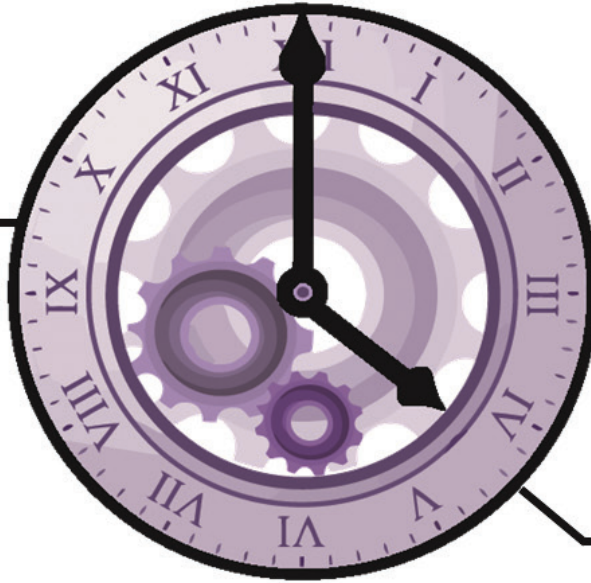


THE IRON TIMES



WELL THAT MONTH WENT FAST

THE CARLETON STUDENT ENGINEERING SOCIETY'S OFFICIAL PUBLICATION

OCTOBER 2013



THE SHIFTY SIDE OF FROSH
PG. 5



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MIDTERM CRISIS EDITION



KEEP
CALM
AND
VISIT
LEO'S

HOW TO NUMB THE PAIN OF LIFE
(AND COOK A DELICIOUS ATLANTIC SALMON! - PG. 3)

Warning: This newspaper may contain offensive material and should not be read by people who are easily offended. All opinions expressed within The Iron Times are solely those of the writers and contributors, and do not reflect the views of CSES unless indicated otherwise. This paper is jestful and satirical in nature and is not intended to be malicious in any manner.



EDITORIALS

YOU NEVER FORGET YOUR FIRST LARP

From the Desk of the Editor

I'd Rather Be in Rivendell

Allan "Bass" Bassi

-AERO II-

Midterms are fast-approaching, and as I stay up late to finish the most recent Fluids homework, I find myself straying. Not physically straying from the computer (unless I am having some gnarly cravings for the fridge to satisfy), but emotionally... mentally! You see, I have a medical disorder called Chronic "Oh-My-God-If-I-Do-Not-Do-Something-Fun-Once-Every-Four-Hours-I-May-Actually-Develop-Hemrhoids" Syndrome.

It's a disease which affects many of us in engineering (the curse of creativity, maybe?), but nobody has the same method of treatment. Whether you are drawn to papercrafts, weightlifting, knitting, or aggressively playing Bingo, everybody has an activity which unleashes their inner geek. I know that I'm a die-hard Tolkien fan, and 9/10 times I'd rather be prospecting the depths of the dwarven mountainhome of Erebor than doing multivariable calculus. Or perhaps – on the night in question – my inner Chris Hadfield takes over, and I daydream of playing rummy on the ISS with a few cosmonauts. All it takes is the inception of one of these ideas, and I can't physically stay in my boring life.

I hop on to *Lord of the Rings Online*, *Dwarf Fortress*, *Sleeping Dogs*, *Space Station 13*, or *Rome II: Total War*, and before I know it I am commanding the Carthaginian Legions against Ptolemaic Egypt, transformed into a changeling alien who has stowed away on a spaceship with malicious intent, or working undercover as a cop in gang-infested Hong Kong. This escapism has always served me well as a fairly studious child/teenager/man-child. The two-hour break I take to land a rover on the Mün in *Kerbal Space Program* recharges my sanity enough to do four more hours of CCDP (just kidding, I'd rather get a chemical vasectomy).

But how do we balance these urges with the ever-increasing weight of schoolwork? Should we risk destroying our hobbyist Dark



Passengers (God, even dropping that reference reminds me how shitty the *Dexter* finale was), and trying to devote our minds 100% to schoolwork? I'm not so sure. Because the reasons that many of us are drawn to our hobbies are the innumerable ways in which they reflect on who we are as engineers. I enjoy rallying the Spartan armies to march against Athens because I am presented with dozens of subsystems to tweak and control to my liking. I enjoy *The Last of Us* because the dialogue-driven story, and scavenge-for-supplies gameplay makes me feel like my year in the Scouts, and watching three seasons of *Survivorman* prepared me for more than sitting at a desk and CAD-modelling bathtub plugs. Why would I spend hours recreating a functioning sewer system for my city of dwarves to dump refuse into after holding out against a powerful goblin army? Because I am a goddamn engineer.

I have a good friend back in Hamilton who has an encyclopaedic knowledge of *Harry Potter*. She lives and breathes the series; she could tell you the pattern on Hermione's panties during Christmas in The Goblet of Fire. But she is also one of the sharpest, most brilliant students that I have met, and you see that same encyclopaedic fervour come through when she is acing chemistry or maths. My younger brother could tell you the height, weight, and favourite late-90s alterna-

tive rock band of any NFL/CFL player, and when exam time came around I watched him channel that same autistic-savant memory and learn the history of 20th century Canada in an hour.

At the end of a multi-hour gaming binge I don't have much to show for it. Sure, I progressed 11% through the storyline, but as far as tangible effect on the real world goes, I've only been flipping binary switches in my computer. The world is no different when I stand up to go back to homework than it was when I sat down to kill Seath, the Scaleless Dragon of the Crystal Archives. What has changed is all in my mind. Maybe I've been conditioned by a tech-driven society to only feel accomplishment from virtual feats, or maybe I realize that my chances of slaying a dragon in River Building are slim, but I find escapism a necessary step in my learning process.

So whether you are an avid D&D player, the best unicyclist in Ottawa, a rabid beard enthusiast, or just a really, really big *Game of Thrones* fan, just remember that your obsessions are a part of you. They define the way you approach problems, your methodology when learning, and your social eccentricities while networking. Have you ever talked to someone who isn't passionate about anything and just meanders through the motions of life? They fucking suck.

EDITORIALS

SWEET, NATURAL AMPHETAMINES



Mid-Autumn Crisis

Jasmine “404” Shaw
-BMED II-

I don't know where to begin.

What with struggling with juggling mid-terms, labs, assignments, and the Great Sweatpants Debate, I am in desperate, dire need of a Caribbean, all-inclusive escape (anyone want to be my travel buddy?).

The transition from first year to second year was much more drastic than I expected. Loaded with assignments beginning the first day of classes (as opposed to like, the third week, in first year), I cannot help but reminisce about those leisurely ECOR 1010 lectures, featuring our supreme overlord, McRae.

So what does one do when they find themselves amidst a Mid-Fall Crisis? Completely let your academic responsibilities slip? Give up on your social life and get drunk with your imaginary friends instead? Or just #yolo it and live off of caffeine pills and never get more than 49.38 minutes shut-eye per night? This is the deadly, turbulent triangle of choice in which I am currently stuck.

Now, I don't mean to get your hopes up. I am not here to give you advice on how to be productive. In fact, I'll be doing the opposite. I am procrastination's most loyal servant, and I am here to share with you verses from the book of How to do everything and anything but what you should be doing.

1) Eat. Convince yourself that you have an Omega-3 deficiency and cook yourself a fancy, fresh, Atlantic salmon meal, coated in lemon juice and sprinkled with seasoning. Or, spend hours on the perfect spaghetti sauce so that you can freeze it and have homemade pasta when you're feeling something a bit more elegant than Heinz tomato sauce. You could even start a garden so that you can have homegrown tomatoes, onions and peppers in your spaghetti sauce.

2) Drink. This should be a given. We as engineering students tend to gravitate towards Ollie's, as opposed to our Thermodynamics P.A. session, because at the time, beer is so much more alluring than

refrigeration cycles. And of course, it helps quell any and all worries about the numerous tasks we should be focusing on, rather than wasting time and money over those damned mini pitchers.

3) Interwebs. Seriously, need I say more? Anything and everything you could possibly need to help distract yourself from what you should be doing can be found on the Internet. Be it innumerable hours of cat videos or twerk fails, Youtube's got it. If you're looking for an environment filled in which you can scroll aimlessly for hours, yet accomplishment so much, hit up Facebook. Seriously, if you look hard enough, you can probably dig up some serious dirt on people from when they were an ugly, pimple-infested, pre-facial hair tween. And then there's Twitter. I believe Twitter may be the biggest of all of these culprits, because you can't actually accomplish anything. Twitter basically serves as a giant network of people complaining about their lives via social media, because they're too lazy to transform those negative thoughts into something creative... like poetry! (That shit's the bomb). Despite the 140-per-tweet word limit, it really is not that hard to waste countless hours bitching about your professors, exes, parents, and Flight-suit Communist Party.

Well folks, there you have it: the three simplest and most effective methods of achieving nothing. Hopefully you haven't taken this article too seriously, in which case, I leave you with the following disclaimer:

The Iron Times is not responsible for any of the following:

- One's failure of any course
- One's exponential weight gain
- One's visit to the hospital for self-induced blindness by staring at a computer screen for 9 hours straight
- One's \$10,000 cost for removing the #YOLO tattoo they got inked on their forehead.

8 Engineering Myths

Courtney “Garburator” L'Arrivee
-MECH II-

Before stepping into the shoes of an engineering student – and by that I mean walking into my first exhilarating lecture: ECOR 1010 – I heard some crazy stuff from outsiders about the engineering world. The goal of this article is to do some myth busting for you first years.

1. You'll be the only normal one.

Did you ever think you'd be the only one that's not a total weirdo? Well, you're wrong. There is no single normal person. If you're crazy enough to associate with engineers then you're already the weirdest of weird. That's what makes C-Eng so fun!

2. Engineering is really hard.

Yeah. If you never go to class. Or open a text book. Or don't hand in your assignments. Or forget to show up for exams. Or act like a student in any way. Seriously, if you work you'll do just fine.

3. Boys, there are no girls in engineering.

There are two. And neither of them wants anything to do with you.

4. Girls, you will get a boyfriend.

Although there may be more boys in your classes than you've known your whole life, they're just the same as all of the other losers you already know. Except that they love each other, and I guess with so few girls around they have to be a little less picky. But seriously, they're so into each other that if all the girls left in the middle of an orgy they probably wouldn't even notice since they hadn't been paying any attention to the girls anyways.

5. All engineers do is drink.

Total misconception. We play games too. Beer pong. Drink. Do well on a test. Drink. Fail an assignment. Drink. Find funny prof habits. Drink. See who has the best liver. Drink. Drink. Drink.

6. None of your profs can speak English.

Your arts elective prof usually can.

7. All engineers are introverted and shy.

Nope. Only the ones you'll never meet.

8. You are Tony Stark.

Okay, this one isn't a total myth. You definitely are Tony Stark except you have to go by a different alias. Unfortunately, we can't all have that kickass name.

Guidance Counselor: Jasmine Shaw

Campus Therapist: Allan Bassi

Academic Advisors:
changechangechange

THANKS

To all of our faithful readers - and contributors - we give our fullest gratitude. The Iron Times is a fully student initiative. We have homework, labs, and jobs, but we care so much about giving you funny bullshit to read that we do it anyway.



NEWS

WANT CHEMICAL WARFARE? BREATHE IN BEIJING

And Death Rode Through the Fog

A brief history of chemical warfare

Connor “Birdbath” Buott

-AERO II-

We as a society have always had a strange hypocrisy towards murder. It often matters not why an individual was killed, but by what means. In less civilized times men would settle their differences with their fists, then swords, then guns. Even today, killing in self-defense (or in offense, as the George Zimmeran trial proved) is still legally acceptable.

And yet, weapons of mass destruction: Nuclear, Biological, and Chemical weaponry, are considered unspeakable. Perhaps it is because those killed are often innocents, women and children. But American bullets and bombs have killed over hundred thousands of civilians in Iraq, for example, tenfold that of actual insurgents. Perhaps it is because weapons of mass destruction use the lives of many as a means to satisfy the goals of a few. Or perhaps it is simply the fear of perpetual escalation ending in oblivion. In any case, my musings aside, I felt it fitting with the Syrian gas attacks still fresh, to explore the history of one of the most basic WMD's: chemical warfare.

The earliest recorded use of chemical weapons dates back to China around 1000 BCE. Sun Tzu's "The Art of War" details the "burning of balls of mustard and other toxic vegetables," the smoke of which could be pumped into enemy tunnels using bellows. In India circa 400 BCE, a Hindu treatise forbids the use of poisoned arrows, suggesting instead poisoning the food and water supplies of enemy. Alexander the Great encountered these poison attacks during the Indian battle of Indus Basin. Around the same time, the Spartans and the Greeks used mixtures of burning pitch and sulfur to attempt to incapacitate their enemy before attacking them.

Skip forward almost 3000 years to 1915, when at the Second Battle of Ypres, the 1st Canadian Division along with French and British troops encountered the first modern use of chemical warfare, in the form of chlorine gas. The German troops had to manually open the canisters upwind of the Allied lines, injuring many of their own troops in the process. Having never seen this form of attack before, the Canadian troops did not retreat from the oncoming wave of gas, and suffered massive casualties as a result. From Captain Hugh Pollard's Memoirs:

"Dusk was falling when from the German trenches in front of the French line rose that strange green cloud of death. The light north-easterly breeze wafted it toward them, and in a moment death had them by the throat. One cannot blame them that they broke and fled. In the gathering dark of that awful night they fought with the terror, running blindly in the gas-cloud,

and dropping with breasts heaving in agony and the slow poison of suffocation mantling their dark faces." Gas attacks, mainly chlorine and mustard gas, were used numerous times by both sides during World War 1. Infantry, who were not equipped with gas masks, developed the method of urinating on scarfs and socks and placing them over their mouths, so that the ammonia could neutralize some of the chlorine. Officially, 1 176 500 casualties and 85 000 deaths are attributed to chemicals attacks during WW1.

During the Russian Rebellions following WW1, the Bolsheviks employed poison gas to kill rebels hiding in forests in 1921. Poison gas was used in few other instances during early 20's, and in 1925 16 of the worlds major nations signed the Geneva Protocol, which banned the use of, production, or transport of chemical weapons.

This treaty was tested when World War Two again tore the world apart. In 1938 Emperor Hirohito himself ordered the use of chemical weapons, particularly Red Nausea Gas and Mustard Gas, by the Japanese military against Chinese communist troops and civilians.

Germany changed the game of chemical warfare in 1939 with the discovery of nerve agents, first Tabun and then Sarin, the chemical that is suspected to have been used in Syria. Nerve agents attack the neurotransmitters connected to the brain and organs, causing spasms, muscle failure, and within a few minutes, death by respiratory failure.

Although Sarin and Tabun gas was developed by Germany's largest weapons manufacturer IG Farben, the government elected not to use them during WW2, fearing retaliation by the Allied forces. In particular the Americans, who had been developing their on chemical weapons. There are estimates that over 60,000 US soldiers were used as human test subjects between 1940 and 1945 in order to develop new forms of chemical weapons.

Entering into the Cold War, nuclear Armageddon was on the forefront of most government's minds. But there was still immense amounts of money and resources being devoted to chemical and biological weaponry.

In a recently unveiled top secret CIA operation codenamed MK-Ultra, it was reveled that between 1953 and 1970, various forms of chemicals were "extensively tested at all social levels, on Americans and foreigners, without their knowledge". In particular, prisons, mental institutions, and hospitals were prime targets for chemical experimentation. Although Senator Edward Kennedy led hearings that discovered 86 Universities or institutions and 185 non-governmental researchers involved, the true extent of MK-Ultra remains classified.

In 1961 during the Vietnam War, the Kennedy administration authorized the use of the chemical Agent Orange, a highly carcinogenic herbicide, to be sprayed over crops in northern Vietnam. Those aerial sprayings destroyed more than 9 million acres of land, and killed 1000 people. Agent Orange also caused birth defects in thousands of children for many decades in Vietnam.

Bringing us closer to modern times, the Iraq-Iran conflict in 1980 saw the use of mustard gas and tabun nerve agents delivered by Iraqi bombers over Iran. Approximately 5% of all casualties from this conflict are attributed to chemical weapons, or approximately one hundred thousand people. Shortly before the war ended in 1988, Iranian forces attacked an Iraqi village with multiple nerve agents, killing five thousand people.

Since the 90's, western countries have made destroying all chemical weapons a priority. The US developed operation CHASE, which involved sinking warships laden with chemical weaponry into the ocean. Thousands of tonnes of mustard gas and nerve gas were disposed in this way.

In April 1997, the US ratified the Chemical Weapons Convention, which banned the development, testing, or possession of chemical weaponry, and required all existing stockpiles have been destroyed. As of right now, experts estimate that 90% of the chemical weapons stockpiles in Europe and North America have been disposed.

This brings us to 2013. A number of Middle-Eastern countries posses chemical weapons, including Iran, Iraq, Israel, Libya, Egypt, Pakistan and Syria. Of those countries, Syria and Israel have not joined the Chemical Weapons Convention, which required the destruction of all chemical weapons by 2012. Syria in particular is thought to have one of the most advanced and heavily industrialized chemical weapons programs in the middle east.

Today, chemical weaponry of all forms has been duly banned by almost every country in the world. However, due to the simplicity of manufacturing weapons like Sarin or Chlorine gas, and an effectiveness that is paralleled only by much more complicated nuclear weaponry, chemical warfare will continue to play a significant role in the ongoing turmoil that is the middle east. Like nuclear weaponry, the development of chemical weaponry has only been stalled due to fears of mutually assured destruction. Should another major global conflict break out, it is possible that newer, more effective chemical weapons will become once again an element of war. But for now, it seems the world had banded together to make sure that chemical warfare does not continue unimpeded.

NEWS

THEY GROW UP SO FAST



The Shifty Side of Avengfrosh

Cameron “Shifty” Byrnes
-CIVE I-

“Do you even shift, bro?”

That simple line began my week with a bang. And for those of you who haven’t heard of me, welcome to the club. Numerous people knew “Shifty Byrnes”, but not the true name of the man behind the strangely appointed call-sign.

But it wasn’t the shifty bearded-fellow attending the frosh activities for the whole week. No, sir. It was another engineer just like all of you who attended AvEngFrosh. And yes, I’m discounting Radioactivity’s lesser half, seeing as their frosh found their drinking buddies rather prematurely and decided that staying hydrated was more important than the awesome week that was AvEngFrosh. But for those sad fellows that decided that the frosh activities were not worth your while, or you simply could not sign up fast enough, I shall recount my time at AvEngFrosh for those few to envy (and for the ones who were not on my team, to hear the shifty side of our frosh week).

Sunday was a bit of a simple day. I went out to the Much Music video dance and met up with some of my facils and heads, to which I gloriously chanted the one liner that our team was so fond of. After saying it to a few people, I oddly received the name “Shifty Byrnes,” which caught on rather quickly. I walked into the dance and stopped in my tracks after I saw the crowd. It was a clump of Enchanted Forest frosh, barely dancing and just standing like zombies. Clearly, that was their way to party. Being in engineering, I turned tail rather quickly.

Monday came around and the facils, heads, and staff running frosh week never let us have a dull moment. The EngGames were fun to get to know your team and fellow engineers, and it was probably the only EngFrosh meal that had some sort of vegetable (corn on the cob, for those who don’t know). All safe space went out the window during the bus tour ride, as profanity and elbows immediately filled the void safe space had left behind. The bus tour was then followed by an INCREDIBLE night at Tailgators! If you were playing billiards against me, you probably lost to my epic trick shots.

Tuesday was white water rafting! For those of you who refused to pay the extra fee to go on this incredible trip, you missed out. I would HIGHLY recommend doing it to ANY new student. It was just such a blast! And some people even caught the early bus out to go to beach day, which was really awesome! There’s a sauna right in front of the beach (by the way) for future reference. If it’s ever as cold as it was this year, it’s a wise choice to chill in there for a bit.

Wednesday was a Wednesday, right? You go to Academic Orientation and you mosey on down the halls to be welcomed and introduced to the staff, right? WRONG. You do that shit in the morning, and then come out to EXPO Carleton dressed in a banana suit with handfuls of



condoms to get a freaking badass callsign. YOU DON’T MISS A SINGLE DAY! Shift Shit will happen at any moment (I can’t get that shift out of my head). And then, it was games night. We brought Cards Against Humanity and I died laughing the whole night (I mainly say that because I had shotgunned a NOS at the time and had literally gone nuts. Caffeine played a VERY important role the last few days).

Thursday is class... AND THEN MAYFAIR! MORE CAFFEINE! However, screaming for two and a half hours straight isn’t fun afterwards. Some people were lucky enough to have had sign language on the same day so they could talk without ripping their throats apart.

Friday was class... AND THEN HEADS IDOL! It may have sounded lame to some, but for those with true team spirit, you came out and joined your heads in the best singing experience ever! AND THEN (sorry, I still have that caffeine rush) it was comedy night and it was just a lot of fun. The headliner was just off his nut-butt in an insanely hilarious way. If you didn’t come, you missed out. That’s all I can say, because every time I try to write one of the jokes I ROFL.

Saturday and Sunday are the days that really made it for me. Our team “blue”-d each other (tee hee) for the market activities, trying to look like Mystique. I don’t think many people completely understood. Now, we had finally reached the best part of the week (besides Dirty Sunday): BOAT BUILDING! I had a total of five energy drinks that night (and shotgunned 80% of them) so the night was rather long for me. I jumped from tossing a ball around with a couple of facils to drawing out calculations on a paper plate. Whoever let me sleep in their car that night: I thank you oh so kindly. I forget who you are, but you are

a very awesome person. In the morning, I helped out with the garbage run and we brought the boat to the quad. Then began the long walk to the canal, hauling the boat over our heads. And to commend those that gave their humility for the race, I shall include all teams in this toast.

To Laser Vision, for designing a boat that mocked all other boats’ corkscrew capabilities. To Radioactivity, for having enough frosh to successfully pilot a boat by the end of the week. To Replication, for being the only team to have relived the rise (and fall) of the Vikings’ boat design. To Atmokinesis, for navigating half of a boat without sinking for a short period of time. To Super Strength, who proved that muscle doesn’t float. To Telepathy, for stealing Super Strengths’ steroid stash and using it to their benefit. To Immortality, for proving that after a (very) long boat race, they would still be alive. To Super Speed, for rowing all the way out to the center of the canal before realizing that the finish line was at the wall. And last but not least, to Shape Shift, for using shovels to paddle because we simply refused to have the time deduction.

I know for a fact that I will be returning next year as a facil to give next years’ frosh the same AMAZING (if not better!) time that I had. I thank the staff, the facils and the heads once again for an amazing week, and I hope to see you in school and at many hydration events in the future!

Stay shifty, ladies and gents.



NEWS

MY MONEY'S ON THE DRAGON

The New Space Race

Alex "Toe Jam" Kurkjian
-EngPhys II-

In 2011, the retirement of the Space Shuttle program marked the end of an era. No longer could NASA rely exclusively on its own resources to launch its own personnel to space, sharing Russia's Soyuz spacecraft in stead. This void has allowed for a surge in the private space industry. In addition to NASA's own spacecraft development, the creation of the Commercial Crew Development (CCDev) has allowed some of these private space companies to blossom, and produce reusable spacecraft of their own. That brings to question, who are the rising stars (pun unintended) in this growing industry? Here's a comparative list of the projects that are currently part of the CCDev program:

Dream Chaser – Sierra Nevada Corporation

- Vertical Takeoff, Horizontal Landing (space plane)
- Can carry a crew of 7
- Mass: 11 340kg (~12 000 pomegranates)
- Volume: 16m^3
- Wing span of 7m (imagine two wandering albatross')
- Estimated Orbital Lifetime: 210 days (docked to ISS)
- Propulsion: Launched into low Earth orbit (LEO) by a modified Atlas V liquid rocket. In orbit, two hybrid rockets will be used of its own independent flight capabilities.
- Landing Style: The Dream Chaser follows a lifting body design, allowing for relatively soft landings, projected at 1.5G.
- Status: In Development, with certain degrees of aerodynamic and landing gear testing complete.
- More info can be found at www.sncspace.com/ss_space_exploration.php

CST-100 – Boeing

- Vertical Takeoff, Vertical Landing
- Can carry a crew of 7
- Mass: ~10 000kg (~137 full kegs...may be enough for a group of thirsty engineers)
- Estimated Orbital Lifetime: 210 days (docked to ISS)
- Propulsion: Launched to LEO using modified Atlas 5 liquid rockets. On-board abort thrusters may also be used to boost spacecraft in orbit.
- Landing: Parachute and airbag system.
- Status: In development, with a degree of structural and safety testing complete.
- www.boeing.com/boeing/defense-space/space/ccts/

Dragon Spacecraft – Space X

- Vertical Takeoff, Vertical Landing
- Can carry a crew of 7
- Total Launch Payload Mass: 6 000kg (2 or 3 hippos)
- Total Landing Payload Mass: 3 000kg (at least 1250 platypi)

- Pressurized and Unpressurized Volume: 11m^3 and 14m^3
- Estimated Orbital Lifetime: 2 years
- Propulsion: Launched by a Falcon 9 rocket, also designed by Space X. The Falcon 9 is a two-stage liquid rocket, with the first stage being developed to be re-usable. Will be able to reach low earth orbit. Speculated mission beyond
- Landing : Parachute landing (3.5G), propulsive landing in development.
- Status: Active as a cargo resupply ship to the ISS, as well as a space lab. Crewed version still in development.
- Still curious? Check out www.spacex.com/dragon

And now for comparison's sake, here's NASA and ESA's own current development:

Orion Spacecraft – NASA/ESA (Lockheed/Astrionum)

- Vertical Takeoff, Vertical Landing
- Carries a crew of 2-6
- Total Capsule and Service Module Mass: ~22 000kg (~29 333 tubs of Balkan yogurt)
- Habitable Volume: 8.95m^3
- Pressurized Volume: 19.59m^3
- Propulsion: Launch is to be achieved using the Space Launch System (SLS), currently in development by NASA. Uses a multistage system, incorporating solid rocket boosters based on the Space Shuttle Program, as well as a first and second stage liquid propulsion. As a result, the SLS is expected to be used within and beyond low earth orbit, to potential Moon landings and asteroid exploration. That however, is some time away.
- Landing : Apollo splashdown parachute landing.
- Status: In Development, unmanned launch predicted in 2014.
- Check out www.nasa.gov/exploration/systems/mpcv/index.html

In sum, the CCDev program has initiated some rather promising developments in private industry spacecraft, one of which is already providing services to NASA as a resupply vessel to the ISS. The privatization of the space industry will also hopefully revolutionize the public access to space, potentially opening more commercial windows for space tourism, or even simply lower costs of small research groups and projects to launch scientific payloads and small-scale satellites.

Go ENG Girl!

Natalie Linklater
-PhD Student-

On Saturday October 19th, female students in grades 7 to 10 and their parents are once again going to flock to Carleton to learn more about Engineering at an event called Go ENG Girl. Go ENG Girl is designed to let younger female students catch the engineering bug from current Carleton Engineering students through fun hands-on activities. Now in its ninth running year, the effects of the program are being seen as girls who have previously participated in the program have gone on to choose engineering at the university level.

The structure of the day is simple. Girls and their parents are first assembled in Bell Theater and after a brief keynote presentation, the girls will be whisked away to participate in hands-on engineering activities while their parents learn more about what engineering can offer to their daughters. Parents and daughters are reunited at lunch and then have the opportunity to participate in lab tours. I've had the privilege to volunteer with Go ENG Girl for a number of years now and the magic of the program is that you can see a spark in the younger students' eyes when they grasp the concepts behind the hands-on activities. As an engineering student at Carleton, Go ENG Girl offers a unique opportunity that allows you to inspire the next wave of young female engineers.

If you want to learn more and get involved, CU-WISE is currently looking for volunteers to help run the activities and give tours, all training will be provided. To learn more email wise@carleton.ca.

CALL FOR SUBMISSIONS

Think we can't write worth a nickel?

The Iron Times is always happy to accept new content from talented (or even sub-par) writers, poets, lyricists, gymnasts, or photographers.

Just send all content to:
publications@cses.carleton.ca

And look for it in the next issue!



NASA's making futuristic craft and I'm just sitting here watching Mulan

NEWS

BUT MY FEDORA MATCHES MY NECKBEARD!



Requiem for a Team: Addiction to Virtual Hats

André Riel

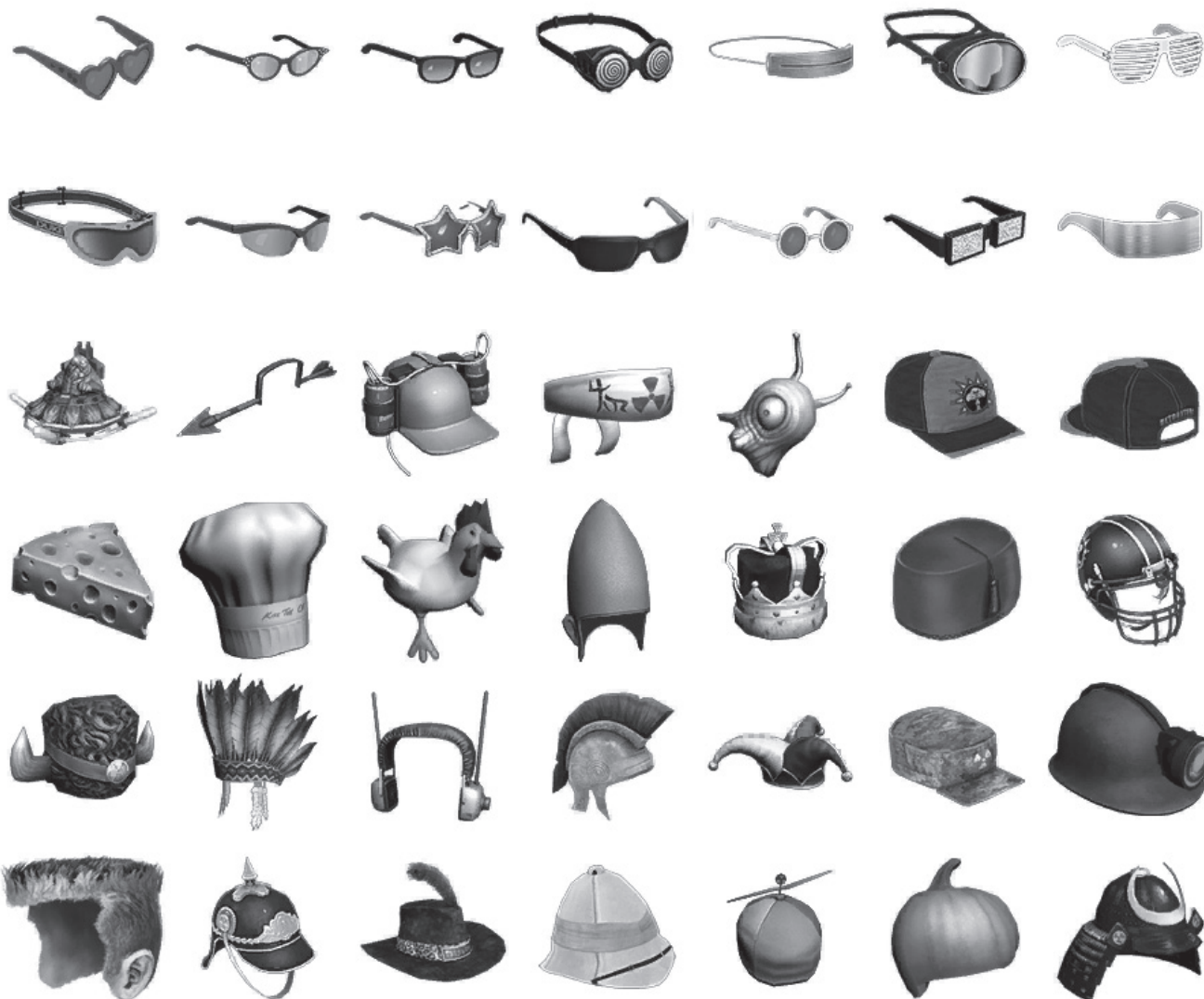
-AERO III-

This summer, I got back into the extremely popular Free-To-Play game: Team Fortress 2 (TF2 for short). Now that I am back to school, it is my number one way to connect with friends back home and to amuse myself when I am bored. This left me wondering recently, why do I love TF2? What is actually so great about it that it leaves gamers “comme moi” enslaved to our ruin? The answer is not so simple.

As many family members have stated to me, it looks quite unimpressive. It is a team-based first-person shooter game just like all the big selling games out there. Does it have amazing graphics to set it apart? Not at all! In fact, the graphics of the game are extremely cartoonish. Does it have a campaign like COD and such games for those who aren't multiplayer fans? Nope. So what is it that makes it great?

The first and probably most obvious answer is that it is free. What? FREE? NO WAY! I know right? Free-To-Play games have taken the gaming world by storm because it lets you try out the game without any risk. If you don't enjoy it, who cares; it didn't cost you anything. Team Fortress 2 was one of the games that helped bring Free-To-Play to the forefront of the gaming community; Kudos to its creator, Valve, in that accomplishment. Also, all their updates are free as well, no 12 DLCs for 20 bucks each on TF2. Remember the CUSA motto: FREE SHIT'S GOOD SHIT!

Next, the game itself is really well done. Unlike a lot of first person shooters, it really is team-based. In COD, if your whole team used SMGs, you can still easily win. In TF2, if you are in a team of heavies, the other team need only a few good snipers and you are done for. Players need to work together. Every class has a purpose and is useful in the correct hands. Also, the maps and game types all offer different ways to have fun and different advantages to each class. I think the shining achievement of this game is the weapon choice. When you first start playing, you are given the default weapons. As you play, you find more and more weapons, each with both advantages and disadvantages in comparison to the defaults. This means all of the weapons have their applications and can be beneficial or detrimental to your performance depending on when and how you use them.



This forces you to learn the maps and begin to evolve in your playing skill. All of this is made even more amusing by the aforementioned cartoony graphics. They mean that your character, the map and the weapons you are using all look absolutely ridiculous sometimes. Add the inside jokes that you and your friends will build and you are in for a gaming treat. Not to mention the graphics offer beautiful opportunities for epic trolling, something my friends and I live for with TF2.

Finally, we come to the part that Comrad Wojtek will hate the most, the Capitalist side of TF2; the part of the game that ironically is more enslaving than the work of our resident Flight-suit Communist Party. Team Fortress 2 has many servers where players go to trade the items they find in game or make using the crafting tool in the game (which allows you to make cool items by combining some of your unwanted loot). This has led to the running joke that Team Fortress 2

is all about hats, because hats for your characters are a hot commodity. The reason that this adds to the addictiveness of the game is that people, including myself, will spend hours trading to try to get good deals on items to eventually buy more valuable items like keys, ear buds and unusual hats. I could try to explain what all of that is, but to keep it simple; TF2 trading is like Engfrosh's trade up. You start with something lame and trade enough times until you get what you want. Its fun and you feel accomplished at the end. Who doesn't love that feeling?

What I am trying to get at is that this game is something you need to play for yourself. Once you play, you can fully understand why it is so epic sauce. TF2 is a love of mine right now and I hope some of you will come to see its beauty so I don't feel so crazy. What you should take from all this: if you are getting off a drug habit and need a new focus, start the new hip drug HF-2, Hat Fortress 2.

GALLERY



GALLERY





COLUMNS

I CAME FOR THE DYE AND STAYED FOR THE FREE BATH

ENGINEERS: AN ARTSY PERSPECTIVE

The Colour Purple

Caitlin Hart
-JOUR II-

What's purple and loud? If you answered Barney, then you are making a mistake. If you answered engineers, then you are correct.

"The color purple has long symbolized royalty, honor, bravery, Barney and loyalty, and has been adopted by engineers as a representation of their commitment to public safety and innovation." -quote from the CSES website.

Gee!! They really take their purple seriously. What strikes me the most is that they are comparing the crazy people running around EngFrosh who build boats and wreak havoc on the ByWard market to royalty.

Although, according to the Waterloo Engineering Society website, the purple tradition is in relation to the marine engineers aboard the Titanic who stayed on the ship to delay the sinking. Guess what color they wore? If this story is true, then, I must say, it is pretty noble.

Being naive I thought purpling was quite simple but when I asked an anonymous engineer they came up with this bit of poetry:

"It's tradition! It's a rite of passage. You - generally - only do it in year two and over. If you made it to purpling, you survived. It's war-paint! Based on this - though some of us have fallen - we are the strongest of the herd." Now don't go all misty eyed on me!

How does one purple? Upon my extensive research I discovered that a kiddie pool is filled with purple dye and everyone strips down and bathes in the purple. This is by far the weirdest image ever; I am now picturing every engineer I know frolicking in this purple bath.

How arts students could apply this: Well the canvas we typically paint on is... canvas, so I guess it's not too far of a stretch to paint ourselves.

Why it won't work for arts students: My clothes are too damn nice to risk getting purple all over them, so I guess my vanity would prevent me from donning the violet. Then again there are always those weird modern art people who would love the opportunity to do something different, you could also call them hipsters.



Should I try it: See above.

Similar to: Body painting has been done throughout history for tribal celebrations, wars and err... nighttime activities. I'd say this is similar to tribal things, because engineers are kind of like a tribe of people who really like physics and math.

Crazy Factor: Have you seen when engineers make themselves look like a grape? It's terrifying. Maybe it has to do with the fact that they're typically yelling at frosh or making menacing faces, but still terrifying. Aside from that really, the only crazy thing is how EVERYTHING can get purpled by the single touch of those colored people, purple toilet seat anyone?

Fun Factor: Purple dyeing parties sound like fun, what's not to like about rubbing in some purple with friends?

Is it legal: The actual painting is, what you do while purple... well that depends. Although it should be noted that whatever you do while purple will leave a mark, no seriously it's like Hansel and Gretel but instead of breadcrumbs I know where you've been because of purple handprints.

Is it healthy: Many debates on this, I find it somewhat disturbing that the recommended method of removal is bleach. Did I mention that the dye is rumored to be carcinogenic? Don't even get me started on the hygiene of roughly 30 naked people bathing in the same purple soup.

LYRICS WITH LIPOHAR

An Ode to Flightsuits

Jake "Treehugger" Lipohar
-ASCE II-

Oh that sexy jumper
Pretty, majestic and blue.
How is it even possible
To look this good in you?

Covering my body
From my neck down to my heels;
Showing off my C-Eng pride
and turning 'round those wheels

Achieving you was difficult
But so much fun was had
From partyin to representin'
I was quite a wasted lad!

Jamming out in Leo's
Throwing around some balls,
and facilitating EngFrosh;
I think I need some Halls!

But now that I have climbed
the engineering ranks
Riding the bus on Hamp day
has never been so dank!



COLUMNS

TAKES ME BACK TO THE SIXTIES

REEL STEEL

October Sky Review

Gilles "Nightstalker" Messier
-B. ENG 2013-

On October 4, 1957, the Soviet Union launched Sputnik 1, the first artificial satellite. As ordinary Americans looked up to see the new man-made star sailing across the night sky, or tuned in to hear its ghostly beeping over the radio, alarm bells rang in Washington. Sputnik not only trumpeted an unprecedented Soviet technological lead, but foretold of an even greater threat: long-range ballistic missiles that could rain nuclear warheads on U.S. cities. How, the politicians wondered, could the U.S. have fallen so far behind - and how could they catch up? In a desperate bid to beat the Soviets in space, the government began a massive campaign to encourage students to become scientists and engineers. This heady time provides the background for 1999's October Sky, one of the most sentimental and inspirational films about engineering - a sports movie for geeks.

Based on the memoir Rocket Boys* by NASA engineer Homer Hickham Jr, October Sky opens in 1957 following the launch of Sputnik. Homer is a 14-year-old boy growing up in the mining town of Coalwood, West Virginia, where a young man has only two possible futures: working in the coal mine, or escaping on a football scholarship. When Homer's football skills prove inadequate, he begins to resign himself to a life of mining coal, a path forced upon him by his father, the mine foreman. Then one day, inspired by the mounting Space Race and the advice of a concerned teacher, Homer finds another possible way out: he decides to build a rocket to try and win the National Science Fair.

The film follows Homer and his ragtag group of friends as they doggedly struggle to perfect their rockets, all while facing unsupportive and suspicious townsfolk, jeering classmates, and endless exploding prototypes. Much of the film's charm lies in its individual scenes chronicling the rocket boys' hijinks-filled quest: their first rocket blowing a hole in the fence ("uh...shouldn't we be standing behind something?"). Mixing up rocket fuel in chemistry class, only to have it set off by an errant match. Tearing up abandoned railroad tracks for scrap metal, and flagging down an unexpected train. Visiting hillbilly moonshiners to obtain alcohol for rocket fuel. These vignettes capture perfectly the endlessly resourceful, can-do spirit familiar to anyone who has ever tried to build anything in their backyard or basement. But the film's most powerful image is its simplest: Homer watching Sputnik sail overhead, just before an elevator carries him into the darkness of the mine. It is a profound statement on the power of dreams and

knowledge as a means of escape.

Cinematically, the film is an unabashedly sentimental, boilerplate coming-of-age story. Homer's conflicts with his blue-collar father and conservative school principal are predictable, as is the uplifting, tear-jerker climax. Yet the film's solid message, flawless execution, and sheer sincerity manage to entirely overcome its sappier elements, making it stand out amongst similar "inspirational" fare. It is a film to make even the most jaded viewer smile - and reach for their pocket calculator.

In terms of engineering, the film does surprisingly well: the chemistry of solid rocket fuel, the physics of rocket nozzles, and the mathematics of trajectory prediction are all well-represented. The writers did, however, make one cringe-worthy mistake. At one point in the film, a machinist inspects a nozzle burn-through on the boys' rocket and suggests they use "a better steel that can take the heat." His recommendation: "SAE 1020 bar stock", which he claims is "kind of expensive". Anyone who has taken Materials, of course, will know that SAE 1020 is a bog-standard low-carbon steel with no special thermal properties. On a historical note, the film also suggests that the ill-fated Vanguard rocket - the U.S.'s first attempt to launch a satellite - was designed by Wehrner von Braun (it was actually designed by a rival Navy team), but this may simply be an error on the characters' part. Otherwise, the film is very accurate: even the issue of Scientific American the Rocket Boys use as a basis for their designs is correct: it was published in June 1957, just 3 months before Sputnik.

Even if you have already seen October Sky*, take the time this October to watch it again and celebrate the 56th anniversary of Sputnik.

Then gaze up at the stars and dream of outer space.

* The title "October Sky" is actually an anagram of "Rocket Boys", the title of the real Homer Hickam's memoir upon which the film is based. Spooky.

* * If you haven't already seen it, shame on you! And you call yourself an engineer?

Ten Albums for Engineers

Raphael "Bluebelly" Adams
-ACSE II-

If you don't already know that music is my passion, you must not know me very well. I'm a drummer, a CD collector, a music analyst, and a fan of everything from cool jazz to death metal. My future goal, if I can't finish my engineering degree, is to go off and start a full-time band, which I think is as good a back-up plan as any.

My list of personal favourite albums is as wide and extensive as Glenn McRae's wisdom itself, but I'm going to give you guys a list of ten albums in particular that are essential for engineering students. Don't come to Carleton without them, because they will get you through every situation you will face as an engineer.

1. Vapor Trails - Rush

Confusion, anger, joy, pain, sadness, hope, love, loss, and triumph...this album encapsulates every emotion you will feel during exam time.

2. The Blueprint 3 - Jay-Z

In the third instalment of the Blueprint trilogy, the world's classiest rapper delivers a perfect example of how to stay ahead of the game without ever saying "Started from the bottom, now we here".

3. Take Off Your Pants and Jacket - Blink-182

Engineering-level humour in a 40-minute nutshell.

4. 4 x 4 = 12 - deadmau5

A ready-made dance party on a single album. Ignore the bad math.

5. Lord of the Rings Soundtrack

Epic study music!

6. Master of Puppets - Metallica

"Pounding out aggression, turns into obsession, cannot kill the battery"...unleash your anger at those nasty physics problems.

7. Paranoid - Black Sabbath

This album contains the song "Iron Man". Engineers, need I say more?

8. Flockaveli - Waka Flocka Flame

Music for poppin' bottles. Of apple juice, of course.

9. Legend - Bob Marley & The Wailers

Feel-good music for procrastinating. "Don't worry about a thing, 'cause every little thing's gonna be alright."

10. Greatest Hits - Queen

All the classic Queen anthems, including the greatest sing-along song of all time, Bohemian Rhapsody. If you don't annoy the neighbours, you aren't singing along right.

Happy listening and you're welcome.
Peace out till next time, friends.



COLUMNS

AND NOW, THE THRILLING CONCLUSION

Daemonium Ex Machina - Part Two

Gilles "Nightstalker" Messier
-B. ENG 2013-

When we finally staggered out of that lecture hall, we all looked like the walking wounded - all except this one mate of mine, Chad Maxwell, who wore this huge schoolboy grin.

"What the hell do you have to smile about?" I asked him.

"Well, Der Kommandant might be able to scare the rest of those sorry lads," he said. "But just between me and you, I've got him licked."

"What the hell are you on about?"

Maxwell said one word: "Computers."

You see, Maxwell was something of a rebel; he kept up with all the technology and trade journals and was always onto the next best thing. As it turned out, just the year before, the University had gotten its first computer, a top-of-the-line IBM 360 mainframe. Now this thing was nothing like the computers you're used to; it was a real behemoth, a mass of huge metal cabinets that filled an entire room! When they first installed it, there were no keyboards or screens; just a massive switchboard, a long row of reel-to-reel magnetic tape racks, and a teleprinter for the output. It reminded me of what I imagined the inside of a nuclear submarine to look like. To program it, you had to write your instructions line by line in FORTRAN on a stack of punched cards, and feed those into a card reader. Then you prayed to God that your program would compile - because if it didn't, the computer would spit out your cards and you had to go through them one by one to find your mistake. The computer science students were a rare breed back then, but you could spot them a mile away, scurrying between the buildings like rats clutching their precious boxes of cards. They all had long beards and looked like they hadn't seen the sun in months; I reckon they were the only students who got less sleep than us engineers. At one point some of them had gotten the bright idea to take these old metal-framed army backpacks, cut the cloth off, and strap on their card boxes with bungee cords. Once in a while you would see one huffing along like some army signalman with his radio.

Of course this was all science fiction to me at the time, but somehow Maxwell had learned all the necessary witchcraft to operate this newfangled device. He figured he could just write a program, feed it in, and get all the stress vectors in a mere matter of hours.

"I'll bet you twenty quid," he said, bold and cocky as usual. "That I can get this thing done in

three days. Two to write the cards, one to run the program. Easy!"

"You're mad!" I said. "You heard him: slide rules only! And anyways, he's going to want to see all the hand calculations; he won't accept a computer printout."

"Four days, then," said Maxwell. "One to transcribe the results. Tell you what, Fergie: give me that twenty quid now, and I'll let you copy my results. No slide rules, no calculating marathon. Just a day of jotting down the results, and you're done. What do you say to that?"

I considered myself pretty brave back then, but even I wasn't about to court McRae's wrath. I told Maxwell I wanted no part of his scheme, and we went our separate ways.

"Have it your way, then," he said, swaggering off. "You're only making life difficult."

Ferguson paused. Leaning forward, he reached under his desk and, to my surprise, produced his mythical bottle. Without a word, he poured two glasses and savored a long, soothing draught - memory lubricant, I suppose. I sat, stunned, contemplating the rare liquid in my hand - and the rarer sentiment behind it - as Ferguson leaned back and resumed his tale.

"After just two days, I seriously began to reconsider his offer. That was one of the most grueling weeks of my life; every spare moment was spent camped in a corner of the library, furiously churning our stress vectors on my slide rule. I don't think I have ever drunk that much coffee, or smoked that many cigarettes, or popped that much benzedrex - all to squeeze in just a few more minutes of consciousness. I remember blacking out from time to time, only to wake up an hour or two later and go right back to calculating. At one point I even nailed my slide rule to the table so I could operate it with one hand while I wrote or ate with the other. Nobody batted an eye, of course; they'd all ceased to be surprised by anything we engineers did.

"Meanwhile, Maxwell sat across the library, calmly puffing on his pipe as he punched out his program card by card. On the third day, as promised, he set off for the computer lab. I nearly chased after him, having finally accepted that the task was hopeless. There simply weren't enough hours in the day. Plus, running on virtually no sleep, I found myself stuck on even the most basic arithmetic, or going over the same line twenty times. Soon enough, twenty quid and risking expulsion seemed infinitely better than an ulcer.

But then, less than an hour later, Maxwell re-

turned. I knew his program would take at least a few hours to run, so I found it odd for him to be back so soon. He looked calm as always, though, so I didn't think much of it. Then the same thing happened the next day, and the next: he would leave the library four or five times a day, only to return thirty minutes later. Each time, he looked ever more worried and nervous. He grew pale, fidgety; he ditched his pipe and started chain-smoking cigarettes. One day, I finally took a break and walked over to see him.

"So, Captain Kirk, what says the ship's computer?" I said.

"Oh, nothing at the moment," said Maxwell dismissively, flashing a hasty smile.

"Oh, no?" I said. "Any why is that?"

"It's uncanny," said Maxwell. "Three days, three different times I go to the lab, and who's there waiting for me?"

"McRae?"

"Unbelievable," said Maxwell, shaking his head. "He damn well can't spend all day waiting there, can he? He must have other things to do. The man must have a sixth sense!"

He was trying his best to look cool and collected, but he couldn't hide his trembling hands.

"Well," I said. "It was a good try, anyway, but tell you what: what's say you give me that twenty quid, and you can use my answers?"

"Not on your life!" said Maxwell, leaping to his feet. He wasn't the sort to back down. "Trust me, Fergie: the man thinks he's got me beat, but there's more than one way to skin a cat!"

I left it at that; I hadn't a moment to lose if I was to finish my own calculations. Maxwell redoubled his efforts, but McRae was always waiting for him. Eventually, Maxwell took to sneaking in late at night, long after McRae had gone home. The trouble was, the lab was locked after seven o'clock, and none of the computer scientists would let him in. They were a suspicious lot that way. Day after day I watched him pace nervously about the library, trailing a great cloud of smoke. I kept offering him my notes - at ever-increasing prices, of course - but he refused.

"Just watch," he said. "Soon as I get in, I'll do a week's work in just a few hours!"

But the week slipped past, and his luck didn't change. When at last the final day was upon us, I was certain he would crack. He had to: there

COLUMNS

RIP DENNIS. COMPILE IN HEAVEN, BUDDY



Daemonium Ex Machina (cont'd)

was no way on God's green earth he could complete that assignment in time. So when he came to the library that day, I expected him to drop to his knees and beg forgiveness. But instead, wearing that Cheshire Cat grin, he plunked himself down across from me and pulled something from his pocket: a key.

"Look here what I found!" he said, proud as a peacock.

"Is that...?" I asked. He nodded.

"Courtesy of one Thomas Burns, department of computer science," he explained. "Good billiards player, but not as good enough!"

"But the assignment's due tomorrow!" I said. "What if your program doesn't run?"

"Oh, ye of little faith," he said, rolling his eyes. Then he swaggered away.

"To this day, I still don't know how I managed it - I must have had a guardian angel watching over me - but somehow I finished that assignment with hours to spare. It was two in the morning, and I should have passed out right there and then. But sleep deprivation is a funny thing, and I chose instead to see how Maxwell was doing. The computer lab was in the sub-basement of the electronics building, a real labyrinth. I got lost a few times before I finally found the place. The lab, a big modern glass cube, had been built specifically for the computer; the floor was even raised for all the air conditioning ducts they needed to cool the damn thing.

When I arrived, Maxwell was still there, hunched over the punch card reader. He looked positively dreadful, his hair a right mess and his shirt covered in sweat stains. I called out to him, but the air conditioner was so loud I had to go up and pound on the glass to get his attention.

It all happened in the blink of an eye. You see, back then there was none of this jeans-and-t-shirt nonsense; we all wore proper shirts and ties to campus, and when Maxwell glanced up to see me, I saw his tie flop down into the card reader. It yanked him down instantly, slamming him face-first into the machine. His eyes bulged grotesquely as he gasped and choked, his arms and legs flailing all over the place. Before I knew it, I was in a dead sprint to reach the door on the other end of the cube. Thank God he'd left the key in the lock, otherwise he'd have met his end right then and there. Anyway, I managed to get inside and throw the master cutoff switch just in time. Then I cut him free with my penknife and opened his collar to let him breathe. He lay on that floor for a long time, coughing and sputtering; it took an hour for the color to return to his face. When he could finally breathe properly, I offered to drive him to the hos-

pital.

"I'm alright," he said, in a horrible raspy voice. Then he staggered to his feet, yanked his tie out of the card reader, and went straight back to running his damned program! Complete and utter insanity! But there was no arguing with the stubborn bastard, so I stayed with him all night in case his throat closed up. And what do you know - the damn program ran on the first try! At 5 o'clock, printouts in hand, I walked him back to his dormitory. As I staggered back to my room, I could hear him banging away at his typewriter. Then I finally passed out.

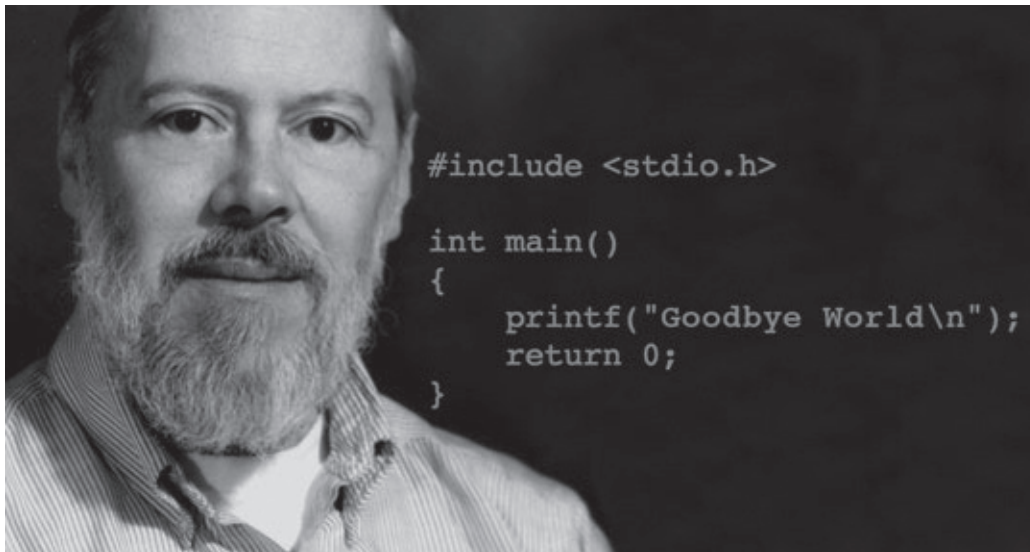
"I half expected Maxwell to skip that afternoon's lecture, but of course that wasn't an option. He'd tried to cover his neck as best he could with his collar, but that hideous purple bruise had spread all the way up to his jaw. As we filed past the front desk to hand in our assignments, Maxwell kept his eyes down, hoping to avoid McRae's piercing gaze. Miraculously, McRae seemed not to have noticed; the submission proceeded without incident.

"Good," said McRae as the last assignment was handed in. "I'm sure you all now appreciate how lucky you all are to have modern technology at your disposal. It is no substitute for hard work and an engineer's intuition, but it can be useful from time to time."

Beside me, Maxwell breathed the greatest - and raspiest - sigh of relief.

But then, McRae snapped his eyes right on Maxwell, drilling right into him. I will never, as long as I live, forget what he said next.

"For example," he said, quite calmly. "I was about to hang a man today, but as you can see, I got a machine to do it for me."



Write in C

Dennis Ritchie
-CompSci ∞-

To the tune of "Let it Be"

When I find my code in tons of trouble,
Friends and colleagues come to me,
Speaking words of wisdom:
"Write in C."

As the deadline fast approaches,
And bugs are all that I can see,
Somewhere, someone whispers:
"Write in C."

Write in C, Write in C,
Write in C, oh, Write in C.
LOGO's dead and buried,
Write in C.

I used to write a lot of FORTRAN,
For science it worked flawlessly.
Try using it for graphics!
Write in C.

If you've just spent nearly 30 hours,
Debugging some assembly,
Soon you will be glad to
Write in C.

Write in C, Write in C,
Write in C, yeah, Write in C.
BASIC's not the answer.
Write in C.

Write in C, Write in C
Write in C, oh, Write in C.
Pascal won't quite cut it.
Write in C.



COLUMNS

THEN WHAT ARE GRANDMAS FOR?

CRAFTS WITH CROWSTON

Sewing a Flightsuit

Zoe Crowston

-ACSE II-

I have a terrible secret. I am a second year and I do not have a flightsuit. Well, it's not a secret and not really a big deal, but I have been seeing people in their pretty flightsuits and I like what I see. Although, I have noticed that some people have had trouble with their patches. If you have a flightsuit, you might have noticed that iron-on patches don't cut it: that shit falls off! So, today I am going to use my "extensive" crafting skills to teach y'all how to sew on patches.

There are a few things that you will need:

Needles: Your best option is to get needles designed for leather. They are stronger and the tip is pointier. This will make it easier to sew your stuff without much swearing.

Thread: Usually you can get needles and thread as part of a sewing kit. However, that thread is not the strongest. If you can, try to get some nylon thread. Regardless, you should try to get it in the colors of your patches that way it will look as seamless as possible.

Safety Pin: This helps to make sure that nothing moves around.

Thimble (optional): Yeah, that thing in your Monopoly set actually has a purpose. It is so you can push your needle through your fabric without hurting or stabbing your fingers.

So this is what you're going to do:

Step one: Figure out where you want your patch to go. If you have the iron on, iron it into place. If not you'll have to safely pin it into place.

Step two: Cut your thread. You do not want to cut it too long or you will get tangled up in knots, and that will suck! Just over a foot (0.305 m) is a good length. If you are sewing a really big patch, you will want to sew it on in stages. If you are using really cheap thread, I recommend doubling up to give it some extra strength.

Step Three: Tie a knot on the end. I have heard that this step has been skipped (*cough Jasmine cough*). Knots help the patches not fall off. D'uh!

Step Four: Now the fun begins. From the back of your fabric, poke the needle into the fabric and the edge of the patch.

Step Five: A few millimetres from where you poked through, bring your needle back through. Bam! You made yourself a stitch. Now just do that around the patch until you get back to where you started. Try to keep your stitches as even and as small as possible. It looks nicer, but smaller stitches do mean more time sewing and ain't nobody got time for that!

Step Six: Knot the thread as closely to the fabric as possible and cut off the rest.

Step Seven: Drink to your success!

I hope that this helps. Good luck my friends.

C-ENG FASHION

Dress Nicely!

Anonymous

With the changing of seasons usually comes a change in fashion. Thankfully, Fashion Weeks take place all around the world to set the trend. Fashion week usually occurs in NYC, Paris, Milan, and several huge cities. Here are a few of the themes that have emerged this year at those prestigious events.

Classic Prints

Classic prints, like plaid similar to the pattern Burberry made popular many years ago are back. Forget about the floral and kaleidoscope patterns from spring, because classic prints are back for both men and women. Whether it be a business professional suit in the office or a coat for when the weather gets colder, classic plaid patterns will be common this fall, and possibly till winter.

Emerald Green

According to a 2013 article from Glamour magazine, emerald green is the top color from fall fashion lines. This gemstone color is recommended to be paired with other gemstone colors such as amethyst, sapphire, garnet or cobalt. Whether it be as a tie, a pair of high heels or a waist belt, there are many ways to incorporate emerald into your wardrobe.

Layering

another key trend surfacing from the fall 2013

runway shows is layering. Avoid combining too many colors and patterns. Outfits should look as streamlined as possible, not like you got dressed in the dark.

Winter White

As the days get shorter and colder, people tend to grab darker colors. Don't forget about the winter white articles of clothing or accessories in your wardrobe. It is very important to remember that these white pieces can be used for all hours of the day. Whether it's a white cocktail dress to go out to very formal events, a tie/ bow tie or a coat, white is a color that shouldn't be overlooked as fall and winter roll in.

Military-inspired looks

Khaki green is going to quickly become a staple in many people's wardrobes. For many fall seasons now, military inspired fashions have continued to be a constant. There are many different ways to incorporate this style into your wardrobe, whether it be a pair of military boots or a khaki green coat. This look is coming once again for the fall season.

Leather

As much as people often complain that leather was left back in the '90s, it surfaces again this fall. Leather is a way for people to look a little edgy, a little bit punk and a little bit tough (Haven't we all fantasize about dominatrix?) There are simple ways to bring leather into your wardrobe. One could purchase a pair of leather boots, a waist belt or even bring a leather dress, pair of pants or jacket into one's wardrobe.

Grey matters

Even though other dark colors are surfacing this fall; grey is also an erupting trend. The hues between black and white offer a great mixture to one's wardrobe. Charcoal coats, a grey business professional dress, a dark grey pleated or pencil skirt or light gray jeans are ways to incorporate this prominent color into your closet or dresser.

Fall fashions are consistent to previous years, yet offer great ways to spice up your wardrobe while also staying on budget. There are simple ways to add these features, styles and colors into your outfit choices this fall. Keep Calm and dress nice!!!

COLUMNS

GOOD THING I PATENTED THE SUSHI-CAR



THIS MONTH IN SUSTAINABILITY Algae Fuel

Eric “French Fry” Labrecque
-SREE III-

If you’ve ever had a pet fish, it was the bane of your existence. In high school science class, you learned that too much of it can kill a lake ecosystem. But did you know that algae – that icky green stuff that grows in fish tanks that Nemo’s dad tried to use to escape P. Sherman’s office – can be used to produce fuel that can be used to power generation stations, cars, and jets?

When we think biofuel, most of us will think of corn ethanol, or other biofuels made from plants that would otherwise go towards human consumption. The issue with using these sorts of plants as a source of biofuel is twofold; the crops occupy vast expanses of land that could otherwise be used to produce for human consumption, and relatively little fuel can be extracted from each plant. Considering that there are 2 billion people across the globe that lack food security and each year tens of millions of hectares of land are lost to soil erosion and desertification, an option that doesn’t require arable land and that can undergo a more efficient fuel preparation process would ideal. That’s where algae fuel comes in.

Corn ethanol produces 1400 L of biofuel per acre, and sugar cane (popular in Brazil) can be used to produce almost 3500 L / acre. As mentioned above, both of these sources could otherwise be used for human consumption and require arable land for production. Algae farms can produce 4000 to 24600 L / acre / year, depending on the method used, and don’t require arable land for production. That begs the question... How is a land use efficiency up to 17 times more than that of corn ethanol possible, and why aren’t all our cars running with algae biofuel?

There are three primary ways in which algae can be cultivated. First, there is nature’s way – open ponds that naturally grow algae that is then cultivated. The issue with this method is that the strain of algae that’s used must be resilient to temperature swings and competing algae and bacteria, rather than creating oil that can be used to manufacture fuels. A step up in efficiency is the closed-loop system. These systems are comprised of constantly flowing water in a closed system, often with CO₂ bubbled through to promote growth (photosynthesis, bitches). An option that is being tested is using algae cultivation as a form of co-generation, using the exhaust fumes from fossil fuel generation stations as a source of CO₂ for closed loop algae farms. This type of algae farms is



the best balance of cost and production efficiency. Taking another step up in efficiency, we come to photobioreactors, a fancy word for test tube algae farms. Nutrient rich water is run through small, clear pipes exposed to direct sunlight, often in a controlled environment. This is the most expensive option, yet most efficient. Photobioreactors provide an excellent environment for identifying strains of algae that are high in the lipids used in fuel production and that grow quickly – algae has a harvesting cycle of 1-10 days and can have a lipid content from 9% to 77%, depending on the strain used.

As previously mentioned, algae cultivation does not require arable land and clean water for operation. That being said, if arable, nutrient-filled land and clean water are not provided, they must be supplied by other means. For example, some closed loop algae farms now use treated wastewater that has gone through anaerobic digestion to break down any biodegradable material into more basic compounds to provide nutrients to the algae. This reduces the amount of wastewater that must be fully treated, reduces the strain on the local water supply, and provides the algae with nutrient rich water. Oh, and arable land is primarily used in open pond algae farms, as closed loop and photobioreactor algae farms are exclusively manmade.

Algae is a rather slimy substance – not very useful as a fuel. Before pouring it into your gas tank, the lipids, or fats, from algae must be extracted and put through trans-esterification. That’s right, it’s time for some chemistry. Algae is up to 60% lipids, compared to less than 5% for other biofuel sources such as soybeans. One method used to extract these lipids, is to expose the algae to low voltage electricity and CO₂ (for increased acidity). This process breaks down the plant cell walls, releasing the lipids within. The processed algae lipids are then separated using a settling tank, and taken to the next step of the process where trans-esterification will occur. Let’s assume you re-

member Grade 12 organic chemistry. The lipids from the algae are reacted with either methanol or ethanol to produce biodiesel as well as a few other, less wanted products such as glycerol and soaps. The biodiesel is generally separated using settling tanks until it’s pure enough to meet local standards. While this may seem to some like an efficient, environmentally friendly, and cost effective solution to the oil shortage, it is not without faults.

Life can’t always be about rainbows, ponies, and narwhals. As with all fuel sources, algae fuel is not without its downsides. Firstly, algal biofuel has a far more complicated chemical composition with polyunsaturated lipids instead of basic alkanes. This higher complexity means that algal biofuel is less stable at engine operating temperatures than more conventional fuels. Secondly there’s the issue that plagues all new energy sources – commercial viability in a very competitive market. Research is still underway for which strains of algae are best suited to the various types of algal cultivation mentioned above. While many experts and energy companies have decided to ignore algal biofuel as a technology that is still 25+ years away, there are a few that have not given up hope. One example is OriginOil, which is already supplying Australia with algal biofuel and has been gradually growing in the United States. They, along with several other companies, have been working hard to reduce or eliminate the issues currently plaguing algal fuel.

While it may not be perfect, algal biofuel has a plethora of potential and there’s no denying that. It can use exhaust fumes from other combustibles and wastewater to produce a large amount of biofuel without the need for arable land or clean water. Algal biofuel is sure to continue to make waves in the oil and gas industry for years to come.



DIVERSIONS

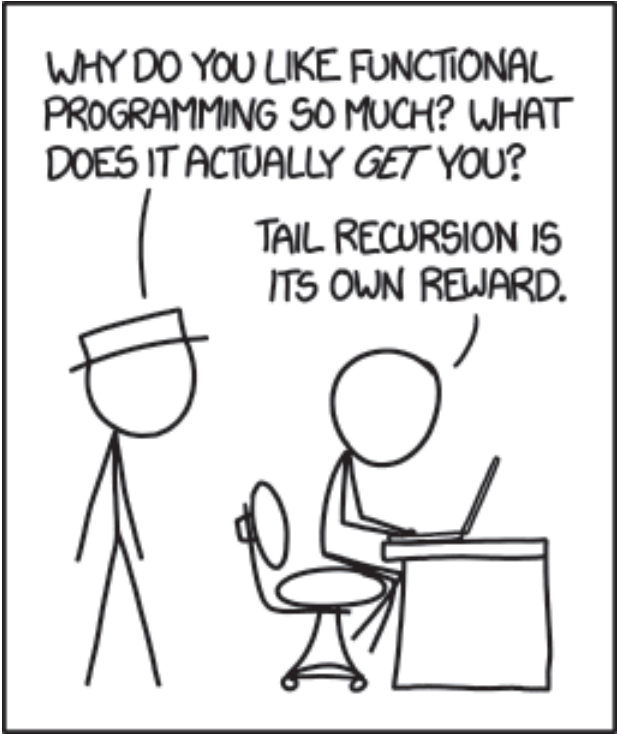
I KNOW WHAT YOU ANIMALS READ THIS FOR

XKCD

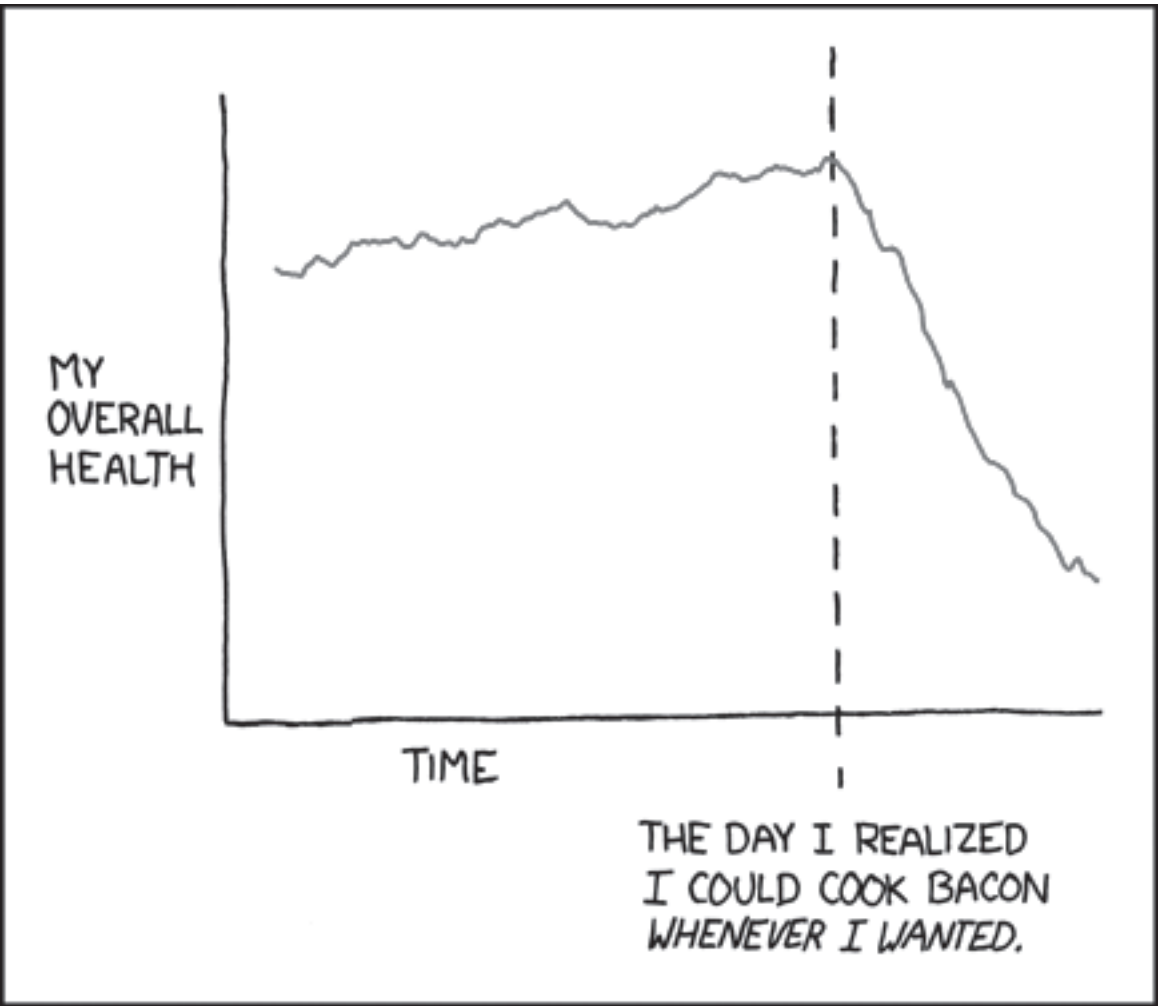
IMAGINE YOU WERE TRANSPORTED TO AN ALTERNATE UNIVERSE JUST LIKE YOUR OWN, EXCEPT PEOPLE OCCASIONALLY ATE SPIDERS. YOU CAN'T CONVINCE ANYONE THIS IS WEIRD.



THIS IS HOW I FEEL ABOUT LOBSTER.



THE FLYER FOR OUR TREBUCHET-BUILDING CLUB MAY HAVE BEEN TOO SUBTLE.

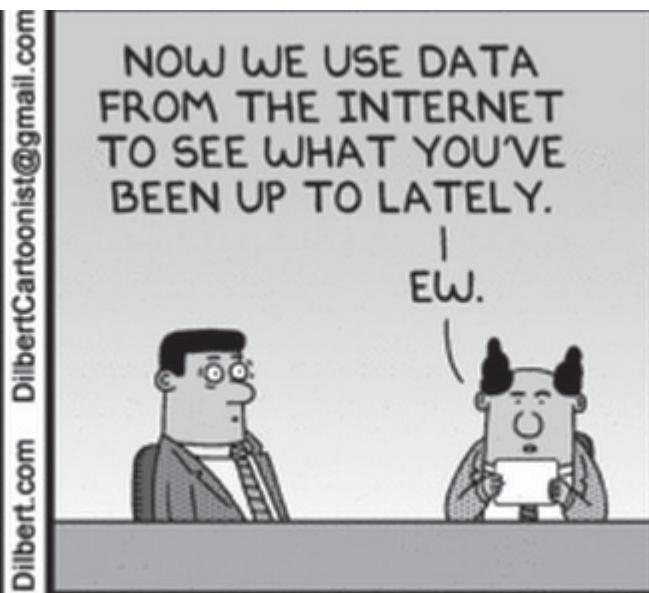
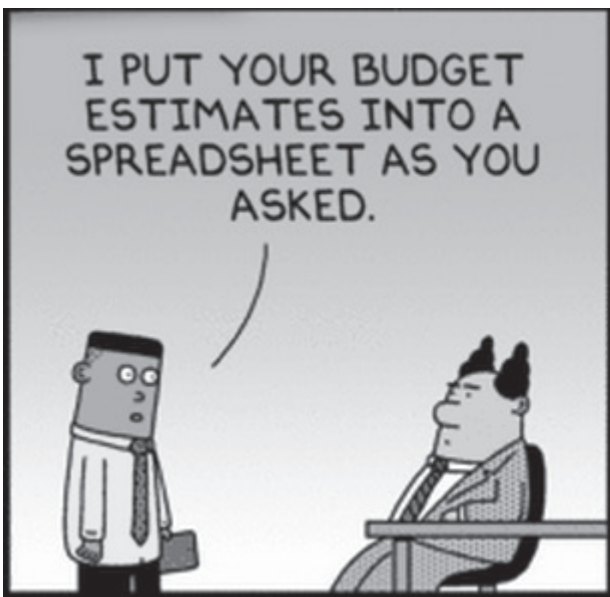


DIVERSIONS

THIS AIN'T THE SUNDAY STAR, PAL



DILBERT





DIVERSIONS

THE IRON TIMES IS 100% GENITALS-FREE...

THE IRON SNAPS



Think you can send a more outrageous Snapchat? Add “theirontimes” and send away!

HOROSCOPE



ARIES

You’re a little bit fat. But you knew that, didn’t you?



TAURUS

یوب یمیدق فدص دن نام امش



GEMINI

You’ll have to declare bankruptcy after buying some chocolate milk from Leo’s.



CANCER

We’ve all seen you pick your nose. Everyone is just too disgusted to mention it.



LEO

Stacy told me that Rebecca told Kasey that she saw you kissing Brad in Minto. Stay away from my man.



VIRGO

Remember to only floss the teeth that you want to keep.



LIBRA

Try not to think of how your best years are slipping by while you sit around and study for a career at a desk.



SCORPIO

Avoid River Building. That’s Tunnel Snake turf.



SAGITTARIUS

You shouldn’t have forgotten to sacrifice a lamb to Glenn McRae. Repent or else.



CAPRICORN

Have you been doing kegels? Your pelvic muscles seem super firm. I bet you’re a sexual tyrannosaurus.



AQUARIUS

Your housemates can hear you every time.



PISCES

You should clean the toilet seat better after you use the washroom. Everyone hates following you in there because you leave the place looking like a Taco Bell stall.

COMING UP

...JUST LIKE THEON GREYJOY.



GREAT EXEC-TATIONS

This month, we asked your CSES Executives what they would like to see done in their portfolio this month that is innovative, novel, and progressive. Here's what they dreamed up.

PRESIDENT

MEL BLAINEY

Goals: Get more than 50 jackets ordered, end FGM within 4 hours, figure out WTF I'm doing for fourth year project, and host a wicket brainstorming night!

How to get involved: Register for a trivia team.

VP SOCIAL

CHRIS ZUBICK

Goals: Attend all of your classes and don't spend so much time in Leo's

How to get involved: Be part of an awesome turn-out for Trivia.

VP SERVICES

TYLER HOLMWOOD

Goals: To overhaul the ELP, make posters/promotional video for SGRC, and purchase new office furniture.

How to get involved: Go buy some shit at Leo's.

VP ACADEMIC

ADAM MIKOLAJCZAK

Goals: McCoys. Design Comp. McCoys.

How to get involved: Just stay classy.

VP INTERNAL

MICHELLE DAVIS

Goals: get a good attendance for FYC and FGM, and get the purple out of my skin/hair/orifices.

How to get involved: Sign up for the announce list!

VP PUBLICATIONS

JASMINE SHAW

Goals: Make sure EngSwag is stocked and sexy and acquire monies from advertisements.

How to get involved: Write me a god-damn article, or come talk to me about your sex life so I can write an article about it.

VP EXTERNAL

ZAC BANDURA

Goals: Attend all necessary conferences and acquire ALLLL the directors.

How to get involved: Apply to be my directors!

VP FINANCE

VANESSA LEWIS

Goals: Learn how to use QuickBooks and then keep track of all the monies.

How to get involved: Apply for student group funding!

THIS MONTH...

Oct. 7

Fall General Meeting

Oct. 15

Triva at Ollie's

Oct. 19

EngFrosh Reunion

Oct. 19-20

Carleton Engineering Competition

Oct. 24

Yuk Yuks I

Fall Reading Week

Oct. 28-Nov. 1

FOR MORE EVENT DETAILS,
VISIT: [CSES.CARLETON.CA/
EVENTS /CALENDAR](http://CSES.CARLETON.CA/EVENTS/CALENDAR).



LAST WORDS

再見



THE IRON MAN



Name: Kelsey Woodall

Callsign: AIA

C-Eng Involvement:
EngFrosh facil and head; GNC-TR member

Favourite hashtag:
#yoloswag4jesus

Favourite video game:
Legend of Zelda: Ocarina of Time

Advice for first-years:
Don't put up with Hailey's shit

USES FOR THE CHARLATAN

- Use it as a source to back up your arguments so that everyone can ~~stop listening to your uninformed bitchface~~ see how right you are
- Put it on your counter when you open a can of tuna to soak up the fishjuice
- Fold it into little paper hearts so that your boyfriend/girlfriend will leave you
- Line the sofas in Leo's to avoid dirtying your clothes
- Wrap it around the legs of your furniture to avoid scuffing the floors
- Emergency feminine paper
- Emergency masculine paper
- Stuff under your door to stop the flow of smoke
- Pour your korean liquor through it to remove any sweetness
- Fashion them into a rope to escape your 4th-floor CCDP class
- Roll it up to use as a torch to fend off nocturnal architecture students in Mackenzie
- Fold it into a diaper to put on because GTA V online is life-changingly good
- ~~You can read it~~

WANT A PASSPORT STAMP?

Become one of our columnists.

Just contact either Allan Bassi, or Jasmine Shaw (VP Publications), or make a special note that you want to start a monthly column when you submit your article.

Joining us guarantees invitation to prestigious soirées, and refreshing ale.*

*By this we mean a beer at a sports bar

THE IRON LADY



Name: Kelsey Doerkson

Callsign: Stop and Go

C-Eng Involvement:
EngFrosh facil, musician for the engineering musical (flute)

Favourite hashtag:
#YabbaDabbaYOLO

Theme song:
SDSS14+13B (Zercon, A Flagpole Sitter)

Advice for first-years:
Don't flood your residence room!