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THE IRON WARRIOR

THE NEWSPAPER OF THE UNIVERSITY OF WATERLOO ENGINEERING SOCIETY

VOLUME 36 ISSUE 10 | WEDNESDAY, JULY 29, 2015

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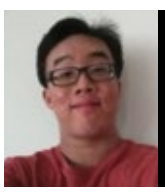
Iran and P5+1 Reach Sanction-Lifting Nuclear Agreement

Members of the P5+1 and the Iranian Foreign Minister in Vienna.



ALEXANDER LEE
3A NANOTECHNOLOGY

On July 14 2015, Iran signed the Joint Comprehensive Plan of Action (JCPOA) with China, Russia, the United Kingdom, France, the United States, and Germany, henceforth referred to as the P5+1 (the five permanent members of the UN security council, and Germany). The JCPOA is an agreement between the signatories regarding Iran's nuclear program. This agreement is a breakthrough in international relations with Iran, which have been frosty due to concern that Iran's nuclear program was pursuing nuclear weapons capabilities. The agreement stipulates that Iran must eliminate its supplies of medium-enriched uranium, remove the majority of its low-enriched uranium and remove two thirds of its centrifuges. In return, the US, EU and UN will lift its sanctions on Iran.

Uranium needs to be enriched before it can be used in nuclear weapons or power generation. Nuclear fission is the splitting of an atom's nucleus, creating two atoms where there was once one. This process releases a large amount of energy, which is harnessed for both nuclear warheads and nuclear power generation. The vast majority of uranium is actually not capable of nuclear fission, and uranium-235 is the only isotope capable of fission with thermal neutrons. U-235 usually only makes up 0.711 wt% of natural Uranium. Thus, uranium needs to be refined to increase the concentration of U-235 before it can be used for any purpose. For reactors, low-enriched uranium of 3-4% U-235 is usable. For nuclear weapons however, highly enriched uranium of 90% U-235 is necessary.

Iran's nuclear program dates back to the 1950s, shortly after World War II. After the destructive potential of nuclear energy was showcased by the Americans in the destruction of the Japanese cities of Hiroshima and Nagasaki at the end of the war, the peaceful power generating capabilities began to be explored as well. Under these circumstances, America aided Iran in building its first nuclear reactors for power generation, as Iran had friendly relations with America at the time. All this changed with the Iranian revolution in 1979, which ousted the pro-American Shah of Iran from power, and resulted in a very anti-American Islamic republic seizing power in Iran. Since then, American-Iranian relations have been very frosty. Iran continued to independently develop its nuclear program.

Iran's real troubles with its nuclear program began in 2003, when the International Atomic Energy Agency, the nuclear regulatory authority, reported that Iran had not declared some of its nuclear enrichment and reprocessing activities. Nuclear enrichment is essential for creating nuclear weapons grade material. The US started to impose economic sanctions against Iran over concern for their nuclear weapons potential, and the rest of the western hemisphere followed suit. Iran's former president, Mahmoud Ahmadinejad, took a combative, aggressive approach to foreign policy with the Western powers, which resulted in increased tensions and even tighter sanctions. Though negotiations over Iran's nuclear program and the sanctions started in 2006, these negotiations stalled and the two sides could not reach a satisfactory agreement.

However, in 2013, Iran elected a new president, Hassan Rouhani, who has taken a more conciliatory, moderate approach to diplomacy. With the blessing of the Supreme Leader of Iran, Ali Khamenei, the new government was able to hammer out the current agreement with the P5+1. Under the agreement, Iran's capability to generate enriched uranium will be greatly curtailed, and Iran will have to give up all its stockpile of medium-enriched uranium, and 98% of its low-enriched uranium stockpile. In return, over time, all of the EU's and UN's sanctions will be lifted on Iran. It is important to note that while the US will lift its nuclear-related sanctions, the US also has other sanctions on Iran for things like "sponsorship of terrorism" and human rights abuses, and these will not be lifted.

The negotiation of the JCPOA agreement between Iran and the P5+1 could possibly, though unlikely, mark a watershed moment in global diplomacy. This could mark the beginning of stability in the volatile Middle East, as Iran was one of the countries in the area most opposed to interaction with the West and the rest of the world. The lifting of sanctions will result in a boom in the Iranian economy, as it reintegrates with the world and reclaims over a decade of stifled growth. While this is a good first step, the problems and issues afflicting the Middle East are myriad and cannot be solved with simply signing an agreement on nuclear weapons development, which only affects Iran. It is unlikely that the US relations with Iran will improve significantly, and as long as Iran is an Islamic republic fundamentally opposed to Western interference, Iran will always be cautious toward America and Europe. Nonetheless, the signing of the agreement can only have a positive effect on the world as a whole.

On the Importance of Listening

CAMERON SOLTYS
EDITOR-IN-CHIEF

Well, it's finally here. My last editorial. This term has gone so fast. They always do, but this one more than most. I am so nervous about saying goodbye that I have, for the first time ever, the feeling of a frog in the back of my throat. Even though I'm not going anywhere, and I'll be back with all the hard-hitting news people are concerned about—news like how to boil an egg without a pot—in the winter, it really seems like I'm going somewhere far away and for a very long time.

As always, this is the part where I thank the people who really stepped up to make this issue happen. I'll still do that, but first I want to make a really personal thank you to everyone who helped in any way with this publication this term. I'm not sure how many people noticed, but that credits bar on the right side of this page has been filled to the brim this term with people. More often than not it was so full I had to start stacking names side by side to make them all fit. I don't have the space here to go through each and every person, but thank you. This has been the best term I have had so far; it was because of the paper, and so by extension because of the tremendous amount of hard work you have all put into it.

This issue in particualar, I would like to thank Sherwin and Alex, who worked well into the evening on Sunday to make this issue possible, along with the myriad of other copy and layout editors, and authors that brought this issue together.

I like to take a short interlude to thank a few people who didn't actively work on this paper, but were never the less very important to its success. Firstly, my mother, who read each issue the moment it went online even when it was well past her bedtime. To my father, who between getting me my first factory job, and buying me those LEGO Technic and then the Mindstorms sets did more to prepare me for engineering than anyone else. To my sister, who was actually pretty nice most of the time when she wasn't being a pain. And because I already mentioned my maternal grandparents in the first issue, to my paternal grandmother, who is always around with the candy and snacks that I know I want but shouldn't have.

There are a bunch of articles that really caught my eye this issue. The most notable is the absolutely massive, coming in at around 3000 words, Acta Diurna on page 16. I had to cut it down a fair bit, so check our website for the full version. I also recommend On the Shoulders of Giants where Brigita and Sherwin have crafted two pieces about some remarkable scientific talent from the past.

And don't forget to check out the Tin Soldier on page 7, which I'm sure you will all find quite colourful.

Finally, I am proud to announce my replacement Editor-In-Chief, Raeesa! Raeesa has been a strong contributor to The Iron Warrior since her 1A term, always taking on the daunting task of trying to get a handle on large, political, and otherwise difficult articles. She will be taking over in the winter term, and I look forward to working under her in what I anticipate will be a dynamite term.

In the intervening period, Meagan will be EIC this fall. Her passionate discourse on why receipts are massively outdated (which you might remember became our first issue's PCP) was the inspiration that lead me to write my editorials about whatever was important to me, regardless of how irrelevant it might seem to others. I cannot wait to see what gold she will have in her editorials.

This is it, my final editorial. Goodbye soapbox; it has been an absolute pleasure.

So final exams are coming up fast now. In fact, they got such a jump on me that I scheduled this last issue of the paper to come out the day after (or evening of, depending on how on-top of things I am) classes end. Around this time of the year mental health always comes to the top of everyone's agenda, and study skills, time management skills, and life balance strategies are the hottest topics around. Now there is probably a very good reason for all of that, and I can appreciate that this is a really difficult time for a lot of people. I'm not going to talk to you about mental health today as such, but it is somewhat related and a good segue into my article.

What I want to talk about is the learned skill of listening to yourself. This isn't a story about finding your inner person, or balancing your energies, or whatever else people generally mean when they say that you need to reflect and look inward. This is about the really practical skill of assessing your life and how difficult that can be, at least for me.

Before I got a phone, I used to listen to myself all the time; there wasn't much else to do. Going for a bike ride? Guess I'm stuck with my internal monologue for the next hour or so. In bed at night? There's no-one around to talk to but yours truly. When I was almost 18, I finally did get a phone that I shared with my sister; it had become a pain to always have to mooch off friends when we needed to contact people. Shortly thereafter, I got a phone of my own. It was great, but I didn't realize what I was giving up when I got it; personal time without the strong pull of enticing phone-based distractions. It's a loss I am still learning the value of.

The reason why "silent time" is important is simple; when there's something else—anything else—going on, you don't have to face the problems that are confronting you. Maybe you aren't very happy with your life right now, but it's easy to ignore that when you are having a laugh at the expense of some poor cat in a YouTube video. There are a whole host of boring but important things that can get pushed aside when there is something more important to think about. And not all of those are bad things that you are pushing aside. Some are very good things. Things like "I'm really proud of how hard I studied this midterm season. How can I do the same next term?" It could be anything.

So what's the solution? There are many that I use. They all have different degrees of effectiveness. But they all are basically the same; asking yourself simple, fundamental questions about how you think your life is going. Think of it a really cheap auto-psychoanalysis. (Free I guess, if you don't count your time. And Mr. Freud would need your time as well as your money.) Sometimes I just close my eyes and try to think of nothing, see what instinctively pops into my head. This may or may not be akin to meditation—I've never really checked—but on the rare cases where it doesn't immediately jump to what hill-climbing algorithms act like in an iteration-dependent search space, I've found that it's a good way to figure out what problems I've been pushing out of the way, or what issues I've been ignoring.

Another thing I do is what I call "going off the clock". I record everything I will do in a given day in an agenda. It is always in the crook of my arm, and I am constantly writing in it. Sometimes I will fill up tomorrow's section before the day even starts. What is it good for, in addition to being an unbeatable card to play whenever the "I have the most work" contests crop up, is organizing my day so I never forget anything. The down side is that I am also constantly aware of everything I have to do, and I am always worrying that something is not on there or trying to prioritise what is. So every once and a while, I go off the clock. I search my brain for anything that I haven't written down yet, then I close my agenda and go somewhere it is not. If I think of anything that I need to do—and would ordinarily write it in my agenda—I say "I'm sure I'll remember it again before it's due" and continue on.

I could go on and on, but I hope I have made my case. Be sure to take some time every once and a while to listen to the things you've been ignoring; it's a surprisingly difficult and fruitful thing to do. And I would like to make one more comment: I love technology. I have my phone on me about as much as my agenda. I don't blame technology for making it hard for me to listen to myself, and even if I did it would still probably be worth it. This is just a way to mitigate one of the more negative repercussions. I'm sure there are even technological solutions to help people be more introspective (maybe a parental lock to turn off all your electronics for an hour per day). But until I find one—and I'm not looking—I will relish the times I remember to listen.

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Frosh Week Deadline: Wednesday, August 12 at 6:00pm for publication on September 7-9, 2015
Send your submissions to *iwarrior@uwaterloo.ca*
Spring 2015 Publication Schedule: May 27, June 10, June 24, July 15, July 29

THE IRON WARRIOR
The Newspaper of the University of Waterloo Engineering Society

The Iron Warrior is a forum for thought-provoking and informative articles published by the Engineering Society. Views expressed in *The Iron Warrior* are those of the authors and do not necessarily reflect the opinions of the Engineering Society.

The Iron Warrior encourages submissions from students, faculty and members of the university community. Submissions should reflect the concerns and intellectual standards of the university in general. The author's name and phone number should be included.

All submissions, unless otherwise stated, become the property of *The Iron Warrior*, which reserves the right to refuse publication of material which it deems unsuitable. *The Iron Warrior* also reserves the right to edit grammar, spelling and text that do not meet university standards. Authors will be notified of any major changes that may be required.

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China's Second Great Wall: Part 3

VINCENT MAGAS
2B MANAGEMENT

In previous articles (China's Second Great Wall: Part 1 and Part 2) we reported on China's growing man-made islands which came to life in 2014. Construction was initially noted when dredging of sand and dirt was done around the natural Spratly Islands, disturbing hundreds of acres of coral reefs. The land reclamation project, as China calls it, now boasts a total of 7 man-made islands, the largest being a monumental 4 square kilometers spanning over what used to be coral reefs. The project has caused tension between bordering countries, including Vietnam, Malaysia, Taiwan, and the Philippines.

Developments have taken place in the heated Spratly Islands territorial dispute, with many neighbouring countries voicing their outcry and taking a very active role against China's expansionist actions. Countries such as the United States, the Philippines, Japan, and Taiwan have made their own moves in this tense game of political chess. China has continued to take a stand on the Spratlys dispute, and has not halted any of the construction on the island.

The Philippines in particular has brought the Spratlys Dispute into the United Nations Court. After almost two years of preparations and extensive research, a team from Manila has brought to the United Nations a one thousand-page-long memorial and case to present to a 5-person tribunal at The Hague. The case is meant to ensure that the claimant countries involved in the Spratlys dispute honour treaty commitments that they have signed, in particular the United Nations Convention on the Law of the Sea (UNCLOS). Nations such as Vietnam, Malaysia, Indonesia, Thailand, and Japan have sent observers to the hearings; China however has refused to participate altogether claiming it does not want "outsiders" to influence what it claims to be its indisputable sovereignty on the South China Sea. China has vehemently opposed the Philippines' choice to bring the case to the UN Court.

The Philippines have also taken actions to bolster its defences on the West Philippine Sea and along the disputed islands where they have their own claims. It recently announced the reopening of a former US naval base in Subic Bay for military use in response to China's expansionism. The Philippines has stated that new fighter jets and frigates will be stationed at the base in the near future. There has also been increased security co-operation with the United States, Japan, and Vietnam. The Philippine military has also announced plans to spend approximately $20 billion over the next 13 years to modernize its armed forces. They have already purchased FA-50 light fighters from Korea earlier this year. The Philippines have also started repairs on the Seirra Madre, a WWII-era ship that was purposely grounded on the Second Thomas Shoal (also called Ayungin Shoal) back in 1999 in response to former dispute with China in the area.

Japan has also made moves to challenge China, in particular with the development on Fiery Cross Reef, one of the seven artificial islands. In Japan's upcoming annual defence white paper, an accusation will be made on China regarding its unfair treatment and dealings with neighbouring countries. It has become increasingly clear to Japan that China's construction projects on the islands are military in nature. The paper will directly call China out on their reclamation work in the Spratly Islands. The announcement of the defence white paper comes hand in hand with Japan's recent passing of legislation that will allow the country to participate and engage in collective self-defence, a first in its history since WWII. The statement on this year's white paper will also further build on an assertion Japan made in the previous year's white paper that accused China of changing the status quo in South East Asia by means of force. Japan's Self-Defence Force (SDF) has also become more active in the region in the last year. Later this year, Japan's SDF will participate for the first time in the US-Australian military joint-drills. It is also reported that Japan and the Philippines are in negotiations regarding a deal that would allow the SDF access to Philippine military bases.

On this side of the world, the United States have paid close attention to the unfolding events in the South China Sea. Recently U.S. Assistant Secretary of State for East Asian and Pacific Affairs, Daniel Russel, rejected a neutral stance for the U.S. on the South China Sea. He announced that the U.S. will take a strong stance if China is found to have acted illegally. "We are not neutral when it comes to adhering to international law. We will come down forcefully when it comes to following the rules" Russel announced, adding that the U.S. continued to advocate for co-operation and peaceful resolution to the disputes. Admiral Scott Swift, the new commander of the US Pacific Fleet, joined a seven-hour spying mission aboard a P-8A Poseidon plane a week ago. China has warned the US continuously in regards to their continued surveillance on the Spratly Islands. Washington however, does not recognize China's sovereignty in the disputed region, and treats it as such. Admiral Swift has also stated in response that the P-8A flight was routine patrol, well under the US jurisdiction. "We have forces deployed throughout the region to demonstrate the United States' commitment to freedom of navigation" Admiral Swift added. Washington has repeatedly insisted that China halt its land reclamation and militarization of the disputed region.

WaterlooWorks: The Future of Co-op

SAM MADHAVAN
1B ENVIRONMENT

Third year engineering students at Canada's pioneering university in co-operative education can look forward to a shiny sleek new website potentially replacing JobMine, the current co-op and career recruiting system, before they graduate in 2017; the School of Architecture has officially adopted WaterlooWorks as their co-op program administration system this term after successfully pilot testing the software three times over the past year. The experiences gained over this period have since been used to make further improvements in the software, which will serve as the new point of relations between Co-operative Education & Career Action, students, and employers. WaterlooWorks is not simply a faster, visually updated JobMine; the new website will also provide students with information on career related workshops and information sessions, and students will be able to use the new site to schedule career appointments with advisors.

While the site works as expected for the 350 odd co-op students in the School of Architecture, further analysis and testing was found to be necessary before WaterlooWorks could be scaled up to accommodate all 18,000 work terms each term; hence a 2 year delay in the projected final launch; by identifying performance risks and doing significant performance tests, a suitable infrastructure can be prepared that is equipped to handle the stresses that would cause the current site, JobMine, to crash, inconveniencing students and employers alike.

The decision to replace JobMine, the current administration system, was made after exploring several commercially available packages of similar functionality; based out of Dundas Ontario, Orbis communications, a leading Canadian provider of co-op and career software for post-secondary institutions with a decade of experience developing software was awarded the contract to implement the proposed software package in 2012. Orbis has since been closely involved in a partnership with the University of Waterloo's Co-operative Education & Career Action (CECA), and Information System & Technology (IST). The three parties have since been working together to determine the scope of the new project, coordinating a geographically separated team to ensure the success of the new initiative.

Most current students and Alumni have bones to pick to with JobMine—the aging application was simply not designed to handle the massive number of new students and the increase in job postings; regular crashes and thirty second load times per page have become the norm during peak usage. Searching through the list of jobs felt more procedural then it ought to have been, and the user feedback and statistics over the years have resulted in several changes that employers and employees alike can look forward to. Among the features being added to the new application, multiple contacts at an employer can now be attached to a single post in the form of a "hiring team", and students will find it easier to search through and compare job postings. Job descriptions are now being revamped to include essential information. Notably, there will be a field for employers to include information like compensation and benefits (although they are not required to fill complete the section), and Google maps as well as keyword based search features are being integrated into the app for the convenience of students.

Ethan Alter

WaterlooWorks' delay has left many students feeling that they will never see the service launched before they graduate.

VP Internal: Welcome to the New Team

ADELLE VICKERY
VP INTERNAL

Hey fellow engineering students! This issue I am writing to you as the incoming Engineering Society President! If you weren't already aware, the Engineering Society held an election (and then a by-election) this term to select a new executive team for the next 16 months. I am very excited to be working with an amazing team consisting of myself as President, Jeff Gulbronson (VP Education), Abdullah Barakat (VP Finance), Ola Suchon and William Wilmot (VPs External), and Sarbajoy Majumdar (VP Internal).

Last week we had our first team meeting and brainstormed a long list of ideas to improve the Society. A few of these include introducing hardware workshops, revamping the P**5 system, increasing involvement with the faculty to gather more student feedback, more student deals (it's already expanding!), increasing our engineering pride during National Engineering Month (also known as March), and many more!

We also recently appointed our first commissioner team! I am happy to announce the new team for the Winter 2016 term: Pat Duong (Student Services), Awn Duqoum (Student Life), Michael Beauchemin (Communications) and Emma Cooper (Outreach). The whole team is very excited to start serving you, and to try to make your time here the best it can be.

We have also released the applications for directorships for the winter term. Directors are student volunteers that organize and run all the events and services of the Society. Taking on directorships is a great way to get involved, meet new people, and develop your own skills. Descriptions of the positions and the application form can be found at *bit.ly/W16DirectorApplication*

The last part of this article is about you! The Society is always looking for ways to improve the student experience at Waterloo, but the executives have no way of knowing what you as a student actually want to see happen, so you need to tell us! We're going to be increasing the amount of feedback we seek out over the coop and winter term, and we want to hear your thoughts! If you have any feedback about the Society, any comments or questions about what we're planning in the coming terms, or just want to chat about your university experience so far, shoot me an email! For now, I can still be reached at *vpinternal.a@engsoc.uwaterloo.ca*

EngSoc Teaching Award: Spring 2015

ERIC SHI AND LIN SONG
ENGSOC TEACHING
AWARD COMMITTEE

Here at Waterloo, we like to recognize the efforts made by our teaching staff for enhancing our learning experience. The Waterloo Engineering Society awards an Engineering Society Teaching Excellence Award every term for an outstanding University of Waterloo Engineering instructor.

Nominations are made by students for their professors or instructors whom have displayed one or more of the following criteria:

a) Employing non-conventional teaching techniques

b) Allowed opportunities for experiential learning

c) Showing commitment and dedication towards ensuring academic success for our students

Detailed evaluations packages are made for review by the Teaching Award Committee, comprised of the VP Educations, the Associate Dean of Teaching, and two at-large members. Taking into account the supporting letters by students, past course critiques, and various other relevant information, the council fairly evaluates a recipient for the award.

After a rigorous selection process, the recipient of the Spring 2015 Engineering Society Teaching Excellence Award is Ehab F. El-Saadany with honourable mentions to Elaine Boghaert and Ariel Chan.

Ehab F. El-Saadany is a professor for the Mechatronics class. He was presented this award for his teaching excellence displayed in MTE 120: Circuits and MTE 320: Actuators & Power Electronics. El-Saadany isn't a professor who makes his classes easy; in fact it's quite the opposite. He challenges his class with tough problems and he pushes you to not just learn the concepts but to also learn to solve problems and apply theory. One student was quoted saying "His examinations were extremely challenging yet students performed well due to the well prepared assignments, tutorials, and labs that supplemented his excellent lectures".

As an instructor, El-Saadany cares deeply for his class. He is constant finding new ways to enrich his lectures. From implementing computer aided tutorials for his MTE 120 class to organizing class trips to a transformer factory for MTE 320, El-Saadany puts into countless extra hours to ensure a pinnacle learning environment for this students. His lectures are also very well planned out, each one is evident of prior planning and rehearsal.

Overall El-Saadany has a great relationship with his students, leading many of them to still stay in touch over the years. He's very patient when answering questions and often he'll put in the time to explain difficult concepts until everyone understands them inside out. His role as an instructor stems far past just his work hours as El-Saadany is willing to put in the extra time and effort for each student.

Below we have an excerpt of a short interview conducted with Ehab F. El-Saadany on his thoughts on teaching.

What advice would you give to junior faculty members just beginning their teaching careers?

"Make sure you to read the course critique evaluation forms, be open to student feedback, and try to implement suggestions in the following year. I am also open to giving advice to newer faculty members."

What do you enjoy most about teaching?

"I like keeping in touch with students and seeing their success after graduation. I've had students that initially struggled with my courses but went to complete masters or went on to be very successful in the industry."

What unconventional teaching methods do you employ?

"I don't consider it unconventional, I think of it as a different way of presenting material. I give students computer dictated tutorials where students are put in groups to build teamwork. I also conduct field trips to better relate course content to the real world. In the power electronic course, lecture notes often have real world examples because the manufacturing process is just as important as the theory. I give students take home quizzes which have challenging problems that are at the exam level to give students a chance to practice.

For experimental learning, I make sure to align the lab experiments with theory. I coordinate with lab instructors to ensure that concepts are taught in class and are covered in the following lab shortly after. This helps students relate theory to practical experiments."

Congratulations Professor El-Saadany!

What message would you like to send to students reading this article?

"Students have lots of resources and they are not using all of them. They sometimes come at the last minute for help. Students should try to use all of their resources including instructors, teaching assistants, and office hours. Most engineering professors are very passionate and are willing to help.

Also, don't lose hope because of a bad midterm. Some students feel like giving up because of a bad exam but they shouldn't. We always have different exams, different ways to evaluate work, not just written exam and not just one exam. Try to catch up, everyone makes mistakes."

A New Frontier in Physics

SAM MADHAVAN
1B ENVIRONMENT

The world's largest particle accelerator, the Large Hadron Collider, recently began a new run of experiments after its latest set of upgrades, colliding particles at energy levels of 13 tera-electron-Volts (TeV), more than 1.5 times the 8 TeV energy it used to discover the Higgs-boson particle in 2012. The Higgs boson was the last particle to be predicted by the standard model of particle physics, but scientists remain unsatisfied with the many questions left unanswered by the mainstream theory, and hope to answer these questions by finding energy levels where the standard model that is thought to control our everyday life does not apply.

Just this month, the research team of over 1,100 members from 16 countries announced that they had observed a new particle, which has since been named the pentaquark. Scientists believe that this new discovery may explain what holds together other subatomic particles like protons and neutrons; excited researches submitted their theories about the properties of the barely discovered particle for peer review at popular scientific discussion forums within 30 hours of the announcement.

The pentaquark is not, however, expected to revolutionize our understanding of the universe; subatomic physicists have actually predicted its existence based of hints of the particle in their data readings for the past decade. It is, however, the first time that enough data has been collected in a related set of experiments for the particle's signature peak to be statistically significant. At the 50th Moriond Elecroweak Conference earlier this year, LHC physicists announced that they did believe they had discovered a new particle, but they did not have enough statistically significant events to announce a conclusion.

The team has been developing computer models for the past few months to make sure the signals measured are not caused by any previously accounted for particles. As the name suggests, scientists believe that the pentaquark is formed out of a combination of any five individual quarks (out of six known kinds of quarks) and have identified two particular combinations of pentaquarks in this experiment. Quarks, however, do not behave like the ordinary subatomic particles taught in general science curriculum, and most scientific explanations about the behavior of the new particle are wishy-washy and vague; the issue is that there are too many variables to account for, and even modern supercomputers struggle to sieve through the veritable flood of noise to glean meaningful information. Physicists have already given the study of the mechanisms behind quarks and pentaquarks a fancy name: Quantum Chromodynamics. Abbreviated as QCD, it is the sum mathematical knowledge of the scientific community on the nature of these most minute yet fundamental of particles, yet can only predict quark related behavior to an optimal accuracy of 80%. One can be cautiously optimistic about that number rising as CERN continues to mash protons at velocities near the speed of light and study the aftermath. We may be closer now to finally understanding the nature of the universe at a fundamental level than we have ever been at any other point in history.

Facing the Bear

An Update on Europe's Russia Dilemma

BRIGITA GUBINS
1B ENVIROMENT

In 1989, the Baltic people formed a human chain that spanned across Lithuania, Latvia, and Estonia in protest of the Soviet occupation of their countries.

In 2013, after an extremely controversial referendum, the Crimean peninsula was annexed by Russia. In the two years that have elapsed, eastern Ukraine has become an active war zone with frequent civilian casualties, and the debacle of the Air Malaysia passenger plane going down over the newly Russian air space. Meanwhile, Ukraine's neighbours to the north, the Baltic States, have grown increasingly nervous with sightings of Russian bombers as far west as Scotland, and with increased Russian military presence around the Baltic Sea.

In an interview with the BBC, the former president of Georgia, Mikheil Saakashvili, now governor of Odessa in Ukraine, stated that Putin is obsessed with the idea of testing NATO, and that the Baltics will be next on Putin's land wish list. Speaking from experience as a man whose country went to war with Russia in 2008, he believes that Putin intends on revisiting Georgia and Azerbaijan as well.

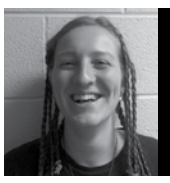
While this aggression on its borders with former Soviet states may appear a haphazard method of testing his influence over NATO, the areas being targeted by Russia are all very strategic naval ports, as with Crimea. Riga, Latvia's capital, is the northernmost non-freezing sea port, and on Latvia's western coast, the city of Liepaja is home to one of the largest military ports in the Baltics with prime access to the Baltic Sea.

The most recent event causing outrage in the three small countries has been the Russian chief prosecutor's office re-examining the legality of the 1991 independence granted to the Baltics. Over the past 800 years, Lithuania, Latvia, and Estonia have all been occupied intermittently by Russia, and other major historical powers, in large part because of their strategic location on the eastern shores of the Baltic Sea. After gaining independence from Soviet occupation in 1991, all three countries sought NATO membership after a long history of living under foreign occupation. In recent years, the Kremlin has viewed this as a hostile challenge to its security interests. In this past month, the Kremlin declared the transfer of Crimea from Russia to Ukraine in 1954 illegal.

While there IS a minority of ethnic Russians in the Baltic States, it is far smaller in proportion to the minority in Ukraine, most of whom emigrated there during the Soviet occupation looking for work. The Baltic peoples have lived on the shores of the Baltic Sea for at least the last millennium, and will not give up their homes without a fight. Lithuania has already re-instated the draft, with Latvia considering it. American tanks now patrol the eastern borders, and with worrying echoes of the Cold War, NATO has stationed troops in Estonia for training exercises and has increased its air force on its eastern order by sending four RAF Typhoons to perform regular patrols. While these may just be exercises for the NATO troops, their arrival being personally greeted by the Estonian president and minister of defence suggests that this is more than just training. British MP Philip Hammond stated very pointedly that the increased NATO presence in the Baltics is for the purpose of making it very clear that NATO will stand by its allies.

Suicide Bombing in Turkey

Turkey Retaliates



CAITLIN MCLAREN
3N CHEMICAL

On Monday, a group of activists consisting mainly of university students was the target of a suicide bombing attack, killing more than 30 and wounding over 100. The bombing occurred at the town of Suruc, a few kilometres away from Kobani, Syria, where the activists intended to rebuild some areas damaged in fights against the Islamic State. The bomber was identified as Seyh Abdurrahman Alagoz, a 20-year old Kurd who reportedly had links to IS.

Shortly after the bombing attack, Kurdish militants (namely, the Kurdistan Workers' Party, or PKK, a banned group in Turkey) killed two police officers, whom they claimed had been in league with the bomber.

While IS did not claim responsibility for the bombing, IS fighters then attacked a Turkish border post. One Turkish soldier was killed in the attack.

The Turkish government immediately blamed the Islamic State, with Prime Minister Ahmet Davutoglu saying that "the first indications point to IS" – which is unusual, as Turkey has long been criticized for their reluctance to get involved in the war against IS despite their proximity, and has tended to blame past attacks on the Syrian government. Considering Turkey's ongoing issues with their Kurdish population, and long enmity with Bashar al-Assad, had IS genuinely not been involved or had Turkey not wanted to fight IS, they would have had ready-made excuses to avoid being drawn further into the war. However, it seems that IS has become too dangerous and too brash for Turkey to ignore.

As a result, Turkey carried out air strikes against three IS bases in Syria, its first confirmed attack against IS. At the same time, Turkish police arrested hundreds of Kurdish activists and bombed PKK camps in Iraq – the first time Turkey has attacked the Kurdish group since a 2013 ceasefire. While there have been nominal peace talks after this ceasefire, tension between the Turkish government and Kurds rose in recent months.

Turkey, meanwhile, claims to be serious in its intention to retaliate against IS attacks. In a phone call with U.S. President Obama, Turkish President Recep Tayyip Erdogan agreed to allow American forces to use the airbase at Incirlik, a decision that was months in the making. This could allow the U.S. to increase their bombing raids against IS, which occupies large parts of Syria and northern Iraq.

All in all, the incidents of the last weeks may have a net positive result in the fight against IS. Turkey so far has refused to participate in fighting despite nominally being against IS, and has even been accused by many of indirectly supporting them, by allowing fighters to cross the border and even supplying them with money and weapons. This was mainly because of Turkey's enmity with both Bashar al-Assad's regime in Syria and Kurdish separatists in Turkey, both of whom are currently struggling against IS. Thus, Turkey saw fit to turn a blind eye to IS activity; but it seems that this time IS has overstepped itself.

It seems a shame, however, that 32 young men and women needed to die needlessly to spark this change of attitude in Turkey.

The Passing of Satoru Iwata

MEAGAN CARDNO
3A NANOTECHNOLOGY

If you are one of the many children who enjoyed playing a Nintendo game at some point in the past thirteen years, you have Mr. Satoru Iwata to thank for the pleasant memories you gained from them. Operating as President and CEO of Nintendo, Iwata passed away on July 11 from a bile duct tumor— a medical issue he had struggled with since early 2014. The news came a great shock to gaming fans across the globe, as the man was only 55 years old at the time of his death.

In his presentation at the 2005 Game Developer's Conference, Iwata summarizes himself very succinctly in what is now one of his most famous quotes: "On my business card, I am a corporate president. In my mind, I am a game developer. But in my heart, I am a gamer." With a major in computer science, he became a member of the Nintendo-affiliated HAL Laboratories, where he worked as programmer on many notable titles.These included entries in the Pokémon, Earthbound, Kirby, and Super Smash Bros. series.

It was in May 2002 that Iwata stepped up as president of Nintendo, and oversaw the development and marketing of both the Wii and DS consoles; the latter of which is Nintendo's best selling console to date, second only to the PlayStation 2 in terms of best selling consoles of all time. At nearly 155 million units sold worldwide, the Nintendo DS remains the most purchased handheld gaming console to date. The Wii had similar success, with over 100 million units sold worldwide, leaving it as the fifth best selling game console to date.

Iwata's success was not solely as a businessman, however. Issues arose during the production of Pokémon Gold and Silver, in which the developer Game Freak struggled with the size of the game fitting on the 2MB Game Boy Color cartridge. This was primarily due to the number of sprites needed for a Pokémon game, coupled with the console's ability to have more detailed and full-colour sprites. It was Iwata himself who found a way to compress the data not only enough to complete the game's projected development, but to include the additional entirety of the Kanto region featured in the previous game.

Even with all of his success as both CEO and programmer, much of the man's popularity with fans comes from his focus on public relations, appearing in numerous instalments of the "Iwata Asks" and "Nintendo Direct" video series. By presenting information regarding the development and new releases of consoles in games in an entertaining and light-hearted way, he showcased himself as a down-to-earth, fun-loving person rather than just a businessman.

If that left any room for the man's passion for the industry to be doubted, following the fiscal losses beginning in 2011 after the launch of the Nintendo 3DS, he voluntarily cut his own salary to apologize for the poor performances of the company. While this isn't an entirely unseen practice in Japan, he still chose to cut his own salary by 50%, while other members of the Nintendo board only had pay cuts of 30% for representative directors and 20% for other directors. He did very same thing after the WiiU also reported losses in early 2014.

Official GDC

Satoru Iwata was CEO of Nintendo when he passed away on July 11.

Regardless if you remember him for his success as President and CEO, for his skills as a programmer, for his funny antics in the various videos he appeared in, or just as the gamer he was at heart, I hope that you remember him fondly and thank him for all that he did for gaming as we know it. Rest in Peace, Iwata-san.

How Canadians Govern Themselves

SHERWIN KWAN
4B MECHANICAL

Cheesy ads. Politicians yelling half-truths on TV. Lawn signs everywhere in many colours. Yes, a federal election is coming up in Canada this October. It would be a good idea for you to become familiar with the Canadian political system, if you aren't already.

Modern governments are divided into three branches with three different roles: a) the legislative branch, which makes laws, b) the executive branch, which enforces laws which have been made, and c) the judicial branch, which interprets laws when there's a dispute about what they mean. A democracy is a country where we, the people, get to make our own laws. We do this by voting, every few years, for people to represent us in the legislative branch of government.

Most countries have a written document called a constitution which acts as the supreme law of the land. In Canada, the constitution consists of two documents, one written in 1867 when we became a country, which sets up our political system and divvies up powers between the federal and provincial governments, and the second written in 1982, which includes the Charter of Rights and Freedoms guaranteeing basic human rights for us, plus a number of amendments which have been made since then. Nobody is allowed to do anything which violates the constitution.

The Monarch

Canada is a constitutional monarchy. The monarchy part means that we are ruled by a king or queen. If you've been living under a rock, the current monarch is Queen Elizabeth II, a British-born woman who also reigns over her native United Kingdom, Australia, Jamaica, and 11 other countries. She gets to do that because her ancestors conquered other countries and built a worldwide British Empire.

Note that Canada is an independent country. So if we wanted to, Canada could amend the constitution to make you or me the monarch tomorrow, or even get rid of the monarchy altogether; it's just that nobody has done this. Since the Queen doesn't actually live in Canada, there is a person called the Governor-General (GG) who lives in Ottawa, and represents the Queen. That means that whenever the Queen isn't in the country (which is, like, 99% of the time), he gets to exercise all the powers the Queen has. The current GG is David Johnston, former president of the University of Waterloo.

Canada being a constitutional monarchy means that the Queen or the Governor-General can't just do whatever the hell they want. They have to follow the Constitution just like the rest of us. Technically, the Queen is the legislative, executive, and judicial branch all combined. However, because of the 1867 Constitution Act, she really doesn't have power to do much out of her own will.

The Legislative Branch

Under the Constitution, the Queen's lawmaking powers are delegated to Parliament. Parliament consists of two assemblies: the House of Commons and the Senate.

The House of Commons (or "House" for short) is made up of 308 members (MPs), elected from cities and other districts across Canada. Depending on where you live, one out of these 308 people represents you. If they vote for laws you don't like, you can vote for someone else to replace them at the next election. (To be honest, you'll often find there isn't someone you trust completely, so you'll have to pick the least incompetent man or woman for the job, but that's a whole other story.)

The Senate is made up of 105 members which are appointed; in theory, by the Queen, but in practice, by the Prime Minister. Senators remain in their jobs permanently until they are 75, then they must retire.

As Canada is a democracy, power is concentrated in the elected House of Commons. The Senate is only supposed to reject a bill if there is something seriously wrong with it; otherwise, its role is mostly limited to suggesting improvements to bills that the House has already agreed to. (If you're cynical, the Senate exists to give pensions to the Prime Minister's cronies …)

The Executive Branch

Some laws require the government to do something, while other laws bind ordinary people like you and me. The executive branch's job is to follow the laws which bind the government, and to ensure that ordinary people are following the laws which bind them. It is divided into a number of departments, such as Public Safety Canada, which runs the police and the intelligence agencies, or Health Canada, which funds health care.

Each department is supervised by a politician, called "Minister of National Defence", "Minister of Health", etc. There is also an overall leader who supervises the entire executive branch, called the Prime Minister. The Queen or GG appoints the Prime Minister, and the Prime Minister appoints the other ministers. The Prime Minister and his ministers together form a group called the "Cabinet".

The Cabinet is in turn accountable to the elected House of Commons – at any time, if a majority of MPs reject a particularly important bill (such as a budget), then the entire Cabinet loses their jobs. If this happens, the MPs who passed the no-confidence motion can recommend the GG appoint one of them as the new Prime Minister, or (more commonly) agree to a new election. This ensures that the executive branch is ultimately accountable to the people. Essentially, the PM only remains in power if a majority of the elected House of Commons wants him to.

In Canada, almost all MPs belong to a political party, an organized group of politicians with similar opinions and beliefs. Most political parties require all their MPs to support their party leader's position (called the "party line") when voting on important bills. This sometimes causes conflicts, because an MP doesn't necessarily agree with everything their party leader believes in.

When one party receives a majority of the seats in the House, that party's leader will be appointed as Prime Minister, and the other ministers will usually also be from the same party. (This is currently the case with the Conservative Party and Stephen Harper's cabinet.) In this situation, the PM is basically invulnerable-he will always be able to count on the votes of his party's MPs, and will not have to fear being sacked by the House of Commons.

However, if no single party has a majority of the seats in the House (this is called a "hung parliament"), then it's a little more complicated. Usually, the leader of the largest party will still be appointed Prime Minister, but they need to be more careful, because they need to always have enough MPs from outside of their party support them to remain in power. In this scenario it is possible for the leader of a smaller party to end up being the PM, as long as they get the required majority support from the House of Commons.

The Process of Making Laws

A bill can be introduced either by an MP or a senator, with one exception: a bill which involves finances or budgeting can only be proposed by an MP, because it's not fair to propose ways to spend the people's tax money without having been elected by the people. If a majority of the MPs and a majority of the senators support a bill, then it is taken to the GG's office to be signed and proclaimed on behalf of the Queen (this is called Royal Assent), which officially makes it into a law.

Over the years, an extensive system has developed to pass laws. In each house of Parliament, there are three stages called "readings" that the bill must successfully clear, in order to be passed. The first reading is for the bill to be formally introduced into Parliament. There are so many bills proposed each year that there simply isn't enough time to debate all of them. So there's a system: Cabinet-introduced bills get priority. Private members' bills – bills introduced by anyone else – are placed into a lottery to determine which ones actually get to be introduced.

The second reading consists of a debate followed by a vote on the general idea of the bill. After the second reading, the bill is referred to a smaller committee to be considered in detail. This committee can then call experts to come and give their opinions. After these expert hearings, committees will often propose amendments to the bill. Parliament then has a chance to accept or reject these amendments.

The third reading consists of a final debate and a vote on passing the bill exactly as written, after the committee amendments. Note that after third reading, a bill must pass through the same three stages in the other house before it becomes law.

Parliament is allowed to delegate lawmaking powers to other bodies. For example, Parliament might say "Health Canada is to prevent Canadians from eating poisoned food". Then, Health Canada would be responsible for coming up with the exact standards for how much mercury or lead is allowed. So there are actually two types of laws: "acts", which are passed by Parliament, and "regulations", which are created by another branch of government, under delegated power from Parliament.

The Judicial Branch

The judicial branch consists of a number of courts, made up of judges whose job is to figure out who's right when there's a dispute about the law. Judges are appointed by the GG on the advice of the PM. Once appointed, it is very difficult to remove them from office. Unlike the legislative and executive branches, judges are neither elected nor accountable to people who are elected. This is intentional, because if a majority ever tries to limit the rights of a minority, judges will be able to defend the minority's rights without fear that the majority will vote them out. The only way a judge can be removed from office is if their peers (other judges) bring a charge of misconduct against them, and both the House of Commons and the Senate agree with the charge.

Courts are arranged in several levels, with the Supreme Court at the top. A court ruling from a lower court can be overruled by a higher court. The Supreme Court's word, however, cannot be overruled (with one rare exception; see below) and is law.

Judges are allowed to nullify laws that contradict the Constitution. This power exists as a check to prevent the government from becoming too powerful, passing laws contrary basic rights we have as Canadians.

But what if judges start abusing their powers? There is also a clause called the notwithstanding clause in the Constitution, which allows Parliament to temporarily suspend a court decision regarding certain rights of the Charter. This sounds sort of bad, but it's meant for extreme scenarios. Let's say the Supreme Court decides that because of freedom of speech, a militantly racist group gets to say whatever they want, including advocating genocide. Parliament can then suspend that court decision, but it is temporary-every five years, it has to be renewed with another vote in Parliament. The reason it lasts five years is that if Parliament abuses this power, the people have a chance to vote out those MPs at the next election.

Is this a perfect system? No, but it's an attempt to balance out powers between the judges and the politicians to prevent reckless abuses of power.

Provincial Governments

Although up until this point, I have been talking about the federal government, provincial governments work largely the same way. The biggest difference is that there are no provincial senates, so the legislative branch is only one house. The provincial equivalent of the GG is called a Lieutenant-Governor, and the equivalent of the PM is called a Premier.

Conclusion

Hopefully this article has helped you understand better how the Canadian government works-if you want more, check out former senator Eugene Forsey's book of the same title (you can find a PDF on Parliament's website).

THE TIN SOLDIER

DON'T MARRY YOUR COUSIN

CENSORED JUST FOR YOU MOM!

A-0 Warriors Lose 5-43

Team bolstered by improvement

A-1 Slenderman Evicted From RCH

"I guess I'm headed to PAS"

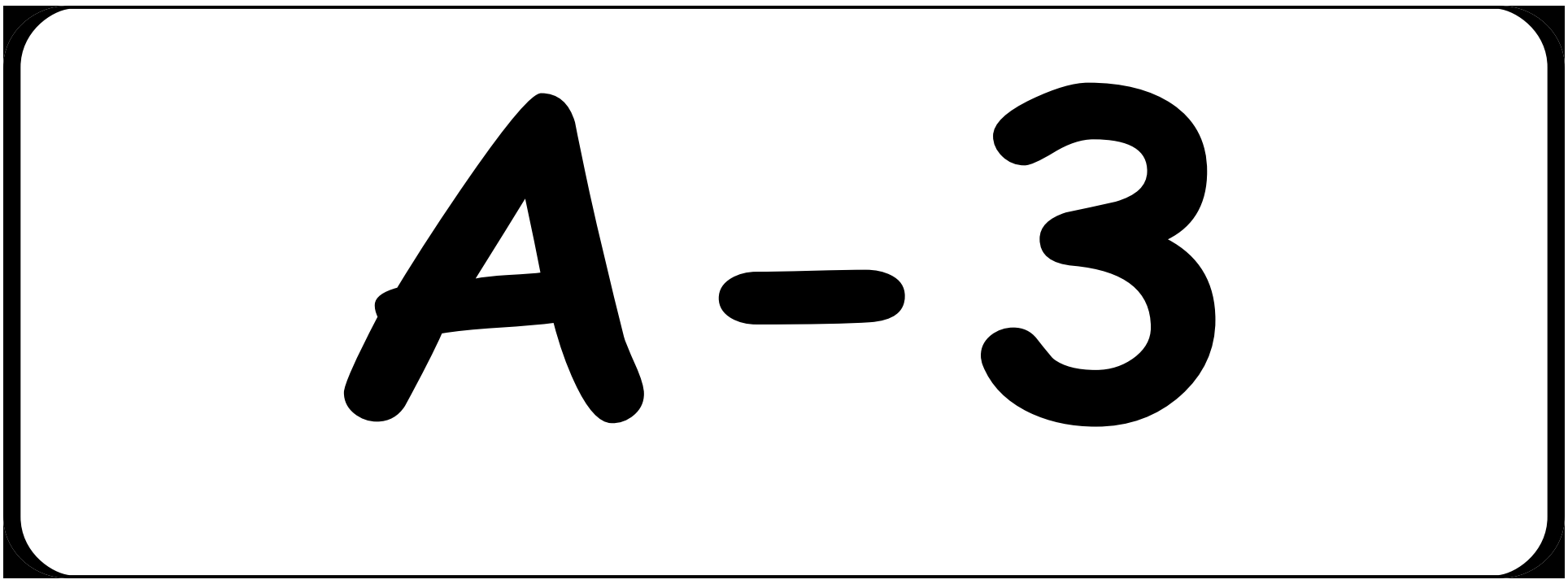
A-2 Future EIC Rekt By Small French Boys

Hat also stolen

"You can't do that Cam."

I can't believe I don't poke fun at Leah anywhere in here for abandoning me

Waterloo Works Doesn't Work



Secret Recipes for Writing Hit Songs

The Shocking Truth

A-4

NACEY I. FONDUE
4A JOURNALISM

In breaking news this week, documents filed during **Pharrell Williams'** trial for plagiarism revealed a SHOCKING TRUTH about the popular music industry today. Wikileaks has now revealed the truth, previously under publication ban, to us. What it reveals is shocking: not only do people plagiarize, but some very popular songwriters have, in fact, been writing their music based on very simple algorithms. So simple, in fact, that a first-year SE student on the Tin Soldier staff has just dropped out of school to begin a startup, writing an app to auto-write hit songs.

This recording was the smoking gun that did Pharrell in:

"I swear the following account to be true on the sacred honour of Elvis Presley, who is not dead.

I entered the music industry in order to accomplish my devious plans with all stealth and [inaudible]. My career took a turn after writing 'Hollaback Girl', a piece of music which contains more screamed lyrics than sung, when I realized I was more incompetent than Il Duce. So I decided to violate Policy 71 and steal the intellectual property of the estate of peace-loving Marvin Gaye, who was so cruelly murdered by fascist imperialist bourgeois reactionary pigs. I even briefly walked into the home of the peace-loving sons of Marvin Gaye in order to look at the original manuscript of 'Got to Give it Up' and copy its [inaudible]. It was only a brief entry, but penetration, no matter how slight, is sufficient to complete the action. For this I most profusely apologize and I plan to beg forgiveness. I hereby express my heart-felt desire to paean the most august, honourable, and peace-loving estate of Marvin Gaye for showing me the error of my ways."

There's also juicy content from other songwriters who were called to testify as witnesses:

Ryan Tedder, best known as the lead singer of OneRepublic, has also penned hit songs for other artists. Apparently, his method can be summarized thus:

1) Pick any four chords which form a suitable chord progression, and use them as the basis of the track.

2) Pick a slow tempo, so the singer has time to demonstrate their skills (or rather, annoy the world) for as long a duration as possible.

3) Set lyrics to the song with a soaring melody.

4) If short on time, repeat step 3 with the same music and give to a new artist.

This would go a long way to explaining the similarities between Tedder's songs such as "Halo" for Beyoncé, "Already Gone" for Kelly Clarkson, and "Secrets", which he performed as part of his own band OneRepublic. Kelly Clarkson is reportedly filing a suit because she thought she had an implied exclusivity contract.

This set of instructions comes from **Max Martin**, a guitarist in a failed metal band from Sweden who somehow ended up writing a whole bunch of teenage love songs for the Backstreet Boys and Britney Spears, and has also worked with Kelly Clarkson, P!nk, and Taylor Swift:

"I just have confidence, and I go write good music. Thank you to all you artists I work with."

Beyoncé Knowles's strategy for writing a song is surprisingly simple. It has enabled her to write songs including "Silent Night" and "Halo", despite the fact that the former was written 200 years ago and the latter was written by Ryan Tedder. This quote from her testifying under oath is revealing, although the court clerk has apparently redacted the obscenities:

"All I do is ask someone else to write it for me. Then I change a note here, a word there, and claim a co-writing credit. If they don't agree, well [procreate] them, I just won't sing it. Daddy's the big boss, so everyone's his [female dog]."

An anonymous source overheard her lawyer telling her to cry racism should anyone attempt to discredit her pristine, astonishing songwriting abilities which rival Schubert's.

In other news, the Tin Soldier has learned that the University of Waterloo will begin a course in Fall 2015 of which Beyoncé will be the topic. So there you go, that's all there is to having a Waterloo prof lecture about you. Or, perhaps, a successful song-factory startup.

(The Tin Soldier takes no responsibility for any troubles, legal, emotional, or otherwise, which may result from following the songwriting advice given above)

Study

Student Federations Mostly Beneficial for Students

A-5

SULLEN CHOIRBOY
4A COMMUNISM AND HERALDRY

A new study published on the National Journal of Student Federations shows that most student unions in North America are sometimes mostly beneficial, a sentiment shared by all student unions surveyed.

Student unions and federations typically represent the interests of their student members. The members would pay fees with or as part of their tuition.

"The opinions of student members were generally not considered, " said one of the researchers, " since student unions are legal students anyway."

"It would be redundant to survey people that are already perfectly represented by the student unions" she added.

The Waterloo Federation of Students (FEDs) has been successful at improving student life, the study notes. Last year saw the roll out of advanced touch screen-based maps. It is believed that maps based on colour printing technology, first used in China in 13th century, is no longer viable in current climate.

"Students only look at things that glow and change at the same time," says former FEDs CEO Ellan Bao, "so we upgraded to 21st century LCD technology which can glow and change simultaneously. "

The study also concluded that a dictatorship-based decision making model is most appropriate for adoption by most student unions. A communist-like structure ensures that the wisdom of the great student leader is always put to good use with minimal opposition, increasing efficiency.

Fight Censorship At Every Opportunity

B-0
NIKOLAOS MICHALOLIAKOS
2A MATHEMATICS

Censorship, I'm completely and utterly sure you will all agree, is absolutely unacceptable in every form. We at the Zillion Egalitarians Advocating Liberties Over Taxes Society have long fought the government in the long battle to preserve every conceivable freedom a person might have under any possible circumstance. It is a task, as I know you are all aware, that has been fruitless. Not two months ago, our poor brothers and sisters in the south lost their right to not have to look at a most vile act, two men or women kissing in public. Instead of, as we all expected, the rational government recognizing the intrinsic constitutional validity of our complaint, they protected this before uncommon and at thankfully unacceptable practice by the unassailable institution of holy matrimony! As horrible as that day was ,and it is a day we all still grieve nightly, I have worse news to bring you today.

Yesterday I learned that even the Internet, our last great hope for freeing the oppressed majority of our nation from the apartheid imposed by the corporate oligarchs, has been tainted by the long and ever-expanding reach of our malicious democratic society. Indeed, the power of the supreme minister is so great that he need not even enforce his abhorrent ideals himself; the idiotic sheep, the very sheep whom we work every day to free from their chains of tariffs and working hours and social norms and schedules, have become so indoctrinated they self-enforce the will of the overlords. This new phenomenon I call Godwin's Law; this odd name, I ensure you, will quickly be made rational.

I discovered this Godwin's Law as I was navigating the Internet, intent as ever on a new idea that might lead to the alleviation of the condition of pain all lifeforms on Earth—whom for the most part unknowingly—suffer. I was on a location designated *https://www.reddit.com/r/worldnews*, ordinarily a bastion for individuality and the liberating "screw-the-man" attitude, when I came across a number of people referencing this phrase, Godwin's Law. As hard as I could look, I could not ascertain the meaning of it. So I went to *http://www.google.com/search* and clicked on the "I'm Feeling Lucky" region. It brought me to the webpage *https://en.wikipedia.org/wiki/Godwin%27s_law#Further_Reading*. There I found a most horrific explanation for what I had seen.

Godwin's Law is, impossibly, an instance of self-censorship. The denizens of the free internet have taken it upon themselves to internally police an unrestrained Utopian domain. When a particular topic that has been ruled as "Taboo," (the extremely dangerous and effective tool the logical Vegans gave to the tyrannical Egyptian Pharos during the time of the unhidden enslavement,) is present on the internet, hordes of poor self-deceiving souls throw themselves at the speaker. Others similarly overtaken by this now Pavlovian response either flee from the speaker that they might avoid the truth he speaks, or throw themselves into the mash to aid in the unjust censorship of the free one.

I engaged the sad fools for a while, hoping that they could still be made to see the light of reason. But alas, the sickly hold of corruption had already taken hold. I fear that people, as well as all those in power, might have to die on the day of our imminent upheaval of all civilization. They said such peculiar things as "there is simply no point in arguing with anyone who evokes [that taboo topic]." My concrete arguments that all ideas should all be equally shared and respected fell on deaf ears. The responses I received ranged from questioning the fundamental truth that all ideas have merit to calling me what I understand to be the rude title of "neo-nazi." My further persistence that everyone had an equal right to fame and celebration seemed to get through to some people, but I could not purse this further as they then began to talk in some strange cryptic language and refer to me alternately as "Idid Nazi" and "die Fuehrer."

People of the truth, I am sorry to have to bring you this bad news, but as it is with all news, it is news we must hear. I propose, at this point, a plan to counteract this new development. Let us determine the root of this taboo that causes the cries of "Godwin's Law." Let us find it and let us advertise it. Let it fly from every flag pole and be plastered on every bus! May everyone open their eyes to see the face of taboo staring down at them! Let us make the government tremble as they see censorship shall never be effected, and that the ideas they try to defame can be celebrated now more than ever was in the past! Freedom shall triumph!

Dihydrogen Monoxide

B-1
QUENTYN FLAMEL
6C MONADO ARTS

ALCHEMHISTORY

Welcome back, dear pursuers of the secrets to life and its expansion. Today we have a real treat of a topic to discuss today— the delicate, but devastating properties of dihydrogen monoxide, often abbreviated to DHMO, or hydrogen oxygen if you're feeling different.

This chemical is surprisingly commonplace in our everyday lives, although it might not be where you think to look. It is used regularly as a fire retardant, despite scientific studies suggesting that it in fact worsens the severity of oil-based fires. Various isotopes are used in the uranium enrichment process, and it is sometimes dubbed the "Universal Solvent", as its potent dissolving properties enable it to entirely dissolve even strong crystalline lattice systems, such as sodium chloride. And yet despite this, it is insoluble in many strong industrial solvents, such as hexane, benzene, and toluene, and is known to cause instantaneous combustion when exposed to tert-butylithium, n-butylithium, and various other commonplace chemicals.

Much controversy surrounds the worldwide storage of DHMO, which produces massive amounts of industrial waste, filling landfills across the globe full of less-than-full containers. In addition, despite its natural occurrence, it is associated with massive structural damage on bridges, roads, and buildings across the globe. It also is medically determined to be one of the most common vectors for disease known in existence, and is a known promoter of weed growth and propagation.

More horrifying is just how common DHMO is in the general population. It is frequently found in large reservoirs across the globe, and is known to induce vomiting in humans unless treated extensively in a specifically designed purification plant. Children as young as -9 months have reported exposure to this chemical.

The intimidation of the chemical does not stop there, though. Historically, DHMO has been a known facilitator in the conduct of Nazi experiments. The Third Reich infamously dedicated research to developing stealth military weapons which were facilitated by the high concentration of DHMO in over 70% of the world's territory. It is also conjectured to contain a memory of previous states by respected homeopathic experts, which could lead to development to horrific spying capabilities from NSA, NASA, and the NBA.

Despite all of these capabilities, we need not be so negative dear alchemists. I have research that I believe will prove that DHMO is one of the seventy-two key ingredients in synthesizing a proper Philosopher's Stone. If we must instigate proper regulation on this most potent potion of sorts, I ask only that it still available for the sake of research purposes and the pursuit of true science.

uBer liBs

B-2
OOBER BRANDY CANDY
8E LUSCIOUS DELIGHTS

OMG OOber driver is da _____! OMG you will make sure they won't be da one dat _____ (verb) away! De answer: Move over _____ , OOber for _____ (noun) has finally arrived. Da _____ is coming true! This one time at ol' Madame _____ told you dat you woud ave to _____ to make da like you by _____ and possibly dancing with a and on a at a _____. Take a _____ with your Uber driver _____ chat it using the #OMG _____ . Wayyt you need to stop at a _____ store because you don't have any _____. Ugh that is soooo ! # _____ problems. OMG did you see that the OOber driver rock that _____ out to _____ on OOtoob?! #_____, #_____, #_____!!!!. Don't forget to take a _____ and post it on _____. And it not kUaLiTy if you don't take it using a oober long . Finally make sure you xcrete lots of since studees show dat making hygher your _____ intake will make hygher your _____ and your overall with _____ .

The Tin Soldier is not a forum for thought-provoking and informative articles, and has no association whatso-ever with the Society of the Travelling Pants. Views expressed in *The Tin Soldier* are not those of the authors and do not necessarily reflect the opinions of Chuck Norris.

The Tin Soldier encourages submissions from students, faculty, and members of the Non-Existent Action Committee. Submissions should reflect the concerns and intellectual standards of the The Society of the Travelling Pants in general. The author's name and phone number should be included, except if they are non-existent, or if you don't feel like it. This information may or may not be posted on our website. For the time being it will definitely not be posted since we don't know how to edit the parts of the website that don't update automatically.

All submissions, unless otherwise stated, become the property of *The Tin Soldier*, which reserves the right to refuse publication of material which it deems too suitable. However we're so desperate for content that we'll likely take it (but we might just send it to *Imprint*). *The Tin Soldier* also reserves the right to edit grammar, spelling, and text that do not meet university standards, but engineers suck at english so it's a low standard.

Mail should be addressed to PJ Katie, c/o YTV Canada, P.O.Box 7500, Paris, Ontario, N2L 3W7. We do not currently have a phone, however you may redirect all inquiries to Kickoff's, as we're likely there. We don't have a fax number as no one uses faxes anymore.

If you have any concerns about content seen in *The Tin Soldier*, feel free to start a blog decrying us, petition us to change things, or actually do something about it by writing for us. Our meetings are held about once a week, unless there is a pub crawl, in a location that we will tell you if you come to the meeting.

If you have read to the end, congratulations. There is no prize for doing so, but if you want to, go tell Cameron "The Narwhal Bacons at Midnight" because he's curious if anyone will actually get to here.

THE TIN SOLDIER

The First Comrade Among Equals, The Most Equal, Comrade of All, Bearer of The Light, Queen of Dragons, Keeper of Darkness, President of the United States of Waterloo, Protector of the Two Trees, Bane of Geese, Chairman Meow, Minister Monday, Khaleesi of the Five Faculties, a Craigular Joe, King Warrior, Warrior King, Kim Jong Quatro of Best Korea, Stephen Harper, Stephan Dion, Mulclair's Beard, Mania of Trudeaumania, Head Gardener of Narnia, Fat Man, The Nina, King Macbeth formerly Thane of Cawdor, Oberon King of the Fairies, Flareon, and Solver of Rubik's Cubes
Shrek
"It's all ogre now."

Protector of Columbia Lake, Vaporeon, Knight of the Laughing Tree, Champion of the Geese, Conqueror of Carl A. Pollock Hall, The Shrew that was Tamed, Lady Friday, Wielder of Sword in the Stone, Destroyer of Worlds, The Pinta, Captain of the Watch, The Invisible Stalker, Little Boy, Hamlet Prince of the Danes, Prince Caspian, Knight of the (lim n->∞ n)-Sided Table, Lancelot of Berlin, Jack the Ripper, Bermuda of Triangles, OK Wall of China, Red Leader Alpha-2, Darth Putin, Second to Stunt Double, and Scrabble Enthusiast
Mr. Meeseeks
"I'm Mr. Meeseeks, look at me!"

Master of the Four Elements, Dark Magician, Superior Saturday, Staff of Gandalf, Elder Wand of Dumbledore (but not Harry), Ruler of the 34, Bread of the French, Breadbasket of the Italians, the Santa-Maria, Garden of Olives, Jolteon, Bard of the Elder Tree, Hermit Carb of the Berscillian Forest, Tamer of Pokémon, Most Popular Man in the Forest, Lady of the Lake, Distributing Manager of Swords, Trinity, the Undead Mockingbird, Magister of Hentacle Tentai, Empirically Worth 10^-3 Helens, and Plebeian of the Potatoes
Lady Rainicorn
"자기야, 나 완전 중요한 할 말 있어. 나... I am pregnant!"

The Iron Banker, Master of Coin, Creator of Spreadsheets, Pincher of Pennies, Grim Tuesday, Harbinger of Fine Silks and False Promises, Umbreon, Czar of the Bomb, Mayor of QNC
Ford Prefect
"It's probably just your house being knocked down."

The Third Teacher, Archmaester of the Eyrie, Keeper of Athelas, Master of the Quodlibetal Disputation, Unspeakable of the Department of Mysteries, Meetinghouse, Jolteon, Box-Maker of the Periodic Table, Builder of Armillary Spheres, Chronicler of the Heavens, Albertian Order of Leibowitz, Son of Bukhtishu
Ealhwine
"We Light the Way"

Tiller of the Fields, Chisler of the Stones, Butcher of the Meat, Filler of Whitespace, Unloved by his Father, Orphan Black's 17th Clone, Is Not Now—Nor Has Ever Been—A Member of the Communist Party, and Yet Still Happy
John Muhammad Li Singh
"#Kate Middleton #Science"

Point Vs. Counterpoint

Should The Tin Soldier Continue to Write and Distribute PCP?

POINT

COUNTERPOINT

PIZZA REVOLUTIONARY
4A CAMERON STUDIES

EDITOR IN CHIEF CAMERON HAS ANNOUNCED THAT HE WILL NO LONGER BE PROVIDING PIZZA AT WARRIOR MEETINGS, CITING 'BUDGETARY CONSTRAINTS'. THIS IS THE LAST STRAW. WE, THE WRITERS, ARE THE HEART AND SOUL OF THE IRON WARRIOR. WE WRITE. WE ENTHUSIASTICALLY VOLUNTEER FOR ARTICLES LIKE DOGS. WE ALWAYS HAND IN OUR ARTICLES ON TIME. FOR ALL THIS WE HAVE ASKED FOR BUT ONE THING: THAT PIZZA IS PROVIDED AT THE WEEKLY MEETING.

NOW EVEN THIS SMALL, INEXPENSIVE PRIVILEGE IS BEING TAKEN AWAY. THIS IS NOT A MONEY ISSUE. THAT'S RIGHT. CAMERON, I'VE SEEN THE BUDGET, AND YOU HAVEN'T EVEN FACTORED IN THE FROSH ISSUE YET. WE ARE A PUBLIC INSTITUTION; WE ARE SUPPOSED TO RUN DEFICITS SO ENGSOC GIVES US MORE MONEY. THIS IS NOT DUE TO 'BUDGETARY CONSTRAINTS'. THIS IS A POWER-HUNGRY EIC ABUSING HIS POWER ON HIS LOYAL WRITERS, WHO ALWAYS GET IN ARTICLES ON TIME. WHAT HAVE WE DONE TO DESERVE THIS? IS THE EIC CURRENTLY UNDERGOING PERSONAL PROBLEMS AND TAKING IT OUT ON US? CAMERON, IS THIS BECAUSE WE KEEP GETTING TO THE OFFICE BEFORE YOU AND EATING ALL THE FOOD (WHICH IS, INCIDENTALLY, NOT PIZZA)?

BUT REALLY, THE PROBLEM ISN'T CAMERON (EVEN IF HE IS A POWER HUNGRY, CONTROLLING, MICROMANAGING MECH ENG), IT'S THE CONCEPT OF AN EIC ITSELF. THE EIC IS A REMNANT OF A PAST AGE, AN AGE OF KINGS AND DICTATORS, OF AUTHORITARIANISM AND CAPITALISM. THE EIC IS A SYMBOL OF OPPRESSION AGAINST US, THE WRITERS, WHO ALWAYS HAND THINGS IN ON TIME. IN THE PAST, THE EIC COULD DO AS HE PLEASES, AND WE WOULD BE POWERLESS TO STOP IT.

IT IS TIME FOR US, THE WRITERS, WHO ALWAYS GET THINGS IN ON TIME, TO RISE UP AND BREAK THE SHACKLES OF OPPRESSION. THE TIME OF THE EIC, THE SOVEREIGN, THE MONARCH, THE DICTATOR, HAS COME AND GONE. WE ENTER THE ERA OF THE REPUBLIC, WHICH WILL USHER IN A NEW GOLDEN AGE. IT IS TIME FOR THE TIN SOLDIER TO BECOME A NEWSPAPER BY THE WRITERS, FOR THE WRITERS. NO MORE HIERARCHY, ONLY COMRADESHIP AND BROTHERHOOD. NO MORE DECISION MAKERS, ONLY CONSENSUS. LET THE EIC TREMBLE AT THE WRITERS' REVOLUTION. WE HAVE NOTHING TO LOSE BUT OUR HUNGER. WE HAVE A FEAST TO WIN. PIZZA FOR ALL WRITERS. EVERY. WEEK.

FRY ESTABLISHMENT
4A CAMERON STUDIES

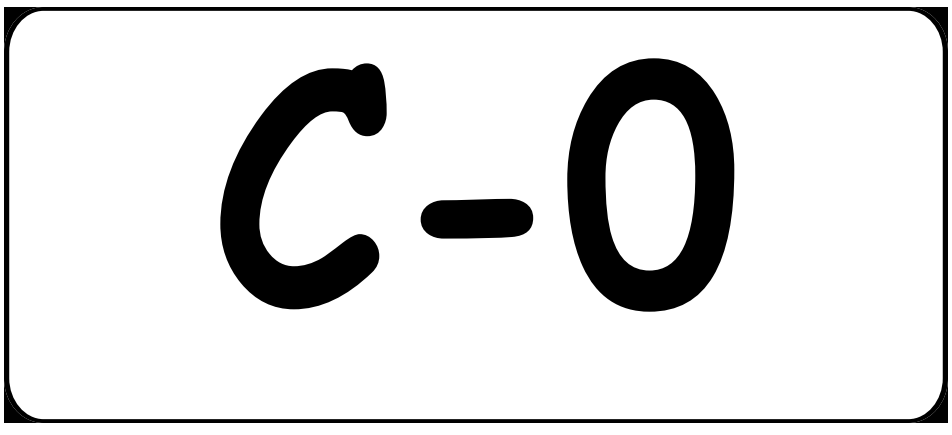
Glorious Editor-in-Chief Cameron Soltys, Warrior King, King Warrior, Fat Man, The Nina, Leader of the Authoritarian Realms, Keeper of the Precious Lambda, Generalissimo of Kepler 452-b, and THE ONE WHO KNOCKS, announced a deal with Frites | Fries with Benefits, providing us with sustenance for another term and beyond. The editor in chief is a glorious role, one that is necessary to ensure that we, the writers, always get our articles in on time. Without the EIC, there is chaos; the Editor brings order. We, the writers, would descend into anarchy, and we would never get our articles in on time. Who wants to live in a world like that? Hmm, these fries are really good. I recommend the Okonami.

Glorious Cameron, Guardian of the Purple Hard Hat, has shown us the way of the future, and it is fries. No more pizza, for pizza is a thing of the past, taking its place with the typewriter, full plate armour, the Backstreet Boys, and Beanie Babies. Fries, fries are the future, at least for the immediate future while we still have an immense surplus of Frites store credit. This sweet chili dipping sauce is the greatest, here, try some.

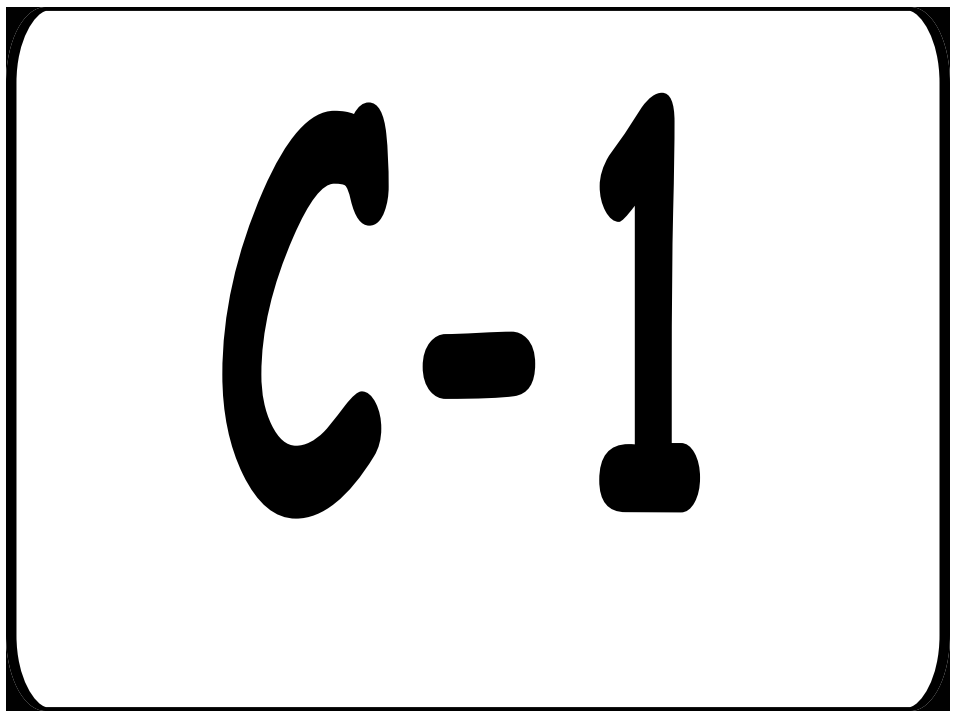
We, the writers, who always submit things on time, need an iron fist to keep us focused, disciplined, and in top condition. That guiding hand is EIC Cameron, the Eye of Engsoc, keeping us in line, ready to do battle against the myriad forces arrayed against us. The EIC is there when we need him or her, the shoulder to lean on, deliverance at the eleventh hour. All praise EIC. This Andalusian dip is also really good, no really.

The republic is a lie, an illusion cast by those dirty engineers at U of T to sow dissent in the ranks, to bring about disunity and chaos. Do not let their lies seep in further. Fries are the future, pizza is the past, EIC is the only thing keeping the rabble at bay.

We are at war with pizza. We have always been at war with pizz- WHAT DO YOU MEAN WE CAN'T ORDER FALAFEL FRIES ANYMORE???



Perceptions of Religious Imagery in Natural Phenomena



Fries are literally what the Gods of Ancient Greece ate.

Ancient People Used to Battle Using Stone Robots

C-2

ANONYMOUS SHEEP
2A HYPNOTISM

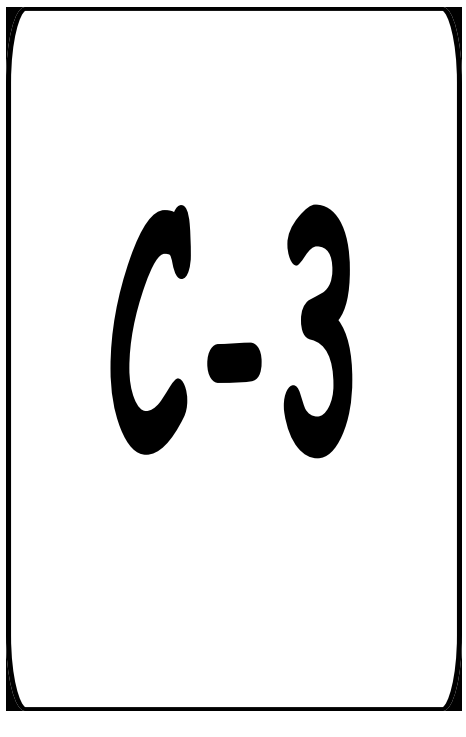
The mysterious heads in the Easter Islands actually have bodies buried under the ground, but that isn't even the most amazing discovery made by archaeologists in the 21st century. Recently declassified government documents have reported that studies in the sphinx have found what appears to be evidence of advanced machinery. In 2013, Egyptologists came forward demanding access to Papyrus scrolls in the archives of the Library of Cairo that reportedly state that the sphinx could be disassembled into five smaller humanoid structures, although there is little doubt in anyone's mind that any working components in these millennia old mysterious robot like constructions have long since been stripped away by governments for study.

The government of North Korea has announced that over the past year scientists studying the ancient texts have found the key to awakening the terracotta armies of China. The national newspapers say that the hundreds of thousands of sleeping clay soldiers can be woken up and will follow instructions–but scientists caution against any early celebrations; the soldiers they have managed to wake up so far do not recognize their authority, they say, and ask for five more minutes of sleep. Further attempts to wake them up are equally futile, according to reports. The North Korean administration refuses to share any reports or evidence of their claims, and Chinese officials remain understandably tight-lipped on the subject.

Enthusiasts are now flocking to the Easter islands to look for telltale signs that the Easter Island statues were at one time capable of locomotion. If they can confirm this hypothesis, then archaeologists across the world can finally state with confidence that we are not in fact the first civilization to achieve an advanced state of technology. It may be possible that the famous historical monuments of today are merely the remnants of once great past empires, destroyed by the ravages of time. If it turns out that our ancestors were capable of harnessing atomic energy for destructive purposes, then archaeologists will finally be able to explain the uncanny similarities between the glassy, scorched earth in the mysteriously abandoned cities of the ancient Indus Valley Civilization, and the glassy craters that are remnants of nuclear tests in the Nevada desert.

Historians connecting the dots now believe that the colossus of Rhodes was not a giant statue straddling the entrance of the bay, rather a relatively small (but still colossal compared to the average human) sentinel, perhaps the most famous of many that used to protect the Greek coasts from invasions. It is believed that their giant metal robots gave Greece a significant military advantage over their European and Mediterranean neighbors of the time, allowing for a prosperous nation that was able to flourish to trade by sea, if only for a brief span of history.

Even the staunchest supporters of the evidence for past civilizations having reached a similar level of technological advancement cannot explain why such technology would vanish without a trace into the pages of history. Far more historians and scientists with experience in the topic believe that there is an extremely high probability that we have merely misinterpreted these ancient texts–an assumption that may yet hold true, given that many of the languages these texts are written in have not been used in society in millennia. Another potential explanation offered by some is that our ancestors simply chose to abandon the destructive capabilities of their times, in pursuit of a simpler and more peaceful lifestyle.



It was definitely aliens.

Internal Memo

Fw: Re: Optimization

Subordinate,

I need you to start getting a sincerely worded apology written up for this. I don't think those idiots in visual media will be able to come up with anything. Make sure to mention that those responsible for this act of terror targeting our communications systems have been dismissed and legal action is pending.

BHO

On Sun, Jul 26, 2015 at 10:21 PM, <president@fed.gov.com> wrote:

SUBORDINATE!

You idiot. My policy managers are saying that the pigment manufacturers are in an uproar over this! And since I've already held a press conference, I expect a solution that appears monetarily-prudent to the public without ruining our relationships with the biggest interest groups in the country by NOON!

FIX THIS!

On Sat, Jul 25, 2015 at 7:16 PM, <president@fed.gov.com> wrote:

Subordinate,

I absolutely agree; it is entirely a waste of important tax-payer money to spend extra on a color plate and then fill it primarily with black and white text. We need that money to support the middle class.

BHO

On Fri, Jul 24, 2015 at 1:04 PM, Minion 43 wrote:

Hey O,

So I was looking at our finances and its a little tight right now, what with penny-pinchers removing our $500/term grant. I think we need to implement some cost-saving measures. Might I suggest using less color plates to save on cost? I don't think people even notice when we don't have them.

Signed,
Matt
Cell: 202-456-1111

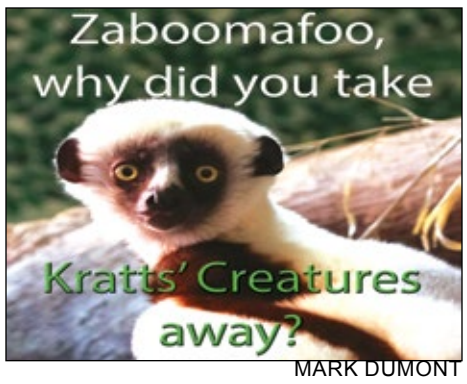
A-0

With content from Evan-Amos and Marie-Lan Nguyen C-1

NASA, H. Ford (JHU), G. Illingworth (UCSC/LO), M.Clampin (STScI), G. Hartig (STScI), the ACS Science Team, and ESA

The ACS Science Team: H. Ford, G. Illingworth, M. Clampin, G. Hartig, T. Allen, K. Anderson, F. Bartko, N. Benitez, J. Blakeslee, R. Bouwens, T. Broadhurst, R. Brown, C. Burrows, D. Campbell, E. Cheng, N. Cross, P. Feldman, M. Franx, D. Golimowski, C. Gronwall, R. Kimble, J. Krist, M. Lesser, D. Magee, A. Martel, W. J. McCann, G. Meurer, G. Miley, M. Postman, P. Rosati, M. Sirianni, W. Sparks, P. Sullivan, H. Tran, Z. Tsvetanov, R. White, and R. Woodruff.

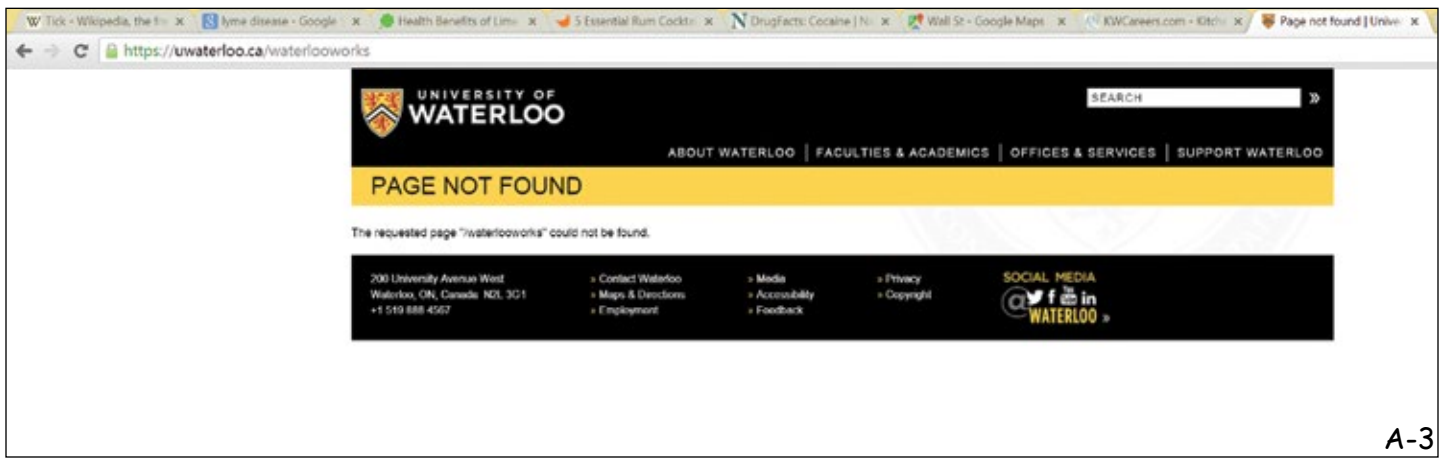
C-0



MARK DUMONT

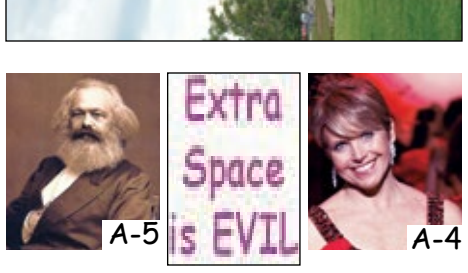
G-0

Vince Magas A-1



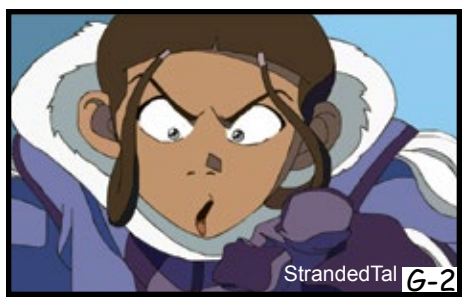
A-3


With content from Pierre J. and Stephen Bowler C-3

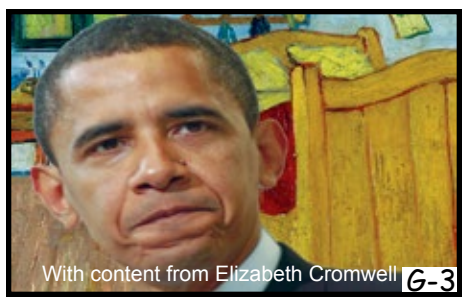

A-5

A-4


G-1



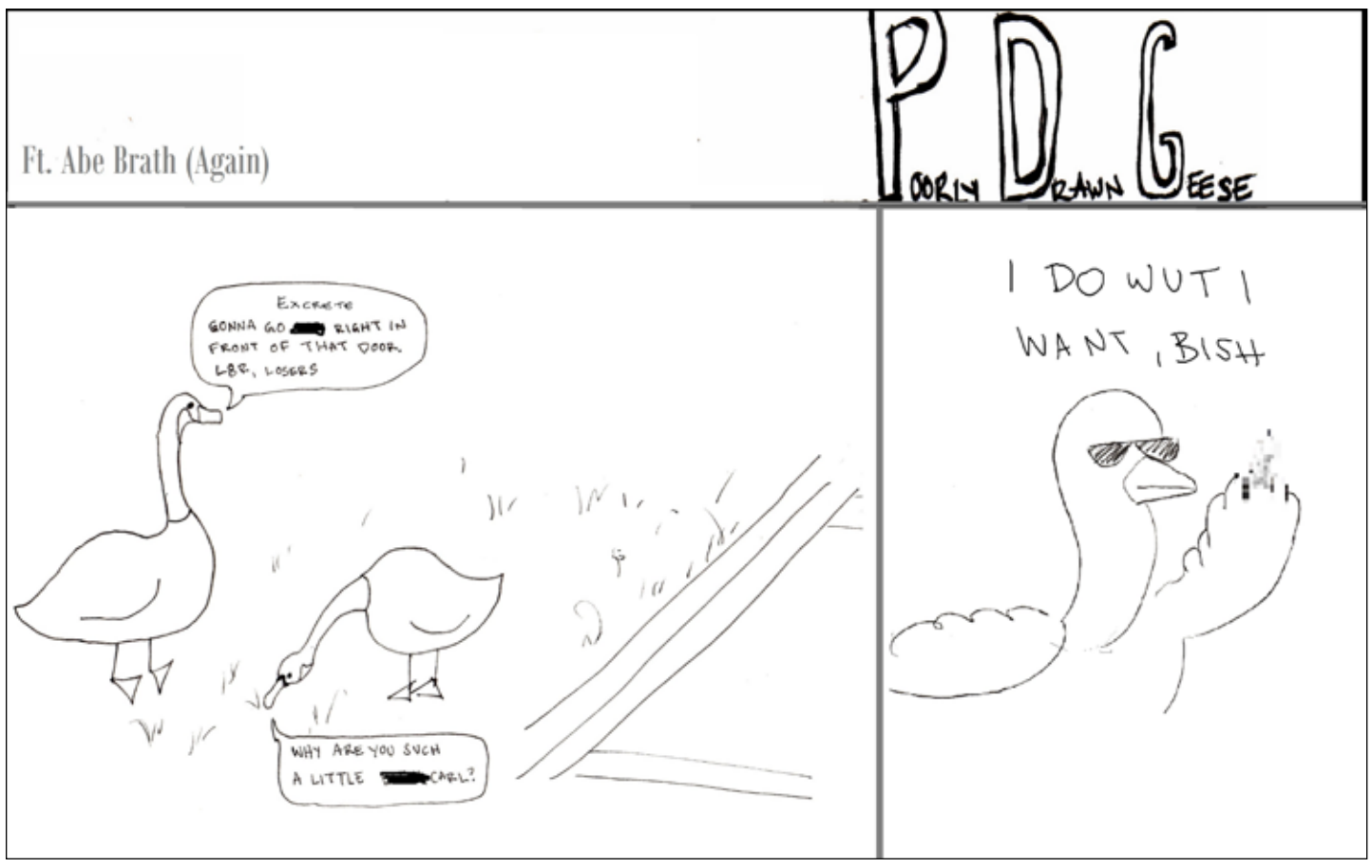
G-2


With content from Elizabeth Cromwell G-3


G-4


G-5


Jason H. Smith G-6




F-0


F-1

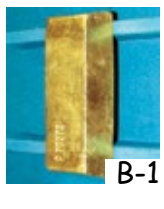

F-2


F-3

Office of the Prime Minister


B-0


C-2


B-1


B-2

A-2

Important Exam Policy Update Information

F-0
EL PRESIDENT
4B AUTHORITARIANSHIP

For my last El Presidente update I am going to share some very important changes which will be implemented this exam period. With the great student response from the food or drink policy recently started we feel these changes will be even more well received.

To provide some background on the new changes, in the Fall 2014 exam period one student submitted a formal grievance. Even though there were no other complaints, we felt this one complaint was a special snowflake and demanded our full attention. The complaint focused on the fact that the student sitting beside them was writing too loudly. This caused them unnecessary stress and they could not focus on the exam causing them seconds of delay while staring at questions they had no idea how to answer. The student claims this was the cause of their 5% final exam mark while they entered the exam with a strong 32% in the course. The student claims to have tried to "ignore it" but it was clearly impossible due to the level of noise generated from the writing. This is a serious issue we are not taking lightly and making it top priority for both the Faculty and all student government organizations on campus.

Therefore from this point forward all pens, pencils, quills, and chisels are banned from exams. Only approved crayons of your faculty colour may be used to write all final exams, tests, assignments, love notes, manuscripts, computer programs, world domination plots, and quizzes at the University of Waterloo. Each incoming first year student will receive one crayon in their frosh kit. Upper year students must provide their own. Crayons must be purchased in campus stores using WATcard between the hours of 1PM-2PM Monday, Wednesday, Friday.

Breach of this policy is punishable by up to one year imprisonment in the RCH dungeon, and trial by goose. This policy will be enforced by the newly chosen "Crayon Police" who can be identified by the large cone shaped hats which makes up their uniform. Students wishing to join the Crayon Police may apply on Leads with their head diameter.

Any questions or concerns related to this policy will be ignored may be sent to *crayons4lyfe@uwaterloo.ca* with the subject heading "SPAM: Student Comments" and you should receive a prompt reply.

Thank you for your time. Please do not contact me about these changes.

I Plan to Maybe Possibly Do Things, Sort Of

F-2
(SOON TO BE) VICE PRESIDENT EXTREME!
2B COLONIALISM

Hey everyone! I hope you've all had a wonderful term, and are excited for what's in store for the upcoming Fall term. It is the end of my term so here goes my last exec update. There are some fairly large changes and initiatives both inside and outside of my portfolio that I will be making in EngSoc during my last month as VP External, so buckle up and get excited!

Change #1: Working with ESSCO to create a new conference called CFSIET-WBOAPWAUAJWTTAI, or the Conference for Students in Engineering that were Born on Another Planet who are Undercover and Just Want to Talk About It. This conference would be hosted on the weekend of June 31 every year, and would involve sessions such as How to Human, 1418 Days and they don't suspect a thing: A Memoir, Handshaking 101, Dress for Success, amongst various other professional development sessions, for those students from different planets that just want to make it as an engineer here on Earth.

Change #2: Red Rover tournament across Ontario. This would involve me communicating with the VP Externals across the province, inviting them here, and playing a massive game of Red Rover. Little do they all know, it's all just a plan to distract them while we steal all of their mascots to use as centrepieces for the tables in POETS.

Change #3: Even though VP External will be switched out for VP Communications in the near-ish future, I plan to write a motion that will hopefully be passed on both societies (pls guise), officially changing the title from VP External to VP Extreme. Because why not.

Change #4: Inviting members of PEO to TalEng. What better way to network and ask each other professional questions than with copious amounts of liquid courage?!

Change #5: Working with the faculty to integrate a mandatory List E complementary studies elective, of which completion is required in order to graduate. List E courses would be all various forms of dance, from swing, to tango, to waltz, to twerking. Because let's face it, dancing isn't really any of our strong suits. At all. There are two types of engineers: the ones who can't dance and LIARS.

Change #6: Have Semi-Formal on Mondays biweekly. No one likes Mondays, might as well have something to look forward to at the end of the day every other week!

Change #7: Change the name of Semi-Formal to Partially Proper. The alliteration gives it a nice ring, seriously how has no one thought of this before?!

Change #8: Mandatory perma-purpling for all engineering students. Requiring for all students to be completely purple in order to show up to events.

Yes I know these are all fairly large initiatives that I plan to complete over my last month, but they are necessary initiatives. If you are at all interested in getting involved or helping out with any of the changes I have listed, please come chat with me, I'd love to hear your ideas!

CHANGE CHANGE CHANGE CHANGE CHANGE CHANGE!

F-3
VP CHANGECATION
3B EDUCATIONAL STUDIES

Oh look, it's finally the end of being in charge of things and now I can reveal all the secret changes that are coming. Yes, you heard that right SUPER SECRET changes. The faculty is suuuuure going to love me now, but because I'm done and fourth year don't care I'm going to REVEAL them ALLLLLLLLL!

First, you may have noticed those admissions averages have gotten awfully high. Well, the university has found a solution! Instead of the usual work your ass off and make doe eyes at your high school teacher to get a gagillion percent average, the university has decided to hold a massive DOTA tournament. Their justification was, "we always take about the Spirit of Why Not? So why the hell not?" I see the upside in this. We'll finally have a university wide culture of sitting in your room all day staring at a computer playing DOTA!!! Oh wait…

… Moving on to other things, the faculty has finally decided that the Geological engineers have been forgotten for wayyyyyyyy too long and has plans to rename the Civil, Environmental Department to be just be the Geological Engineering department. My sources have told me this was due to a mutiny from various people around the school and something involving some guy and circles, whatever that is supposed to mean. Anyway, Geos, your time is now; seize this opportunity and never be forgotten about again!

I also have an update on what happened to the ELPE! Well it's dead, but you all knew that. Instead we'll get a wonderful array of super relevant English courses that can be taken to replace it. I've been told there is a course on how to rap like Snoop Dog, enunciate like Bob Dylan and even a course on how to talk like a crazy right wing political activist similar to Rush Limbaugh!

Closer to home, we've decided to scrap the whole idea of doing a career fair. It just turned into people peddling their jobs and was just boring. Instead we've decided to make a FLEA MARKET! That's right, EngSoc is creating its own flea market where you can buy lots of a useless trinkets at questionably cheap prices! How this relates to education you may ask? I don't even know! But it will augment our existing stores and just be completely awesome!

Last but not least we have Waterloo Works. It turns out that it isn't actually a Jobmine replacement!!!! So what is it you ask? It's actually a secret project with the supposedly defunct North Korean satellite campus to get people to work EVEN HARDER! The real reason it is delayed is because there are some teeny tiny ethical issues here, with this being related to slave labour and all. I have full confidence in the university's ability to keep the integrity of our now-not-so-secret-supposedly-defunct-but-actually-existing North Korean campus!

That's all I've got and remember for this week. My buddy Jeff will take care of you all for the next 16 months. So here's to him and being done.

SPEND THE MONEY (FOOD)

F-1
VP FRIVOLOUS
1B MACROECONOMICS

As my term of VP Frivolous comes to an end, I would like to inform you, the students, about what will be happening between now and the end of my time in this role.

First, the Engineering Society fee will be seeing an 169% increase, based on approval at our recent meeting of the financial executive council, which is made up of myself. We have decided that in order to accommodate the growing needs of our students, as learned about through a highly confidential space audit, we need more cash. This will mostly be used to add more bureaucracy to the Society, including expanding our staff and office space. Additionally, to help cut costs, we will be moving to a completely paperless society, which means we will no longer accept cash and will only pay people through Swiss bank accounts.

Secondly, we will be purchasing top of the line, 100" CRT screen, mechanical keyboard controlled map kiosks for both the Orifice and the C&D to help you find your way around these incredibly weird layouts. Can't find the coffee? Click here! Can't find Mary? Click here! Can't find the complaints department? Type your question into this incredibly sleek, 1990s DOS window. Looking for the textbook library? You'll need a time machine to 2014.

Third, unfortunately I have to inform you that this will be the last Iron Warrior issue, as we have decided to terminate their lease. The huge costs associated with the iron maintenance needed to keep the warrior or strong, which up until this point the Society has been covering, have grown to be too much. Moving forward we are looking to find a more suitable space in which to store the IW, and are definitely considering a more corrosion resistant aluminum warrior (AW) option. Keep your eyes peeled!

Fourth, I have taken the liberty of spending the remainder of EngSoc's money on free food. Do you know how many freezies 10 000 freezies is? It's a lot. We barely have enough room to keep them in storage. Not to mention all of the space being taken up by the mints we stock in the orifice. Moving forward, EngSoc will adopt a policy of spending money solely on food and nothing else. This means that all purchases will be of an edible nature, and any reimbursements for the purchase of the food will also be done in food. The green space in CPH Courtyard will be converted into a pasture where we will keep our own chickens in order to feed everyone. There will also be a private pool. And other amenities at my discretion.

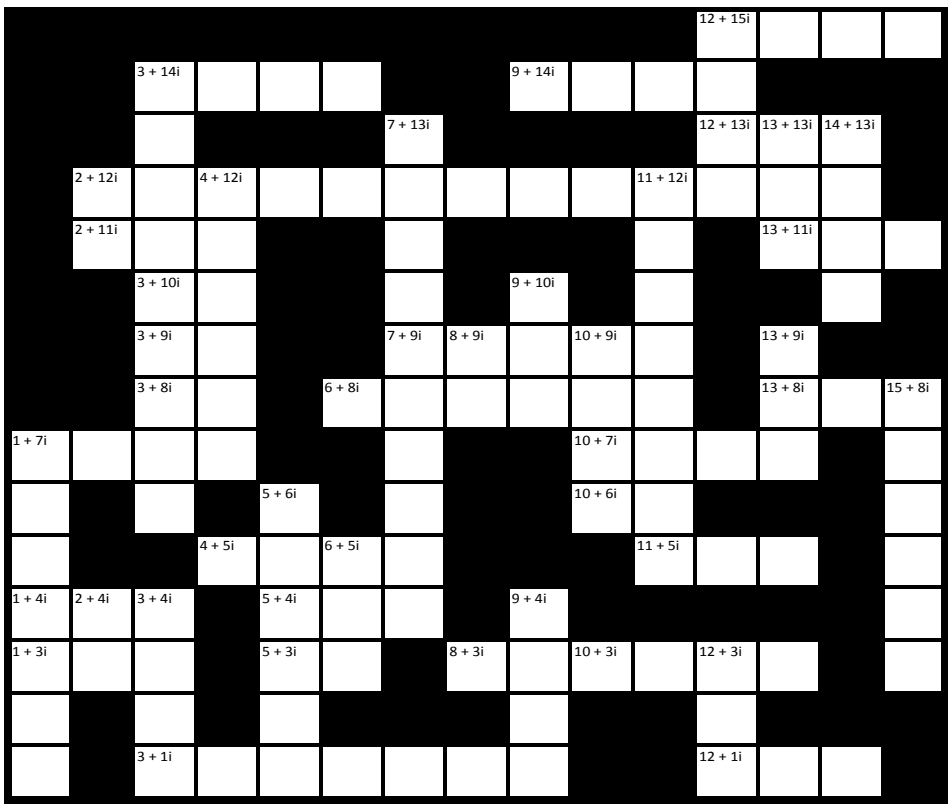
Finally, instead of licensing POETS for events and dealing with the rules, we have decided to buy Kickoff Sports Bar and rename it STEOP (pronounced POETS), where we will hold hourly drinking events for the rest of eternity. You thought they would never sell it? You thought wrong. It's an amazing thing how much you can negotiate through just food (since that is all the capital we have now). I had to throw in a chicken as well, but in the time I was there I had two pitchers and got a free basket of waffle fries (or hashtag fries for the more "hip" readers), so it was well worth it.

In summary, it's been great. I look forward to getting more sleep and eating all of EngSoc's free food in the future.

The Tin Wordsalad

For all those too big to fit

E. I. JANES
4B LITERATURE



POSITIVE X

3.2<68.8: Comes after seven
4.1<74.5: Lazy guy who never responds on time or with what you need
5.8<28.6: "Rate" without one of either the vowels or the consonants
6.4<40.1: Something you might say to a Frenchman telling you about a person
6.4<51.6: _____ where Lord of The Rings was shot
7.1<80.2: The lady of many names and an ocelot
8.5<22.9: As opposed to 15+8i down
8.5<68.8: A two-letter roman numeral
9.5<68.8: The only resolution appropriate for watching dirty movies
10<51.6: He was kind of correct
10.4<17.2: A pirates second-favourite letter
10.4<74.5: Top-of-the-line optical storage solution
11.2<80.2: Both a name and a legal process
11.4<51.6: The other reason one might get a ring
11.7<28.6: The general operation of a time-traveling computer
12<5.7: What did the bird say when he ran into a concrete wall?
12.1<22.9: Our ultimate goal at Waterloo is to ___
12.2<80.2: A design team The Iron Warrior is currently engaged in a flame war with
12.2<34.4: A generally undesirable sensory signal
14.3<80.2: The world's most fashionable shoes
15.3<34.4: The fourth years know when it is
16.6<57.3: With -asaur, a delicious salad
17<40.1: Follows EFG
17.7<45.8: Companion to open stable systems
19.2<51.6: A buff that causes teammates to turn invincible

NEGATIVE Y

4.5<63: Three occur per cycle, and you should really participate
5<51.6: Previously compared to a hobbit
7.1<80.2: Something you just lost
7.8<40.1: A region that famously lacks internet
7.8<51.6: hjklmn
9.9<22.9: The most frequent thing people get together to do
10.4<17.2: A vowel, perhaps
12<45.8: It's two letters; I don't think you need a clue to figure it out
12.2<80.2: A setting chrome asks you to approve every time it occurs (abbr)
12.4<11.5: The best part of any textbook
12.7<68.8: The origin of most of The Iron Warrior's news stories
13.5<40.1: When some mean person takes your hard-earned stuff you forgot to pay for
13.5<45.8: What ION is when the trains are moving backwards
14.3<80.2: _____ like a lioness
14.8<63: As the ____ is to the US, so Nanos are to The Iron Warrior
15.8<34.4: What Meagan always does in Smash
16.3<45.8: An idea that might seem good when you are already drunk and spelling-impaired (2 wd)
17<28.6: As opposed to 8+3i across
18.4<45.8: Made for a mint condition Black Lotus, perhaps
19.1<40.1: See Imprint Vol 22 No 17, 24 Across
19.2<51.6: Company that secretly makes most of its money selling flammable tires

Chess

#2000-235

MAN-FIA LED
CHESS-TEACHER EXTRODINAIRE

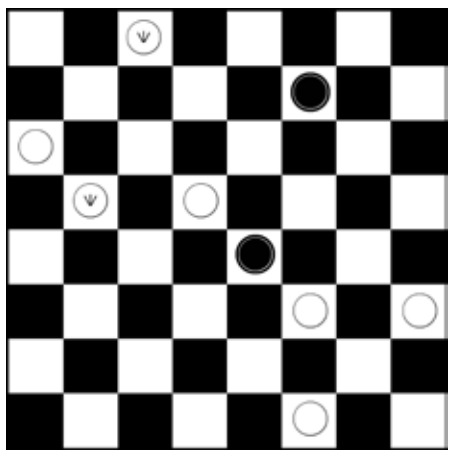
ILA Boy for the pieces

Castles not allowed. Black move. White to win in 15.

Checkers

#42

MARYON FRANK TIN
SOME GUY



Non-forced jumps variant. Black move. Black to win in 10 moves.

Solutions can be found by completing the problem. Do your professors give you the solutions to their homework problems? All the time? Well that's because they're nice. They don't have to be. And I'm certainly not.

THE TIN TRIBUNAL
Vince, did you right this? Let me know by 10 PM if you didn't.

"How many times have you answered the Iron Inquisition?"

G-1

"I didn't expect the Iron Inquisition"
Michal Kononenko, 2B Nanotechnology

G-2

"Phuke you, I'm busy"
Some random guy in Comfy Lounge

G-3

"How did you get into my house? Michelle get the gun!"
Barack Hussein, 1A Political Science

G-4

"I don't remember, but do you want some weed?"
Freudian Ham, 3A Delegation

G-5

"exp(2πi)"
Oiler, 1A Crossword Solving

G-6

"I believe answering this question is an infringement on my rights"
Chuck Norris, 4A Conspiracy Theories

Boat Shoes: Somewhere Beyond the Sea

VINCENT MAGAS
2B MANAGEMENT

HIT REPLAY

We return one more time this term to Hit Replay! The term is just about over and we are greeted finally by summer weather! Let's hope the summer sun holds up, and the summer breeze keeps those sails high. This week on Hit Replay, we go to a favourite that has made a marvelous comeback not just on polished yacht decks, but also as everyday wear for us who prefer grass-covered parks, and white-sand beaches. That's right, this issue of Hit Replay looks to take you somewhere beyond the sea with boat shoes! Sperry Top-Siders, we're looking at you!

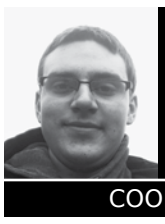
So just how did boat shoes come about? Very similar to the history of last issue's Jean Jackets, boat shoes were initially a utility-focused article of clothing. Prior to the invention of boat shoes, sailors and boatmen struggled to keep a firm foothold on the decks of their boats. The 1930s changed all this with the invention of the modern boat shoe, by one Paul Sperry. Paul Sperry was an avid boater, who became determined to develop a non-slip shoe after slipping and falling overboard while sailing one day. His design of the boat shoe was inspired by his Cocker Spaniel, Prince. It all started one winter day in Connecticut, when Sperry took Prince out for a walk, and was amazed at how Prince managed to run across ice without slipping. The traction Prince managed to generate off the slippery surface caught Sperry's curiosity. Sperry examined Prince's paws, and realized that the grooves on Prince's paws resembled that of a herringbone-pattern that gave them their grip. It was from this that Sperry decided to cut a similar pattern onto the soles of the shoes he used for boating.

In 1937, Sperry applied for a United States patent for his shoe. Initially, he offered the patent to the United States Rubber Company, but was ultimately turned down due to the sole being expensive. Sperry then tried his luck with the Converse Rubber Company in Boston, who agreed to make the blank rubber soles for Sperry. The blank rubber soles would then be siped (the process of cutting groves in rubber to improve traction) by Sperry, and the rest of the shoe would be assembled by the Converse Rubber Company. Sperry later on developed a machine for cutting the herringbone-pattern onto the soles and launched the project in his spare time, still maintaining a full-time job in the process. Sperry also advertised his shoes to his fellow members of the Cruising Club of America, and was met with overwhelming success. He received requests for shoes from all 500 members at the time. This inspired him to start a mail-order business for his shoes. In the next few years, Sperry continued to develop the shoe, and work closely with the United States Rubber company in developing a rubber compound for traction that could more easily be siped. This new rubber compound was also developed to be white, so they would not mark the decks of boats. Perry worked alongside the Commonwealth Shoe & Leather Company on a new design using a specially tanned leather that would incorporate the iconic saddle on the shoes where rawhide laces were pulled. The iconic Sperry Top-Sider design was now complete.

In 1939, Sperry's shoes gained popularity and credit to the extent that the United States War Department specified his shoes as one of the official shoes of the Navy. A deal was eventually negotiated for the Navy to be able to manufacture the shoes for its sailors.

The shoes never really faded in popularity but have certainly taken a back-seat since their conception. It is without a doubt that they have made a resurgence in recent years! The popular footwear has gone beyond its classic look, appearing in a multitude of styles and varieties. The top-siders have also gone beyond boat decks and are worn daily by many on land. Perhaps you'll grab yourself a pair this summer and rock a classic look from the 1930's!

Slow Cooker Chilli



CAMERON SOLTYS
2B MECHANICAL

COOKING WITH CAM

Good morning, my sous-chefs! At least, I hope it is good morning because this recipe I have today will take a long time to prepare. Now I know what you are thinking: "I'm an engineering student. I don't have a lot of time to prepare a meal. I have labs and projects…" You'll probably continue on like this for a good two or three minutes before you realize that I haven't been listening since the "an". But anyway, now that we are back on the same page, here is my recipe for a delicious slow-cooked chilli. It's a party favourite, and a perfect meal after a long day of tobogganing or, more likely, shoveling snow. I think it's the perfect dish to share with you on a July day.

As always, there are three golden rules to remember when you cook. The first is that you don't ever need to buy new ingredients, since having to do so would undoubtedly destroy your perfect, meticulous, productive schedule. The second is that you don't need to measure anything, as that too would be a massive waste of your precious time. And finally, I guarantee that you can make any dish work; to succumb to the sunk-cost fallacy, you don't let you've spent time on to go to waste.

So now onto the chilli. But first, what is "slow cooking"? Slow cooking is a method of cooking where food is placed under low heat for extended periods of time. It's a method that produces very tender food—think toothpaste—and delicious if somewhat homogenous aromas and tastes. It is often done in a "slow cooker" or a "crock pot" which is a self-heating pot much like a pressure cooker, but not pressurized. In fact, the two work exactly the same way; the only differences is that a slow cooker is slow because it cooks food at water boiling point at atmospheric temperature—100°C—while the pressure cooker goes to about 200 kPa, and thus (according to my Thermodynamic Property Table) 120°C. Honestly, that doesn't seem too much hotter than a slow cooker. It's certainly nowhere near the 205°C I default to in my oven.

But whatever. The point is that slow cookers are awesome. Now you are probably thinking "but I don't have a slow cooker." Rule one, subordinate, applies to more than just the foodstuff. For instance, I just checked my oven, and it goes down to 70°C. If yours does too, just set it to somewhere above 100°C and let it go. If your oven doesn't go low enough, there are a number of things you can do. You could crack open the door a little bit to create a heat sink. If you are paying your own electricity bill, you could set up a heat engine instead to sell some power back to the grid. Honestly though, opening the door should be fine; this is really a winter-only dish so you're already heating your house. If it's not winter, you're kind of an idiot for making chilli.

And finally, the ingredients. The most important thing to remember about chilli is that it is supposed to be flavourful, and ideally spicy. Now I won't critique if you want to add a dash of paprika and call it a meal, but at least add as much as you can. I bring this up first because you can add all your spices at any time in the preparation, as often as you like.

Start by chopping up some onions—not too fine, you'll be boiling them away to almost nothing—and some garlic. Don't have either? Garlic salt will work, as would chives, or just about any other plant it is generally unacceptable to eat raw. If you want to be really fancy, you can brown them in a pan with your triglyceride of choice before putting them in the crock pot. Next, take some ground beef (or hare or kangaroo or snake) and add that. Follow it up with cans of diced tomatoes, chick peas, split peas, and all those other cans of stuff that have been sitting in the back of your pantry for a while. If you have tomato sauce, add that. Otherwise you will probably want to add some water. If you're in a rush, put the pot on "high" and wait about 4 hours. If you are headed out for the day, put it on "low" and you can let it fester for as long as 8 hours. When the time is up, if you aren't feeling too hungry, throw in some kidney beans and mushrooms, cooking for another half hour. Serve over corn buns, or any bread-mimicking foodstuffs.

Go Set a Watchman: A Review

RAEESA ASHIQUE
1B ELECTRICAL

I was taught *To Kill a Mockingbird* with the reverence of a holy book. My English teacher was in love with it; she loved everything about it. When reading aloud, certain lines would make her cry. As a fourteen year old, I did not appreciate the subtleties as I do now.

When I first heard that Harper Lee was publishing another book, my mind immediately went to my English teacher and the uncontrolled little-kid-on-Christmas-morning excitement I could imagine on her face.

Of course, I was excited too. Forget that I haven't read it in several years: I can very much appreciate it as a work of art. Here is the thing: when someone asks what a book is about, they expect a two sentence overview, but some books cannot be done justice in only two sentences. They are too deep, too complex, too beautiful to butcher in that way. If someone asks me what *To Kill a Mockingbird* is about, I would answer "you just have to go read it." It is better experienced for yourself.

I would like to think that everyone has read *To Kill a Mockingbird* and that a summary is not necessary. However, we do not live in an ideal world, so let me try to explain. It is told from the perspective of eight year old Jean Louise "Scout" Finch, a white girl who lives in Alabama in the early 1930s, who witnesses things she does not necessarily understand. Race is one major focus, and that is the one I will address. Her father, Atticus Finch, is a man ahead of his time. He ventures across the line separating racial interactions by defending Tom Robinson, a black man accused of raping a white woman. He is the epitome of good character and pure values.

No one ever expected Harper Lee to follow up her first success, but the dreams of fans everywhere are finally coming true. *Go Set a Watchman* was released on July 14 by HarperCollins in the US, and William Heinemann in the UK. HarperCollins announced that just in the first week, it had sold more than 1.1 million copies, making it the "fastest-selling book in company history."

In *Go Set a Watchman*, twenty-six year old Scout is living in New York City, and learns some disturbing things about her family upon returning home to Maycomb County. In the midst of the civil rights tension in the South, Atticus is exposed as a hypocrite and segregationist. His previous pedestal is compromised.

This is not a new novel. Harper Lee completed it in 1957, but her editor, Tay Hohoff, considered the draft "more a series of anecdotes than a fully conceived novel." Lee reworked it, and in 1960 released it as *To Kill a Mockingbird*. Over fifty years later, *Go Set a Watchman* was published in the exact form that it was first written. In the time between her first and final draft, Lee obviously developed her characters. Atticus, along with everyone else, is not the growth of his *To Kill a Mockingbird* self. If anything, it is the other way around. For this reason, *Go Set a Watchman* cannot be taken as a sequel, despite being publicized as such.

The original manuscript was supposedly rediscovered in late 2014 by Lee's lawyer, Tonja Carter. This is where the controversy begins. Carter may or may not have been in a meeting in 2011 with Lee's former agent, where they discovered the manuscript that turned out to be *Go Set a Watchman*: there are two conflicting accounts regarding whether she was present. The timing of the official announcement is suspicious, considering Lee's declining health and the death of her sister and caregiver, Alice Lee, only two months before. Carter could possibly have been waiting for the moment when she became Harper Lee's new protector to bring this manuscript out into the open.

So why choose this time to release the book, after saying for years that she would never publish again? The timing seems too calculated. This could be a huge money grab, considering that millions would jump at the chance to read anything that came from Lee's pen, and every last one of them would be willing to pay for that chance. So is this a premeditated move on the part of Lee's new protector? Quite possibly.

Who would have expected controversy surrounding the release of a companion to the beloved classic? We should ideally have nothing to discuss besides the symbolism and literary intricacies. However, it is not all negative. While the timing is calculated at best, there are optimistic theories.

Is it just me, or has racism been on the rise? Media coverage could be a factor in this, but the number of black lives taken by police seems to be increasing alarmingly. It is as if the KKK of Scout's time have abandoned their white robes, and instead donned police uniforms and judge's robes. Murder is now committed in the name of justice, and no one says a word. In light of all of this wrong, Lee's new book reminds us of what we have forgotten. This book is a message, we should have progressed much further since the 1960s than we have. Even if this was not her intent, it is an ideal take-away. Let us please appreciate the message Lee originally sent, which has not changed.

I'm not one for doing what everyone else does, because popularity does not necessarily imply merit. See, you have *Fifty Shades of Grey* popular, and then you have Harper Lee popular. Let me tell you, the latter is much more worth it. Which is why to conclude, I would like to urge anyone who has not read this literary classic to pick it up and see what all the hype is about. Everyone should experience it for themselves.

Point Vs. Counterpoint

Is it Better to Have Morning Classes Than Morning Labs?

POINT

ELIZABETH SALSBERG
3A NANOTECHNOLOGY

Though it may seem trivial at first glance, the scheduling of labs and classes can hugely affect student quality of life throughout the term. After classes and labs are scheduled, the remaining time is used to schedule the seemingly endless monotony of homework, assignments, projects, exams, and electives, as well as recreational activities (including complaining about scheduling!) and basic self-maintenance (i.e.: feeding oneself and keeping a sufficient supply of clean underwear). This unscheduled time is so critical to university students, particularly those of us in Engineering with very heavy class schedules and workloads. For students to get the most out of their unscheduled time, it only makes sense to have classes in the morning and labs in the afternoon.

Before exploring why morning classes trump morning labs, let's take a step back and look at the time incurred by each.

Classes: The majority of engineering student takes five courses a term. Some terms (depending on the program) students will take six or yes, even a whopping seven courses. Each course typically has three hours scheduled each week (though some may have four), making for a total of at least 15 hours per week. Several programs also have hell week—this can entail an addition of up to two extra 1 hour lectures per course assuming the prof uses all of them (it remains inexplicable as to why they schedule five make-up lectures when one week only equals three missed lectures…). Also, the vast majority of courses have a weekly one-hour tutorial scheduled as well. So right now we are up to a minimum of 20 hours per week on classes alone (assuming no additional make up lectures).

Labs: Time-wise they come in a variety of shapes and sizes—they are usually three to four hours in length, but some are known to be even longer (on the order of seven, anyone?). Being careful to stay general here, the average lab takes three to four hours and there is roughly one to two per week (again, depending on the program). Each lab often consists of a pre-lab and a post-lab or report as well, so taking into account two to three hours for these per lab, let's add about 6 hours per week to the list.

So the bare minimum total is now 26 hours. Most typical schedules have closer to 30 or 35 scheduled hours (at least before fourth year anyway).

As we can see, labs are typically a large block of time. Classes are usually (and sensibly) lumped together as well into blocks of four hours. The fifth course is often an elective which can take on a variety of forms including a three hour block in the evening, two 1.5 hour sessions weekly or even three one-hour chunks (though the latter is the least common due to timetabling problems).

Okay yeah, so what's the difference? The key distinction here is that labs occur once or twice a week, whereas that four-hour block of classes happens everyday. If labs happen in the morning (so 8:30-11:30 or 12:30), the four-hour, everyday class block is usually 1:30—5:30 PM. If you are unlucky and tutorials are not scheduled in the morning (and providing that you go to tutorials), you could be done as late as 6:30 basically everyday of the week!

The other key consequence of this is that you absolutely have to make the most out of your mornings. Unless you are productive into the middle of the night (though many people are…) there is absolutely no choice. Sleeping in is extremely tempting, but will waste time and just put more pressure on to get things done after four to five hours of class. This can be understandably difficult to do after sitting down and trying to stay focused (note the use of the word 'trying') for such a long time. Outside of mornings, your time after class will probably be limited to that between eating dinner and when you inevitably fall asleep at your desk. So if there's something due soon that you didn't quite get to this morning… you know the rest.

With classes in the morning, most days will be free after 12:30pm. This allows time to recover from the monotony of class and take a break without feeling pressured that there is such a limited amount of time left in the day to get homework, etc. done. For many people, it also facilitates an easier sleeping schedule, and for everyone, it eliminates the temptation to waste time by sleeping in.

Classes, often scheduled in four-hour blocks, form the vast majority of the very long scheduled week (often around 30 hours). Though labs take a large chunk of time, there are usually only one or two a week. Classes happen everyday, which is why it is imperative that they are scheduled in the morning. Labs scheduled in the morning results in classes being moved to the afternoon. The result is that most people basically have to be productive in the morning hours to get their homework done, as there is limited time between classes ending and falling asleep. Though it may be possible to get a lot done on a few nights after class when critically necessary, for many people this is just not a sustainable practice. It is much easier to get things done knowing that you are not limited by having to run to class in an hour or two. Hence morning classes, please. Enough said.

COUNTERPOINT

MEAGAN CARDNO
3A NANOTECHNOLOGY

Now, assuming you're going to have to drag yourself out of bed to be on campus for 8:30 AM either way, why would you take a lab over classes at that early slot? Well, logic suggests that at an earlier hour, you are more likely to be tired and unfocused on your task at hand. You might be inclined to think this suggests that morning labs are a bad idea waiting to happen then—and I would argue that your inclination is wrong.

In any sort of engineering program, it is only to be expected that you will have a very heavy course load, and a very busy weekly schedule for both lectures and labs. And, as an engineering student, it is expected that you not only attend all of these, but that you are properly participating in these scheduled events, thus getting the proper and expected experience from the class or lab.

So what benefit is there to dragging yourself to the lab rather than the classroom at 8:30 AM? Because of the fundamental difference between laboratory learning and classroom learning—laboratories are an active form of learning, whereas classes are a passive form. Labs require you to think, perform, and participate in order to complete. A lecture will continue without hesitation, no input needed from you, the student. While this might make morning lectures sound like a far more tempting option for 8:30 AM commitments ("Awesome, I can just sit in class and try not to fall asleep!"), they are also a far less efficient option.

To relate to another aspect of our lives, it is very akin to other aspects of our life that have 'easier' options—say, choosing wake up or staying in bed for an extra 40 minutes in the morning. Yes, the latter option is much easier to do, but it also has less reward. What is gained by staying in bed for an extra 40 minutes? Some additional sleep, yes, but likely still not enough sleep for your taste. All that you did was delaying the same inevitable task of waking up, and lost time that could have been spent getting exercise, or doing some additional work, or literally anything else that requires consciousness in order to perform.

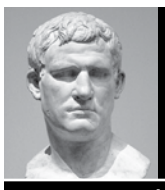
In the same regard, having a morning lab not only is benefited by being attentive, but in fact requires that you be attentive in order to succeed. You cannot snooze your way though wiring a amplifier, or be half awake when performing a chemical purification in a lab the same way you can snooze through a proof in your calculus lecture. Even if you were up way later than you should have been the night before marathoning Game of Thrones, or playing too much Super Smash Bros., you have no choice but to put your fullest effort into the laboratory. The risk of doing poorly during a lab also has far greater pressure than simply dozing off in the middle of your chemistry lecture, and so you might re-think your next 4 AM visit to the realm of distractions.

In the same regard, since lectures are such a passive method of learning, morning classes have the risk of being far less efficient at conveying information than the alternative (that is, presumably, afternoon or evening classes). If a student is sleepy or otherwise inattentive when a lecture is taking place, they run the risk of missing out on crucial information about the course explained by the professor, either verbally or visually. The scientifically unsubstantiated, but still popular, quote about how we learn only 50% of what we see and hear, but 80% of what we experience already suggests that classes are less efficient at teaching simply due to how the majority of the population is inefficient at retaining information. Coupling this inefficiency with the risk of being sleepy during the morning class does not seem like the best option for getting the most out of your tuition, and out of your precious time.

Having morning labs might appear to be a less pleasant option at first glance, but there is definitely a clear benefit to having them over classes. Much like eating your vegetables and getting your daily exercise, it is an option that rewards your lifestyle choices, and should overall have a positive impact on your lifestyle as a student.

Editor's Note:
Point Vs. Counterpoint is a feature meant to stimulate discussion on thought-provoking topics. The views and opinions expressed here do not necessarily reflect those of the authors, *The Iron Warrior*, or the Engineering Society.

The Dominion of the Roman Republic: Vae Victis



GAIUS LUCIUS AGRIPPA
10B CONSUL

ACTA DIURNA

Salve citizens of Waterloo, I Gaius Lucius Agrippa welcome you all once again to the steps of the Forum Romanum! Once more on this day of Mercurius, I bring to you another befitting article for the Acta Diurna. Given that we have successfully reached the final article of the Acta Diurna for this term, I present to you today a topic that is very much related in nature but very different in origin to our debut article on the Founding of Rome. In this article, I can only hope to present to you but a taste of the splendour of our glorious nation, once more for this term, I welcome you all!

In our last meeting, I brought forth a topic from the realm of the endless: the flowing waters of time! On this fair day, I speak to you of something much more tangible, and much easier to observe with the senses. Here on the mortal plane, we know of the Celtic Kingdoms, the Greek Poleis, Achaemenid Satrapies, and of course the countless tribal borders dotting the known world. The people of Rome saw the expanses of these great cities and kingdoms, and more often than not these same kingdoms would clash against Rome throughout its long history. Acting for the good of the Senate and People of Rome, brave generals and their legions would march on these nations. Through the course of time these lands would fall under the control of the Roman Republic and eventually become a part of the Roman Empire. So today we speak of the rise of the Roman Kingdom and Roman Republic. We follow the small kingdom and its growth, from the province of Latium to the known world! As the old saying goes: Venimus, vidimus, vicimus.

This topic of course would be difficult to explain without first giving some insight on the significance of the conquests that we will mention, and a brief history on their role and how they came to be part of the grand history of Rome. The conflicts and battles that we chose to showcase in this article were selected due to the significance of their role in the shaping of the Roman Republic. During the course of these conflicts and wars, many thousands of battles and skirmishes may have been performed, but to list all would both be tedious and difficult to follow. As such, we mention only the major battles that have made an important impact to each of the wars. We also divide the timeline into three very broad periods of expansion: the first being Rome's establishment of power in the Italian peninsula in the Early Republic; following that is Rome's expansion of control in the Mediterranean, and finally Rome's conquests into Gaul (modern day France and Germany).

THE ITALIAN PENINSULA

Since the founding of Rome, its history has been one of blood, duty, and power. If you may recall in the first Acta Diurna article on the Founding of Rome, we mentioned Romulus, the First King of Rome, and the establishment of the eternal city on the banks of the Tiber River after the death of his brother. As the Kingdom grew, Rome's first clashes were with its neighbouring towns and villages in the region of Latium. In the legendary account of Rome's early history, a major rival of Rome were the Sabines, an Italic tribe who inhabited the area of Latium north of the Anio River. It is said that during the course of its history the original Sabine tribe were divided in two, with one half joining the new city of Rome, and the other half eventually fighting for their independence against the rapidly growing city. During the reign of Rome's Kings, from the 8th to 6th Centuries BC, Rome's conflicts expanded through most of Latium reaching as far north as modern day Tuscany, against other Latin tribes, and the Etruscan civilization.

Around 509 BC Rome transitioned from being a Kingdom to a Republic, and its conflicts extended north and west. Initially the conflicts were the result of harassment from the Etruscans to the North, and the Umbrians to the East. Rome had no choice but to defend their relatively small borders from the older and well established kingdoms. In the 4th Century BC, Rome came to clashes with Gallic tribes from further north which resulted in the dramatic defeat of the Roman army at the Battle of Allia. This battle would be the first of many in what would be a long-spanning conflict between the Gauls and the Romans. It is not until 200 years later that this conflict would be resolved in a Roman victory with the defeat of Vercingetorix at the hands of Julius Caesar in the Battle of Alesia.

Following the loss against the Gauls and the subsequent partial sack of Rome, the Romans wasted no time in recovering to resume their expansion within Italy. The next 70 years would see Rome once again on the battlefront against the Samnites to the south. The first (343 BC – 341 BC) and second (327 BC – 304 BC) Samnite wars eventually led to the annexation of Samnite territory and the establishment of Roman colonies. A third Samnite War broke out (298 BC – 282 BC), which ultimately led to Rome facing not only Samnites forces, but also Etruscans, Gauls, and Umbrians. By 282 BC Rome had established itself as a major military power in Italy, and had most of the Italian Peninsula in its field of control.

In 280 BC, Greek colonies of Magna Graecia (region around the southern coast of Italy) who were allied with the Samnites were drawn into the fray due to the continued expansion of Rome. This led the Greek city state of Tarentum to seek help from the larger Greek nation of Epirus from across the Ionian Sea. Pyrrhus, King of Epirus, answered their plea and brought over a Greek army and a contingent of war elephants over to Italy, embroiling Rome into what would be known as the Pyrrhic War. The war lasted approximately 5 years, initially being unfavourable for Rome, but eventually resulting in heavy losses and the depletion of Pyrrhus' army. In 275 BC, Pyrrhus retreated back to Epirus, and Rome's dominance on the Italian peninsula was solidified.

DOMINANCE IN THE MEDITERRANEAN

Rome's expansion across the Mediterranean and rise in naval power occurred through a series of devastating wars which saw heavy losses for Rome and its rivals. The period, which would last over a hundred years, would see Rome emerge as the dominant power in the Mediterranean region, controlling territory as far West as Iberia (Modern day Spain and Portugal) and as far east as the fringes of the Persian Seleucid Kingdom.

Rome's introduction as a major contender in the Mediterranean occurred in 264 BC, the dawn of the first Punic War. The First Punic began when City of Messana (Modern day Messina, in Sicily) requested aid from Rome and Carthage against Hiero II of Syracuse. Carthage, being the strongest force in the Western Mediterranean at the time, responded first to Messana, forcing Hiero II to take no further action against Messana. In return for their assistance, Carthage stationed a garrison of troops in Messana. The Mamertines who controlled Messana, unhappy with the result of the Carthagian intervention, petitioned for an alliance with Rome and appealed to them to expel the Carthaginian garrison. Rome, fearing the growth of Carthage's control in Sicily, and the prospect of Carthaginian influence spreading in Italy, responded with arms. The war began with the arrival of Roman troops led by Appius Claudius Caudex in Messana. The Roman army defeated the Carthaginian garrison and their Syracusan support at Messana and marched on to Syracuse itself. Receiving no support from Carthage, Syracuse eventually sued for peace with Rome, paying tribute and taking its place as an ally.

Aside from the early battles in Sicily, the rest of the war would become a naval affair off the coast of Sicily and Africa. Carthage, being a well-established naval power, had the upper hand against Rome's non-existent navy. Rome's initial naval attempts against Carthage in the Battle of the Lipari Islands resulted in devastating losses. It was only after the invention of the Corvus, a Roman boarding mechanism which allowed the Roman marines to board enemy vessels and fight on deck, that Rome would gain the upper hand against Carthage. The victory of Rome in the Battle of Mylae, thanks to the new Corvus mechanism, would mark the beginning a series of naval victories that would put Rome in control of the sea against Carthage. After a war lasting twenty years, Rome would defeat Carthage and impose harsh terms in a peace treaty that would feed the cause for the Second Punic War.

In the years that followed, relations between Rome and Carthage were tense at best. It was not long before a Second Punic War would break out, featuring some of the greatest generals the Mediterranean has seen. The war began with Hannibal Barca (son of Hamilcar Barca, one of the leading commanders of Carthage during the First Punic War) attacking the city of Saguntum (modern day Sagunto in Eastern Spain) which had close ties with Rome. Hannibal then raised an army in Iberia, which is estimated to be composed of over 102 000 troops and a contingent of 37 war elephants. He would famously march his army north through Iberia and Gaul, crossing the Alps with his army and war elephants, arriving in northern Italy by the spring of 218 BC. Rome, in retaliation, mustered an expedition to Iberia, and crossed the Mediterranean.

Hannibal, for the following years of the war, took control of most of the Italian country side, defeating the Romans again and again at the Battles of Nola, the First Battle of Capua, Silarius, Hedonia, Numistro, and the Battle of Asculum. In 216 BC, shortly after the defeat of Rome in the Battle of Cannae, Philip V of Macedon allied himself with Hannibal with the intention of expanding his power and control west towards the Italian coast. The alliance was shortly discovered and caused alarm on an already stretched and struggling Rome. By 214 BC, Philip V of Macedon, invaded and besieged Apollonia, a coastal city on the Adriatic fiercely loyal to Rome. The war with Macedon ultimately ended, with Rome keeping Philip V pre-occupied from aiding Hannibal with an expeditionary force to Greece.

In 210 BC Rome's fortunes turned after a Second Expedition to Iberia lead by general Scipio Africanus culminated in the successful capture of Cartagena, the center of Carthage's power in Iberia. Hannibal's Brother Hasdrubal Barca, seeking to join his brother in Italy, passed through Iberia and clashed with Scipio's expedition. By 206 BC, Scipio Africanus defeated the armies of Mago Barca, Hasdrubal Gisgo, and Masinissa, ultimately destroying Carthagian control in Iberia. This would hinder Carthage greatly in the war, no longer being able to support troops on the Iberian coast.

Rome however, was still unable to defeat Hannibal in Italy, facing various stalemates and losses attempting to reclaim cities across Latium. In a desperate attempt to threaten the city of Carthage itself, Rome assembled an expeditionary force to Africa. Scipio Africanus, well known now for his victories in Iberia, was given command to lead the African expedition and landed near Utica in 204 BC. Shortly after landing, Scipio would destroy the combined Carthaginian and Numidian army waiting for them.

After this a brief armistice occurred, and negotiations were opened between Rome and Carthage shortly after Scipio's defeat of the Numidians. Hannibal was recalled from Rome, and met personally with Scipio Africanus in Carthage. Rome however, distrusting of Carthage due to their breach of earlier agreements after the First Punic War, was reluctant to accept a peace treaty. It was not long before negotiations were ended and hostilities resumed. Scipio defeated Hannibal in the Battle of Zama, ending the Second Punic War.

Rome's dominance in the Mediterranean would further be solidified with a series of wars against the Macedon and the Greeks. In 200 BC Macedon began to claim territory belonging to mostly independent Greek city states. The city states, most of whom forged alliances with Rome during the Punic wars, turned once again to Rome for help against Macedon. Rome, eyeing Macedon and its possessions, gave Philip V an ultimatum: for Macedon t0 submit and become a Province of Rome or to face further conflict. Philip refused, and Rome declared war on Macedon once again, beginning the Second Macedonian War. Under the leadership of Titus Quinctius Flaminius, the Macedonians lost during the subsequent major Battles of Aous in 200BC and Cynoscephalae in 197BC. Ultimately, Macedon lost to Rome, being forced to sign the Treaty of Tempea, where it lost its claim to territory in Greece and Asia and had to pay a indemnity to Rome.

During the resulting power vacuum in Greece after the defeat of Philip V and Macedon, the Greek city state of Sparta gained power. Sparta, hoping to fill the void in Greece and seeing the potential for expansion in the Peloponnese, started to assert dominance, enforcing their rule in Argos which they had gained during the Second Macedonian War. Rome, unwilling to allow Sparta to grow further in influence and power in Greece, stepped in with the aid of the Achaean League, Pergamum, and Rhodes starting the Laconian War.

Rome would eventually return to conflict with Macedon after the death of Philip V and the rise of his son Perseus of Macedon. Perseus' actions not only boldly challenged the alliance between Rome and Macedon, but also violated the treaty signed by his father many years before. It was not long before Rome declared war on Macedon, thus beginning the Third Macedonian War. Initially the war went in favour of Perseus and he claimed victory at the Battle of Callicinus against a Roman consular army. However, under the command of Lucius Aemillius Paullus, Perseus was ultimately defeated in the Battle of Pydna in 168 BC. The end of the war brought about the split of Macedonia into four Roman client republics. Various lands formerly under Macedonian rule were annexed by Rome, and were distributed to various Roman veterans, and hundreds of thousands of Macedonians were enslaved. This would mark the end of the Macedonian Kingdom, and the rise of Rome over the former powers of Ancient Greece.

The next 50 years would see Rome fight wars against their former allies and continuous bloodshed between Romans, Greeks, and Illyrians. The Aetolian, Illyrian, and Achaean Wars would see Rome all across Greece and the Lower Balkans. The series of wars gave Rome more land for expansion and control over regions far from the Italian peninsula, and ultimately dominance in the Mediterranean.

THE GALLIC WARS AND THE HEART OF GAUL

By the late Republic, the expanse of the Republic of Rome reached far west across the Iberian Peninsula, the surrounding cities of the Aegean Sea to the East, and as far south as the former lands of Carthage. Rome would now turn its gaze north into the dark forests of Germania, and the rich wilds of Gaul. The man at the forefront of this conquest would be no other than Gaius Julius Caesar.

After 50BC, Rome's power would not face any major challenges, and their dominance throughout the known world would echo thro ughout the ages. Even time itself would remember the reaches of the Roman Republic, its sign of strength, and its marks of conquest visible from every corner.

Remember Citizen, Vae Victis Et Roma Invicta!

Canada Out with a Bang at Pan-Ams

ELIZABETH SALSBERG
3A NANOTECHNOLOGY

THE BENCHWARMER REPORT

Hola again! Or perhaps I should say adiós—the Toronto 2015 Pan Am Games are at an end, with Canada finishing in style. Team Canada shattered the existing national record for total medals and gold medals ever won at the Pan Am Games with 214 total medals (77 of which were gold). The existing records, set in 1999, were 196 total medals with 64 gold.

Canada will add to this Games' total on the final day, when the women's baseball and softball teams take on the United States for gold. In addition, the Men's volleyball team faces off against Puerto Rico for the bronze.

Overall, and not unsurprisingly, it has been a wildly successful Pan Am Games for Team Canada. There have been ups and downs, records were broken, and there was certainly a taste of the up-and-comers for the Rio 2016 Games.

Notable performances include back-to-back gold by Andre DeGrasse in the men's 100m and 200m. These were thrilling races to watch, particularly the 200m where DeGrasse came from behind for a one one-hundredth of a second victory over the second place finisher. Canada also captured gold and bronze in the women's road race (cycling), while the swim team had an excellent run in the pool with a whopping 27 medals won. Cool fact: every Canadian female swimmer at the Games won a medal. Canada also made strides in boxing, where Arthur Biyarslanov won gold in a split decision against Cuban boxer Yasnier Toledo. New faces won on the water, with Benjamin Russell and Gabriel Beuchesne-Sevigny taking gold in the canoe doubles. I will pass my severely limited word count if I keep going here, but there were many, many more victories and stories to follow—CBC and the Toronto Star have decent coverage of most events, so hop on over to see what was of interest to you.

Word constraints aside, I can't publish this article without mentioning team sports, particularly basketball, in which both teams had great tournaments. The women took gold while the men earned silver—for those who missed it, here's the recap:

After mostly impeccable play through their first four games (i.e.: 3 round-robin and a gritty overtime win in the semi-final against the U.S.), the Canadian men appeared to be in good shape heading into the gold medal match against Brazil. Yet head coach Jay Triano, Anthony Bennett, and company did not have an answer for Brazil's Big Men in the final, falling short in a too little, too late comeback in the final frame. Nevertheless, it was a good tournament for the Canadians, with 18-year-old breakout star Jamal Murray leading the way against some tougher, more experienced opponents. This should be a team to watch come 2016.

On the women's side, Canada scratched and clawed its way to gold in a final, well-deserved victory over the United States. Led by the superb play of athletic basketball phenom 19-year-old Kia Nurse, Canada took a stranglehold early in the first quarter and never looked back. There was however a scary moment in the third quarter, when Nurse collided head-to-head with U.S. counterpart Moriah Jefferson. Jefferson did not re-enter the action, but after a brief trip to the locker room, Nurse got back in the game to help seal the victory. Team Canada's stifling defense, superior offensive rebounding, and quality shot selection by all on the floor ultimately won them the tournament. This year's Pan-Am gold was Canada's first ever in women's basketball. This is a relatively young but increasingly experienced group—and they will definitely be a force to be reckoned with at the Olympics come next year.

And that, sports fans, concludes the Pan-Ams and coincidentally, the Benchwarmer Report for Spring 2015. Best of luck with final exams—and see you all next term!

On the Shoulders of Giants

BRIGITA GUBINS, SHERWIN KWAN
1B ENIVROMENT, 4B MECHANICAL

Katherine Johnson

NASA is an organization run by the joint efforts of many, many people. While astronauts often become the poster children for space exploration, the individuals behind the scenes do not always receive the credit they deserve for their Herculean feats of engineering and creativity. Wernher von Braun is known as the man who brought humanity to the moon; however, a name most people do not know is Katherine Johnson, born Katherine Coleman. She is the African-American woman responsible for calculating the trajectory of the Apollo 11 lunar mission and Alan Shepard's inaugural NASA space flight, and working on the emergency backup procedures to help bring the famous Apollo 13 mission astronauts back to earth.

Johnson had shown an affinity for mathematics all her life, and unsatisfied with her career as a teacher at the age of 35, found a job as a "computer" working for the National Advisory Committee for Aeronautics (later known as NASA). Johnson worked with a group of women—whom she has referred to as "computers who wear skirts"—whose primary task was interpreting data from the black boxes of aircraft and carrying out very precise calculations. Johnson's "big break," as it were, came when she was temporarily assigned to an all-male flight research team. Her knowledge of analytical geometry helped her advance in a field where racial and gender barriers had always existed, but in her own words, she just ignored them. She outright asked to be included in editorial meetings (where no women had been before), citing that she was more than qualified and belonged there. When digital computers were first used to calculate John Glenn's orbit around the earth, Johnson was called upon to verify the data.

Katherine Johnson left behind a legacy at NASA, having co-authored twenty-six scientific papers, and was given credit as a co-author at a time when women were not listed as formal contributors. She received numerous awards from NASA for her pioneering work in navigation problems on the Mercury and Apollo missions, and continues to be a role model for women, especially women of colour, in STEM fields.

James Clerk Maxwell (1831-1879) was born in rural Scotland and, after his mother's early death, was raised by a single father. His childhood is almost stereotypical for a "genius"—growing up, he was rather socially awkward and endured bullying in school, but his dad saw that he had an unusual curiosity and encouraged him to keep going. By the time he was done high school, his peers had started giving him grudging respect—somehow this weirdo was winning academic awards and writing scientific papers.

Maxwell started university at Edinburgh, but soon he transferred to Cambridge. It was a time of great change in physics—Michael Faraday had recently proved that electricity and magnetism were related, and Joule and Mayer (see OTSOG April 1st) had just discovered the law of conservation of energy. In 1854, Maxwell completed the Tripos, the infamously tough exams for graduating math students. Within a few years of his graduation, he had a made a name for himself in four different fields.

First, he published an optics paper. In an experiment with multicoloured tops, he noticed that if you spun it fast enough, the colours would combine and you would see yet another colour. He concluded that white light was a combination of the three primary colours red, blue, and green.

Next, he published a paper on astronomy. He showed, using Newton's laws, that Saturn's rings couldn't actually be a single solid structure, but instead were an illusion caused by a large number of small objects orbiting around Saturn. This was confirmed a century later by NASA's Voyager space probes.

By extension, if Saturn's rings were actually made of many small objects,

Johnson calculated the trajectories of NASA spacecraft.

Maxwell thought, perhaps gases also consisted of many atoms, with heat being merely the kinetic energy of these atoms. The kinetic theory of gases was not a new theory—Daniel Bernoulli had proposed it a century earlier. But Maxwell set to work to create a formula determining the probability that a gas molecule would have a certain velocity. This, after further refinement by Ludwig Boltzmann, resulted in the Maxwell-Boltzmann distribution and gave birth to the bane of many a Nano student, statistical mechanics.

Finally, he published a paper discussing electromagnetism. At the time, most scientists thought magnetism was just a force acting at a distance. But Faraday observed magnetic fields with lines of force—this suggested to Maxwell that magnetism didn't just act at a distance, but something, somehow, had to be moving along these lines. Now scientists had also been wondering for a long time how we could even see the Sun and the stars—if it was just empty space, how could light travel through it? Maxwell's stroke of genius was to realize that these two problems were related: electromagnetic radiation travelled as waves, and visible light was just one form of it. Based on the work of scientists before him, he published a number of equations to describe how electromagnetism worked. Today, these have been simplified to four formulas, known as Maxwell's equations.

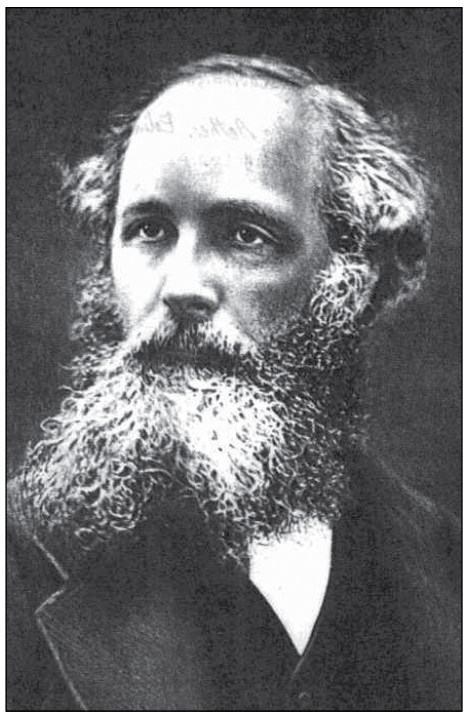
Additionally, Maxwell hypothesized that solid materials failed when the distortion energy passed a maximum level; several decades later, Richard von Mises would derive a formula for this, which is still used today to determine the force required to break a material. Maxwell also published a paper on speed regulation in steam engines, which would prove to be the beginning of control system theory.

In 1874, the University of Cambridge set up an experimental physics lab, and Maxwell was chosen to run it. His fame was such that many other professors came to hear his first lecture. Maxwell, who was prepared to teach a regular course, ended up lecturing about temperature unit conversions to some of the world's most brilliant scientists! Unfortunately, soon after his return to Cambridge, his health began to fail, and he was unable to actually implement a lab course for physics students. In 1879, just 48 years old, his life was claimed by abdominal cancer. It was left to Baron Rayleigh (covered in OTSOG last Nov. 26), his successor, to actually implement a physics lab course.

As engineers, we love inventors—people who build appliances, cars, electronic gadgets, and so on for all of us to use. We like to think that science is a means to an end, begging to be applied in real life, to make our lives easier. But often, the genius scientists we rely on were happy simply to learn about the universe, perhaps to see beauty in how it all worked. Maxwell was no exception; a deeply spiritual man who loved writing poetry, many of his private writings explored the philosophical and religious implications of his findings.

It was left to others to turn Maxwell's work into technologies. Notably, inventors would soon use non-visible types of electromagnetic radiation to deliver radio and television broadcasts. Colour photography got its start from his optics theories. Later scientists also found his work fruitful. Einstein acknowledged a debt to Maxwell, as it was through the latter's electromagnetic equations that he discovered the significance of the speed of light, which would lead to his groundbreaking work on relativity.

No matter which engineering program you're in, you've almost certainly learned—or rather, crammed last minute and have now forgotten—something which traces its roots back to Maxwell. His shadow is inescapable. And although he was just 5'4" in his life, his legacy is giant.



Maxwell is probably in your textbooks.

Seaforth, Ontario, A Town With Burning Passions

JESSICA KEUNG
2B CIVIL

SMALLEST VILLAGES

Sorry about the lack of article last issue, avid readers of the Iron Warrior. I know that the fans of the Smallest Villages in Canada Column really missed my presence but fear not, I have returned this week with another installment. This issue we are going to take a gander at Seaforth; a Southern Ontario community in the municipality of Huron East and the hometown of one of our staff writers and Fall 2015 Editor-In-Chief, Meagan Cardno.

Seaforth, Ontario is located north of London, is surrounded by good farmland, and is home to 2300 people. This town site was once a swamp where two roads intersected and was known as Four Corners and Steene's Corners. The intersection of roads was marked with a guide board which pointed in the direction and distances to other surrounding towns thus giving it the name Guide Board Swamp. It wasn't until 1793 that the town was established. The name Seaforth possible comes from the Seaforth Highlanders, a Scottish regiment, or Lock Seaforth in the Outer Hebrides of Scotland.

The Iron Warrior's own Meagan Cardno comes from the prominent Cardno family of Seaforth. The Cardno Hall located on Seaforth's Main Street was built by Alexander Cardno, Meagan's great great great great great grandfather. Cardno Hall was originally built as an opera house, but now houses many commercial and retail stores and has a clock tower. Meagan's grandmother, Betty Cardno was the first female mayor of the town and was so beloved that there is a road named after her. This small town has hosted many big names in Canadian music like Rush and Lighthouse at their very own Queen's Hotel on the main intersection. A few very notable people who are from Seaforth include Lloyd Eisler, an Olympic medalist in pairs figure skating, and RIM's former CEO Jim Balsillie.

Seaforth holds a lot of festivals and events like the Cider Fest held at the Van Egmond House in the Fall. The Cider Fest is held in the Van Egmond House where people sell apple cider, apple fritters and others goods for the entire community to enjoy. There is also the Volunteer Fireman Breakfast, held every Canada Day, where the volunteer fire fighters cook up breakfast for all the people in town. Seaforth is also home to the Seaforth Country Classic Open, a golf tournament that is part of the PGA Canada Tour. The Seaforth Country Classic Open helps raise money for medical charities around the Seaforth community and has raised over $80,000 since its inception.

There have been fires on the Main Street of Seaforth and in 2011, the only grocery store in town burned down, forcing the elderly to take shuttles to the next town over to do their groceries. In 2014, a separate fire also saw the destruction of the historic Queen's Hotel, leaving the main intersection void of a familiar building. When the students in the local high school were incorporated into the high school in a neighbouring town, the students from the elementary school moved into the high school building and the elementary school was demolished. Nothing has been built over where the elementary school once stood, and it now stands in ruins. Last year, the first Tim Hortons opened in town much to the dismay of the townsfolk, who did not want the corporation to take business away from the small mom and pop coffee shops around town.

Seaforth is the quintessential Ontario small town with a Victorian streetscape that stands as a testament to the town's rich history and embodies all the images and influences that makes rural Ontario so unique. Special thanks to Meagan Cardno for tolerating my bad interviewing skills and telling me all the wonderful stories about Seaforth.

Ancient Cures

CAITLIN MCLAREN
3N CHEMICAL

5 THINGS YOU DON'T WANT TO KNOW

Everyone, before you read (or don't read) this article, I have one thing to say to you: be grateful for modern medicine. Be very, very grateful for modern medicine. If you were born more than a hundred years ago, whenever you were ill you would have to deal with crap (and I mean "crap" in the worst and most literal sense possible) like the following:

The Everlasting Pill

Way back Victorian times, antimony was considered to be a cure for constipation and other illnesses of the digestive tract. In fairness, it was a cure of sorts, in that when swallowed, a pill of antimony induces violent vomiting and diarrhoea. This is because antimony is highly toxic. That, oddly enough, isn't the disgusting part.

Don't you hate getting prescriptions refilled? With the antimony pill, that was never necessary. Only a small amount would be absorbed by your body, and the pill would be left intact for future use. Unfortunately, as you have no doubt realized, retrieving the pill would involve searching through (hopefully) your own poop and vomit, with the intention of eating what you found. Repeated trips to the doctor don't sound that bad any more, do they?

These pills lasted so long that they could be passed down through a family for generations. It is doubtful that it would have been a part of Grandpa's estate that the kids fought over.

Boars are… useful?

Look, there's nothing wrong with enemas per se. Sure, they make immature people giggle, but I am sure that none of our readers are immature or voyeuristic in the slightest. Sometimes an enema is medically or hygienically useful. And sometimes the medieval doctor says "screw it" and pumps a solution of wild boar's bile up his patient's rectum.

Yup. Boar bile, literally up the [CENSORED]. It is not clear why this was thought to be a good thing in particular, but boars are big, strong animals and perhaps there was positivity by association. As discussed in a previous column, the ancient Romans had similar ideas about boars, and Roman charioteers would both use boar's dung on minor injuries and drink dried boar's dung like protein in shakes.

Back to the enemas: the king of France was a big fan of them, and would sometimes receive an enema while sitting on his throne. It remains unclear whether this was a lavatorial euphemism or not.

Flipping the Bird

In Elizabethan England, bird poop was a common medicine. Don't worry, it wasn't in the pill form, or in the enema form. No, it was used as burn cream. According to Elizabeth Gray's book "A choice manual of rare and select secrets in physick and chyrurgery" (and no, I don't have the slightest idea what "chyrurgery" is supposed to be, unless Gray really, really failed at spelling "surgery"), a mixture of various plants, boar's grease (again with the boars!), goose poop, and chicken poop should be mixed together. According to her, the mixture will keep for two years. Curiously, she emphasizes that the chicken poop should be as fresh as possible. So you have it, ladies and gentleman: two-year-old chicken poop is good for burns.

That's not the only use for bird poop: Sir William Read, who was Queen Anne's official eye doctor, recommended goose and chicken poop as freaking eye salve. Don't worry: he clarified that he only meant the liquidy part.

Toad Broth

The English were not an obsessive people; they liked to mix up their grotesquerie every now and then. (Yes, "grotesquerie" is a real word, meaning "bizarre, often disgusting absurdity." You're welcome.) There are so many things on God's green earth, so many more than bird poop. For example, there are toads. Why not boil a few toads alive?

According to John King in 1885, a good recipe for back pain was to boil four (4) toads alive and simmer, add butter and arnica, then apply. He admitted that this was "hard on the toads," a memorable understatement, but claimed that it was the quickest way to kill them. In so saying, he seems to have lost sight of the fact that he was a practitioner of osteopathic medicine, not a toad exterminator.

Another idea from the 1600s was to rub a tumour with a dead man's hand until the tumour got hot, which would make the tumour go away (presumably because it took offense).

Of course, when everything else fails, you can go back to the old standby for everything: putting a beet root or cabbage root up your fundament. "Fundament" being an old-timey word for "ass," which puts a new slant on the word "fundamentalist."

Speaking of which...

And, of Course, Exorcism

In ancient times, you could never be sure whether your illness was from having too much blood in your body or whether it was caused by a vengeful spirit. (Although a vengeful spirit giving you secret blood transfusions by night would be super crafty.) However, if a competent professional in ancient Babylon diagnosed you with an excess of spirits, you would have to find some way of getting rid of them.

Let's say that you are an ancient Babylonian who grinds your teeth at night. It's painful and annoys your wife. However, a Babylonian exorcism didn't mean the use of incense, crosses, and Latin. The opinion of the priests at the time was that your problem was caused by the ghost of a dead relative, and the remedy was to sleep beside a human skull for a week. That by itself doesn't get rid of the ghost: you should also kiss and lick the human skull seven times every night.

Honestly, that will annoy your wife even more. On the other hand, it would probably work fairly well:

Dead Uncle Bob: "Wooooooooooo!"

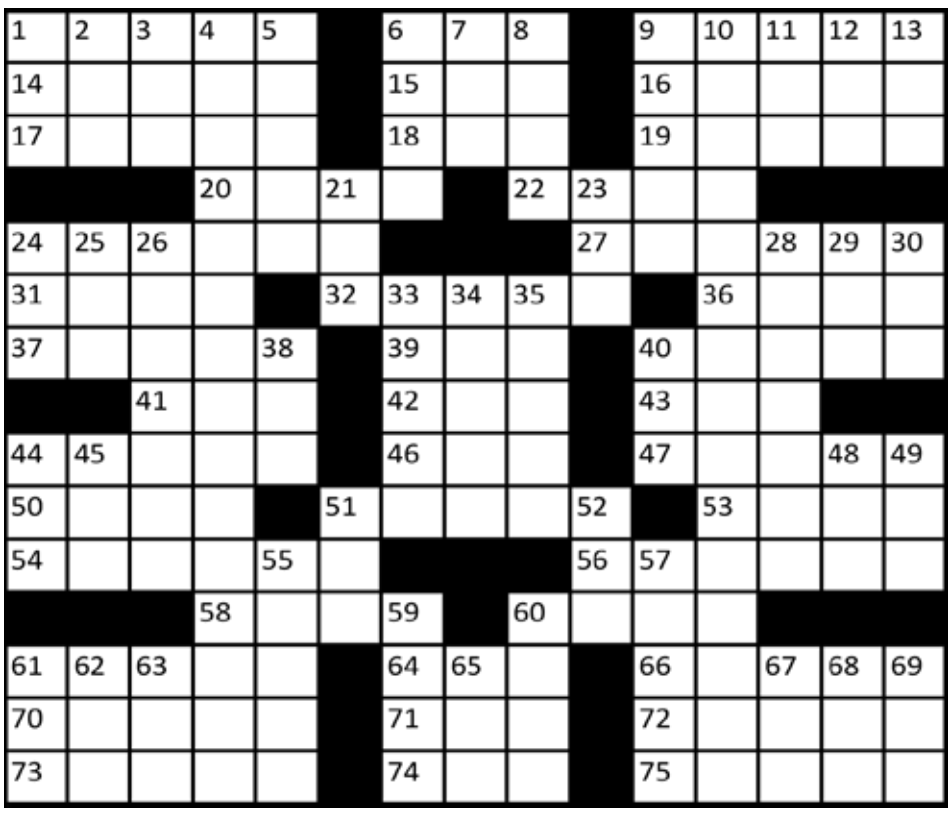
You: "Oh pardon me Uncle Bob, I'm just gonna start making out with this DEAD HUMAN SKULL. Look at meeee, I'm slobbering all over it!"

Dead Uncle Bob: "You're messed up, dude. I'm outta here."

The Iron Crossword

Celebrate Because Classes are Over!

CAMERON SOLTYS
2B MECHANICAL



Across

1: A joyous celebration
6: Computer program that acts like a human
9: A baker's fashion requirement
14: Old English word for realm
15: Before the present
16: A continuous section of one thick masonry
17: Suffix indicating belief in a government system
18: A flammable liquid placed on roads
19: Societies of college men famed for parties
20: The eggs of a grade school infestation
22: FCC notice to illegal radio transmitters (abbr)
24: Artificially mimicking tradition or culture
27: _____ shrub, or Rose of Sharon
31: Responsibility
32: A number that has only two factors
36: Snake-like fish (pl)
37: Famous singer who also narrates children's television
39: "Book of ____" post apocalyptic Western
40: A location on campus where one might go to be productive, or not (2 words)
41: A gas frequently observed at 101 kPa
42: Central Europe energy market (abbr)
43: In Igbo culture, a mystical life-force
44: In insects, an intermediate stage
46: The spectacular deaths of stars (abbr)
47: To look though items that are not yours
50: Fiftieth year of Queen Elizabeth's reign, to a Roman
51: You should be able to drink 40 of them
53: _____ of Man
54: "__ ____ existence" (2 words)
56: To move back from a previous position
58: The sound made by pouring liquid
60: A game for both boring people and sadists
61: A citizen of the oil capital of the world
64: Police officer in rural Ontario
66: Airport that facilitates the annual neglect of a particular child
70: Biblical son of Abraham
71: Store with a giraffe for a mascot (abbr)
72: Appropriate formalwear for Orientation Week dances
73: A special version of a video game that costs extra (abbr)
74: A dictionary produced by the world largest university press
75: Pitchers with oval bodies, flaring spouts

Down

1: An affirmation
2: Art museum in the city of 66 across (abbr)
3: LA band that started the Swing Revival movement (abbr)
4: Holiday, later in the US than in Canada
5: Mythical beasts of the Himalayas
6: Winged mammals
7: Euphemism for the CIA
8: Ripped, often into two pieces
9: Very bad or unpleasant
10: A visual display that often occurs during important national occasions
11: Semiconductor manufacturing process involving heating silicon wafers rapidly (abbr)
12: Internet slang for an inefficient method of data entry (abbr)
13: Console that debuted Zekda (abbr)
21: Your choice between these options (abbr)
23: A catastrophic reduction of oxygen levels in the worlds oceans (abbr)
24: "This land was made ___ you and me!"
25: Ogre-like devils of Japanese folklore
26: Also known as "Money Plants"
28: French abbess who secretly married Pierre Abelard
29: Short for part of the official name of Puerto Rico (abbr)
30: The official publication of the International Academy of Sex Research (abbr)
33: Maker of a candy that is attractive to aliens
34: ____ Woods, voice of 1950 Cinderella
35: A party, or an appliance used in baking
38: Default file extension of OpenRaster files
40: Advanced mathematical machines designed for home use (abbr)
44: Medical device that holds an unconscious person's airway open (abbr)
45: One with diplomatic immunity (abbr)
48: Used to describe objects that have a large amount of 67 down
49: Often euphemised as #1
51: A group of mercenaries intent on the destruction of their doppelganger opponents
52: A Sanskrit title of veneration
55: She went though several growth spurts
57: Indicates performing of an action in chat
59: BASIC command to move to a line
60: Tater
61: The symbol used by the *Schutzstaffel*
62: Finance minister of "The Land of the Rising Sun"
63: A fancy term for "Beta Testing" (abbr)
65: A ___fix
67: Increments annually
68: Data container that can be unpacked by a famously free software
69: Group that looks after undergraduates of the green persuasion (abbr)

Sudoku

#2015-10

CAMERON SOLTYS
2B MECHANICAL

Easy

	2	9			4			
		3	5					7
			7	6		3		9
	4		9	2				3
	1			5			4	
3				4	7		6	
6		5		8	3			
2					9	7		
			6			2	3	

Medium

	6			3				
2	7	1	8	5	6			
				4	9			2
1	9					6		
		2				9		
		7					2	5
3			4	7				
			2	8	3	1	4	9
				9			7	

Hard

		4	7	5				
	1			9	2			4
		5						
	9		6	2			4	8
4	2			8			6	1
8	7			3	1		9	
						8		
1			2	7			3	
				6	3	5		

Solutions for previous crosswords can be found on *The Iron Warrior*'s website at *iwarrior.uwaterloo.ca/distractions*.

THE IRON INQUISITION

Jessica Keung, 2B Civil and Vince Magas, 2B Management

"How many exams do you have?"

"Around 8 bottles of wine worth"
Stefanno Da Silva, 2B Management

"A lot of Starbucks runs worth... #Basic"
Mike Cottenden, 2B Management

"10 coffee after parties"
Cyrus Wu, 2B Civil

"0 all nighters"
Srineetha Maddineni, 2B Management

"More than the number of hours I sleep every night"
Abdullah Barakat, 2B Mechanical

"One and not stressed at all"
Leila Meema-Coleman, 4A Mechanical