evolved. ... Some olfactory system cell types predate the vertebrates, as do some of the mechanisms specifying placodes, and it is likely these two were already connected in the common ancestor of vertebrates and tunicates.

In stem vertebrates, this evolved into an organ system integrating additional tissues and morphogenetic processes defining distinct olfactory and adenohypophyseal components, followed by splitting of the ancestral placode to produce the characteristic paired olfactory organs of most modern vertebrates.

Stack, J., et al (2021) ***Tanyrhinichthys mcallisteri*, a long-rostrumed Pennsylvanian ray-finned fish (Actinopterygii) and the simultaneous appearance of novel ecomorphologies in Late Palaeozoic fishes.** ZOOLOGICAL JOURNAL OF THE LINNEAN SOCIETY 191:347-374

[The Carboniferous era is subdivided into two epochs, the Mississippian from 359 to 323.2 megayears ago, and the Pennsylvanian from 323.2 to 299 mya.]

Authors' abstract: *The Carboniferous radiation of fishes was marked by the convergent appearance of then-novel but now common ecomorphologies resulting from changes in the relative proportions of traits, including elongation of the front of the skull (rostrum).*

The earliest ray-finned fishes (Actinopterygii) with elongate rostra are poorly known, obscuring the earliest appearances of a now widespread feature in actinopterygians. We redescribe Tanyrhinichthys mcallisteri, a long-rostrumed actinopterygian from the Upper Pennsylvanian (Missourian) of the Kinney Brick Quarry, New Mexico. Tanyrhinichthys has a lengthened rostrum bearing a sensory canal, ventrally inserted paired fins, posteriorly placed median fins unequal in size and shape, and a heterocercal caudal fin.

Tanyrhinichthys shares these features with sturgeons, but lacks chondrostean synapomorphies, indicating convergence on a bottom-feeding lifestyle. Elongate rostra evolved independently in two lineages of bottom-dwelling, freshwater actinopterygians in the Late Pennsylvanian of Euramerica, as well as in at least one North American chondrichthyan (Bandringa rayi).

The near-simultaneous appearance of novel ecomorphologies among multiple, distantly related lineages of actinopterygians and chondrichthyans was common during the Carboniferous radiation of fishes.

This may reflect global shifts in marine and freshwater ecosystems and environments during the Carboniferous favouring such ecomorphologies, or it may have been contingent on the plasticity of early actinopterygians and chondrichthyans.

Weaver, L.N., et al (2021) **Early mammalian social behaviour revealed by multituberculates from a dinosaur nesting site.** NATURE ECOLOGY AND EVOLUTION 5:32-37

Authors' abstract: *When sociality evolved and in which groups remain open questions in mammalian evolution, largely due to the fragmentary Mesozoic mammal fossil record. Nevertheless, exceptionally preserved fossils collected in well-constrained geologic and spatial frameworks can provide glimpses into these more fleeting aspects of early mammalian behaviour.*

Here we report on exceptional specimens of a multituberculate, Filikomys primaevus gen. nov., from the Late Cretaceous of Montana, primarily occurring as multi-individual, monospecific aggregates of semi-articulated skulls and skeletons within a narrow stratigraphic (~9 cm thick) and geographic (<32 m2) interval.

Taphonomic and geologic evidence indicates that F. primaevus engaged in multigenerational, group-nesting and burrowing behaviour, representing the first example of social behaviour in a Mesozoic mammal. That F. primaevus was a digger is further supported by functional morphological and morphometric analyses of its postcranium.

The social behaviour of F. primaevus suggests that the capacity for mammals to form social groups extends back to the Mesozoic and is not restricted to therians. Sociality is probably an evolutionarily labile trait that has arisen numerous times during mammalian evolution.

Bourque, R.D., and H.C.E. Larsson (2021) **Changes in terrestrial ecosystems across the Cretaceous-Paleogene boundary in western Canada inferred from plant wax lipid distributions and isotopic measurements.** PALAEOGEOGRAPHY, PALAEOCLIMATOLOGY, PALAEOECOLOGY 562:doi.org/10.1016/j.palaeo.2020.110081

[K-Pg was the asteroid impact at the Cretaceous-Paleogene boundary that ended the era of the dinosaurs and began the rise of mammals.]

Authors' abstract: *Changes in terrestrial environments across the Cretaceous-Paleogene boundary, including plant ecology and carbon and water-cycling, remain poorly defined. Fluvial sediments spanning the Cretaceous-Paleogene (K-Pg) boundary of southern Saskatchewan, Canada, contain well preserved plant wax n-alkanes that provide a means of reconstructing changes to plant ecology and carbon and water cycling during this mass extinction event.*

We measured n-alkane carbon ($d^{13}C$) and hydrogen ($d^{2}H$) isotope ratios in two sedimentary sections and applied established fractionation factors to estimate the isotopic compositions of precipitation and bulk sedimentary organic matter sources. We also analyzed the distribution of n-alkanes as an indicator of the relative abundance of aquatic and terrestrial plants.

We find a consistent shift towards a greater relative abundance of longer-chain nalkanes across the boundary, implying a persistent increase in the relative abundance of terrestrial plants in the sedimentary basin. This is consistent with an increase in birch and elm palynomorphs immediately above the boundary.

We hypothesize the extinction of all large herbivores at the boundary may have facilitated this transition to a terrestrial angiosperm [flowering plants] *dominated flora immediately after the boundary. We also find that the region was characterized by isotopically light precipitation, with $d^{2}H$ values between -95‰ to -160‰, but do not observe evidence for major millennial-scale changes in regional precipitation isotopic composition spanning the boundary.*

n-Alkanes derived from both aquatic and terrestrial plants at one site display an upward trend in $d^{13}C$ values of approximately 2‰ across the K-Pg boundary. This suggests millennial-scale local or global carbon-cycle variability altering either plant carbon isotope fractionation or the carbon isotope composition of dissolved inorganic carbon and atmospheric CO_2.

Overall our results suggest that carbon and water cycle changes associated with the K-Pg impact in terrestrial environments in western Canada were short lived, but ecological shifts in plant communities were longer-lasting.

Speirs: Studies published else show that the tsunami and fire storm caused by the asteroid impact reached into North Dakota, just short of Saskatchewan. The dust and ashes lofted into the sky lasted for decades, which is what finished off the dinosaurs.

Brakenridge, G.R. (2021) **Solar system exposure to supernova gamma radiation.** INTERNATIONAL JOURNAL OF ASTROBIOLOGY 20:48-61

Author's abstract: *Planetary habitability may be affected by exposure to gamma radiation from supernovae (SNe). Records of Earth history during the late Quaternary Period (40,000 years to present) allow testing for specific SN gamma radiation effects.*

SNe include Type Ia white dwarf explosions, Type Ib, c and II core collapses, and many gamma burst objects. Surveys of galactic SNe remnants offer a nearly complete accounting for this time and including SN distances and ages.

Terrestrial changes in records of the cosmogenic isotope ^{14}C are here compared to SN-predicted changes. SN gamma emission occurs mainly within 3 years; average per-event total emissions of 4×10^{49} erg are used for comparison of close events.

There are 18 SNe less than or equal to 1.5 kiloparsecs distance, and brief ^{14}C anomalies are reported for eight of the closest. Four are notable (BP is year before 1950 CE): the older Vela SNR and an abrupt 30‰ del ^{14}C rise at 12,740 BP; S165 and a 20‰ rise at 7431 BP; Vela Jr. and a 14‰ rise at 2765 BP; and HB9 and a 9‰ rise at 5372 BP.

Rapid-increase anomalies in ^{14}C production have been attributed to cosmic rays from exceptionally large solar flares. However, the proximity and ages of these SNe, the probable size and duration of their gamma emissions, the predicted effects on ^{14}C, and the agreement with ^{14}C records together support SNe causation.

Also, the supposed solar-caused ^{14}C anomalies at CE 774 and 993 may instead have been caused by the SNe associated with the G190.9-2.2 and G347.3-00.5 remnants. Both are of appropriate age and distance.

Speirs: In other words, well within the time that modern humans were evolving, Earth was hit several times by blips of gamma radiation from supernovae within our quadrant of the galaxy.

Lahtinen, M., et al (2021) **Excess protein enabled dog domestication during severe Ice Age winters.** SCIENTIFIC REPORTS 7:doi.org/10.1038/s41598-020-78214-4 (available as a free pdf)

Authors' abstract: *Dogs (Canis familiaris) are the first animals to be domesticated by humans and the only ones domesticated by mobile hunter-gatherers. Wolves and humans were both persistent, pack hunters of large prey. They were species competing over resources in partially overlapping ecological niches and capable of killing each other. How could humans possibly have domesticated a competitive species?*

Here we present a new hypothesis based on food/resource partitioning between humans and incipient domesticated wolves/dogs. Humans are not fully adapted to a carnivorous diet; human consumption of meat is limited by the liver's capacity to metabolize protein. Contrary to humans, wolves can thrive on lean meat for months.

We present here data showing that all the Pleistocene archeological sites with dog or incipient dog remains are from areas that were analogous to subarctic and arctic environments.

Our calculations show that during harsh winters, when game is lean and devoid of fat, Late Pleistocene hunters-gatherers in Eurasia would have a surplus of animal derived protein that could have been shared with incipient dogs.

Our partitioning theory explains how competition may have been ameliorated during the initial phase of dog domestication. Following this initial period, incipient dogs would have become docile, being utilized in a multitude of ways such as hunting companions, beasts of burden and guards as well as going through many similar evolutionary changes as humans.

Humans and wolves belong to the highly competitive large carnivore guild. When resources/game are abundant, different species of carnivores may tolerate each other in a sympatric relationship in which top carnivores provide carcasses for other guild members to scavenge.

During lean times, direct and indirect negative interactions between guild members predominate. Accordingly, it would be highly likely that prehistoric hunter-gatherers would have killed wolves as ecological competitors rather than tolerated them.

Humans are unusual carnivores, in that we are primates with ancestors that were herbivores and insectivores, and at the same time prey to larger carnivores. During the Pliocene-Pleistocene transition, some early hominins adapted to scavenging as an important part of foraging activities. When the larger, large-brained Homo genus appeared, the hominin clade entered the carnivore guild.

This atypical evolutionary history means that humans have an incomplete ability to digest meat and must rely on exosomatic adaptations to hunt large game. Wolves on the contrary are typical carnivores.

The specifics of early dog domestication are uncertain. Palaeolithic humans are known to have engaged in interaction with the predatory species. Carnivores are found at Palaeolithic sites with cut marks suggesting ritual butchery such as brain removal, and there is evidence of wolf burials at Upper Palaeolithic sites.

The first signs of proto-dogs appear in Upper Palaeolithic deposits in Eurasia. Genetic studies suggest that dogs descend from extinct wolf populations that diverged from the ancestors of extant wolves approximately 27,000 to 40,000 years ago.

Looke, M., et al (2020) **Are dogs good at spotting movement? Velocity thresholds of motion detection in *Canis familiaris*.** CURRENT ZOOLOGY 66:699-701 (available as a free pdf)

Authors' abstract: *The ability to perceive motion is a fundamental property of the visual system, and one of its most basic aspects is the ability to discriminate moving objects from motionless ones, for example, motion detection. Velocity thresholds represent the minimum rate of displacement over time unit that an animal is able to perceive as movement, any slower motion being not discriminable from a still object.*

Although such topic has grabbed the attention of scientists already at the beginning of the 20th century, the interest has waned in time, and velocity thresholds have thus far been assessed in only a handful of species.

Since perceived linear speed depends on the distance between the moving stimulus and the observer, angular speed [i.e., angle of the observer's field of view/unit time], which is distance invariant, is the preferred unit in the speed perception literature.

Thresholds for pigeons Columba livia, rats Rattus norvegicus, and cats Felis catus fall in an approximate range of 1 to 10 deg/s. Thresholds <1 deg/s are only reported for nonhuman primates, falling to under 0.1 deg/s for adult humans

[For dogs] *The mean individual velocity threshold ranged between 0.26 deg/s and 1.24 deg/s. The overall mean velocity threshold in our sample was of 0.7660.38 deg/s.*

Shirai, N. (2020) **Resisters, vacillators or laggards? Reconsidering the first farmer-herders in prehistoric Egypt.** JOURNAL OF WORLD PREHISTORY 33:457-512

Author's abstract: *This article discusses the diffusion of food production from the Levant to Egypt in the Early-Middle Holocene. It attempts to explain how the diffusion and adoption of food production occurred in Egypt in light of optimal foraging theory, niche construction theory and innovation diffusion models. It disputes an old argument that Southwest Asian domesticates appeared late in Egypt and played only a minor role in its inhabitants' subsistence.*

The primary focus is on the Fayum in northern Egypt, where the earliest-dated Southwest Asian domesticated cereal remains in Egypt were found together with cultivation-related tools and facilities. Circumstantial evidence suggests that the beginning of food production in the Fayum was not as late as previously thought, and that the subsequent development of food production

should be seen as a response to the increasing imbalance between the growing human population and the limited wild food resources available in the Middle Holocene.

Lithic evidence strongly indicates that people in the Fayum exerted every possible effort to make food production feasible and efficient with the aid of technology in the course of a millennium, starting in the early-to-mid 6th millennium BC.

Reed, M.H., et al (2021) **The 2018 reawakening and eruption dynamics of Steamboat Geyser, the world's tallest active geyser.** PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES USA 118:doi.org/10.1073/pnas.2020943 (available as a free pdf)

Authors' abstract: *Steamboat Geyser in Yellowstone National Park's Norris Geyser Basin began a prolific sequence of eruptions in March 2018 after 34 years of sporadic activity. We analyze a wide range of datasets to explore triggering mechanisms for Steamboat's reactivation and controls on eruption intervals and height.*

Prior to Steamboat's renewed activity, Norris Geyser Basin experienced uplift, a slight increase in radiant temperature, and increased regional seismicity, which may indicate that magmatic processes promoted reactivation.

However, because the geothermal reservoir temperature did not change, no other dormant geysers became active, and previous periods with greater seismic moment release did not reawaken Steamboat, the reason for reactivation remains ambiguous.

Eruption intervals since 2018 (3.16 to 35.45 d) modulate seasonally, with shorter intervals in the summer. Abnormally long intervals coincide with weakening of a shallow seismic source in the geyser basin's hydrothermal system.

We find no relation between interval and erupted volume, implying unsteady heat and mass discharge. Finally, using data from geysers worldwide, we find a correlation between eruption height and inferred depth to the shallow reservoir supplying water to eruptions.

Steamboat is taller because water is stored deeper there than at other geysers, and, hence, more energy is available to power the eruptions.

[Image is from this paper. A major eruption on 2018-08-04 reaching full height. Note that the people in the bottom center of the frame are ~65 metres away from the geyser. Image credit: Bruce H. Jensen.]

Marselle, M.R., et al (2020) **Urban street tree biodiversity and antidepressant prescriptions**. SCIENTIFIC REPORTS 10:doi.org/10.1038/s41598-020-79924-5 (available as a free pdf)

Authors' abstract: *Street trees are an important biodiversity component of urban green space, but little is known about their effects on mental health. Here, we analysed the association of street tree density and species richness with antidepressant prescribing for 9751 inhabitants of Leipzig, Germany.*

We examined spatial scale effects of street trees at different distances around participant's homes, using Euclidean buffers of 100, 300, 500, and 1000 metres. Employing generalised additive models, we found a lower rate of antidepressant prescriptions for people living within 100 metres of higher density of street trees, although this relationship was marginally significant (p = 0.057) when confounding factors were considered.

Density of street trees at further spatial distances, and species richness of street trees at any distance, were not associated with antidepressant prescriptions. However, for individuals with low socio-economic status, high density of street trees at 100 m around the home significantly reduced the probability of being prescribed antidepressants.

The study suggests that unintentional daily contact to nature through street trees close to the home may reduce the risk of depression, especially for individuals in deprived groups. This has important implications for urban planning and nature-based health interventions in cities.

Malik, K., et al (2020) **Reconstruction of past backyard skating seasons in the Original Six NHL cities from citizen science data.** CANADIAN GEOGRAPHER 64:doi.org/10.1111/cag.12640

Authors' abstract: *This study conducted linear and change-point analyses of historical trends since 1942 in the length and number of days suitable for skating on backyard rinks in the "Original Six" National Hockey League cities of Boston, Chicago, Detroit, Montreal, New York, and Toronto. Analysis is based on the relationship between ambient air temperatures and the probability of skating, using thresholds identified through the RinkWatch citizen science project.*

In all cities, coefficient estimates suggest the number of high-probability skating days per winter is declining, with easternmost cities displaying notable declines and growing inter-annual variability in skating days in recent decades. Linear analysis shows a statistically significant decline in Toronto, with a step-change emerging in 1980, after which there is on average one-third fewer skating days compared with preceding decades.

The outdoor skating season trends towards later start dates in Boston, Montreal, New York, and Toronto. Future monitoring of outdoor rinks provides an opportunity for engaging the public in identification of winter warming trends that might otherwise be imperceptible, and for raising awareness of the impacts of climate change.

Speirs: Our family, like so many others, had a backyard rink. When the weather forecast in November predicted a week or two of cold weather, my brother and I would shovel out a rink and pile the snow around the edges. We sprayed the banks with a garden hose to ice them solid and stop leaks, then subsequently built up layers of ice by spraying. (Flooding doesn't work because the ice freezes unevenly and develops air pockets.) Home from school by 16h30, we played on the ice in the darkness lit only by the back porch light until Mom called us in for supper. Those were the days, back in Red Deer, Alberta.

WHEN WORDS COLLIDE 2021

August 13-15, 2021 will be the 10th anniversary of Calgary's readercon When Words Collide as a meeting place for readers, writers, and other professionals in the literary world. Contact info@whenwordscollide.org

While the Alberta's government's vaccine rollout schedule suggests large in-person events will not be viable in August, that could still change in the weeks ahead. We continue to plan for an in-person festival for August 2021. Should health concerns prevent us, we will move the entire festival (except the banquet and autograph session) online. Either way, we are also planning to hold an online festival warm-up on Saturday, August 7, when we will have some special online presentations and social events.

A selection of webcasts from our 2020 online festival (as well as podcasts from earlier festivals) are available on the When Words Collide YouTube Channel: www.youtube.com/channel/UCYLP-1XdcKWDyRftkL_a8lQ/