YOU GOT ME BABE

PROTEST!
...EDS Hope to ...ure
...out what We'...
...by time buses le...

Apathy
Apathy
Apathy
Apathy

Which light is different?

Barry Manilow/Willie
Double Bill at Fed Hall...

Now thats Entertainment! says BENT President.

A Different Light

GAY
AIDS
liberate
CLAW
Persecuted

WATERLOO WITLESS

≡Ahem≡

COMICS THAT NEVER SHOULD HAVE MADE IT!

TAP TAP TAP

FLUFFY LITTLE BUNNIES FROM **HELL**

Hymie

ARTS

Band Plays Awful...
Great Show!

NEW REVOLUTIONS

Various Bands You Never Heard of Reviewed by a Maximum of 4 Dobermans

Hip   Hip
Hip

LookAhead

MathSoc	
Mar 18	Images in Vogue
	at Fed Hall
Cinema Gratis	
Mar 16	Ghandi
Mar 23	Future Shock
	Let It Be
Fed Flicks	AL 116
Mar 11-13	Hamburger Hill
Mar 18-20	The Golden Child
Mar 25-27	Top Gun
UW Arts Centre	Humanities Theatre
Mar 12	The Late Great Ladies of Blues and Jazz
Mar 13	The Acrobats of Pagoda
mathNEWS	
Mar 21	Submission deadline - 7:00
Mar 21	Production night - Issue 6
Mar 25	Last **mathNEWS** out

Prez Sez

Well, now that the midterm blues are over it's time to start celebrating! On Friday March 18th, MathSoc and EngSoc are putting on *Images in Vogue*. Prices will be $6.00 Feds, $7.00 non-Feds. Let's see if we can get more Mathies there than Engineers!

If anyone knows of someone they would like to nominate for 'Student Leadership Award', I have the forms in the MathSoc office. All submissions must be in by March 15.

Speaking of March 15th, that's Campus Day! So be nice and show your Mathie spirit to all the 'could be' frosh that will be around that day. Also, if you wear a pink tie (a real tie - not paper or a pin) you can take advantage of specials in the C+D.

Thanks goes to all those people who bought Math t-shirts and sweats. They should be here in about two weeks. Watch for signs.

The end of term is coming fast and I urge all those wishing old finals to come in early and beat the photocopying rush. I'm not sure how much the MathSoc office will be open since all the volunteers are students too. Better safe than sorry!

That's all for now!

Ciao

Lisa

Predictions

Pat Robertson, in an effort to bolster his presidential campaign, will declare that God will "call him home" if he doesn't win at least 8 states in the primaries.

Twenty years from now, in the middle of his seventh attempt to run for President, there will be a newspaper article written about Jesse Jackson that will not have the words "black vote" in it anywhere.
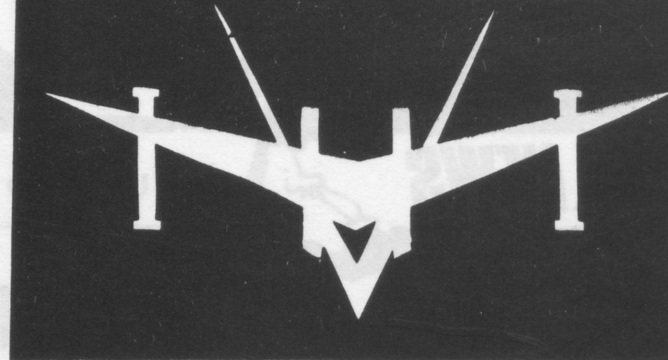
Two months from now, after three more cabinet minister scandals, PM Brian Mulroney will abolish the cabinet. He will be quoted as saying "doing all of the cabinet's official work myself has got to be easier than handling scandals every other week."

Michael Dukakis and George Bush will run against each other in what will become one of the most boring Presidential campaigns in the history of the United States. This election will stimulate coffee sales so much that Brazil's national debt will be fully repaid, and Columbia will become a major international trading force for yet another reason.

After decades of hard work, in the year 2018 the William G. Davis Computer Research Centre will finally be finished.

In May 1989, in an issue of *Imprint* that will astound Waterloo students all across the campus, the CKMS playlist will contain 5 (yes, five) well-known songs.

IMAGES IN VOGUE

Images In Vogue

March 18th
at Fed Hall

Tickets — $6 Feds

— $7 Non-Feds

Ultraclassified

Question: Does the Buffalo Philharmonic Orchestra have a violinist named Nero?

CYBERman

Dateline Waterloo: Genetic researchers have succeeded in adding apples and oranges. Mathematicians are in a quandry.

CRAYfish

K,D,L,L,and D invite all mathies to certain Hamilton suburb for turkey scavenger hunt. Bailor excluded.

Ed: Robert has quit E.S.P.

mathNEWS former ex-editors and future **mathNEWS** former ex-editor are disappointed at ex-super trez's failure to show up for production night. As if RUSH was an excuse. Come on Joel, Tom's going tomorrow night. You just like the future MathSoc prez's new muscle shirt, don't ya???

To the girl with the strange walkman name: you should listen more closely to it...

It's Opening

Yes, the Davis Centre

A momentous journey lay ahead. For the first time, we were finally going to see the innards of the Davis Centre front to back. It was a frightening proposition, but we felt we could handle it.

We began by entering the bridge from the 3rd floor MC and immediately noticed the state of incompleteness: some of the windows were still wood and there was a bucket in the middle collecting drippings from the ceiling. The overwhelming colours were the next experience, an experience that would be carried right through the Billding: pinks, greens, blues and yellows predominated.

The rooms encountered were mainly long and narrow, reportedly 7 feet by 20 feet. The lighting was set up to reflect from the ceiling and power outlets ran the lengths of the rooms. Very few rooms were occupied, but we did get to talk to someone from the VLSI group who had moved in. He was concerned about the absence of heat controls in the rooms, and about the long and narrow room but was otherwise satisfied.

Some of the rooms had interesting views: windows overlooking chemistry and engineering building roofs, interior windows overlooking people studying in the library. And the corner rooms had multiple windows—would people find this annoying in bright sunlight?

The washrooms on the second and third floors were quite small—for the men, one stall and 2 urinals, and wash basins facing out windows; and for the women three stalls and a wash basin. The first floor washrooms were much larger.

The atriums were strange sites, with strange obelisks to direct some light to library (?) and narrow carpeted ledges to the sides that are meant to be inaccessible but easily can be reached (but can they be cleaned?).

Some other general comments: the bridge to the Chemistry building has a fairly large slope; it appears that it is easy to get shocks from all the metal; the hallways and stairwells are numbered; the total amount of office/lab space is staggering; there are some enormous engineering shops; the lecture halls seat about 260 but it may be difficult to see and the acoustics are terrible; the food fair is a strange, round orifice on the first floor; the ceilings look low and unfinished but are neither.

After our hour tour of the 2nd and 3rd floors, we were told that we shouldn't be there but it would be open at the end of the month.

Coming back to the MC, we got the impression that we were coming back to a strange world—one in which we saw all the colours we hadn't noticed in the halls since first year. And yes, our eyes quite literally hurt from all the colour contrasts in the DC, something we will just have to get used to.

Serfer

mathNEWS Subscriptions

Before all of you happy co-ops head out to your work terms in Pinawa (or whatever) and for all you regulars who get to miss the unparalleled joy of doing homework in thirty-three degree weather, mathNEWS announces subscriptions for Summer '88. Just drop by the MathSoc office and for the ridiculously low price of $5, cash or cheque, you can enjoy your Friday morning companion all term. You can also drop us a *cheque* in an envelope in the *BLACK BOX* or under the mathNEWS door, MC3036.

Don't miss out on your weekly craziness: those weird prof quotes, the ingenious squiz, that marvellous GridWord, our *inventive* covers, and all the other miscellaneous mathNEWS silliness that you've come to know and wonder about late at night. Get your mathNEWS subscription today!

Prof Quotes

Tom has forced me to type in this next set of quotes. Only one more issue this term, so get those good ones into us.

"You don't bite the hand that feeds you, but you do the one that causes coitus interruptus." [talking about rats]

Lefcourt, Psych 355

"Say you're in an exam and you say, 'Oh my god! Did I take this course?'"

Lefcourt, Psych 355

"Alright, who was it? I was quoted in mathNEWS. In stats, we're not really interested in balls as such."

Welch, Stat 230

"That's sigma squared. I don't know what it means; it's all Greek to me."

Welch, Stat 230

"... like a McDonald's hamburger. It has little variance. It is uniformly bad. That's why it is so popular."

Welch, Stat 230

"It's guesswork; if you want to be fancy, you call it physics."

G. Tenti, Am 365

"We either did this example before or I got up in the middle of the night and did it on the board at home. But I don't have a board at home so we must have done this example before."

F. Goodman, Math 220b

"Behind every stewardess is a chiropractor."

A. Brender, Act Sc 432

"If you believe probability theory, you'll believe anything."

M. Cheng

"That sounds like a man giving birth. My wife assures me that's tough."

P. Schellenburg

"The rules are: no intercourse of any kind."

P. Reilly, Ch E 022

"You see I'm not totally on drugs."

G. Cormack, CS241

"Just think of me as the Mathematical Picasso."

G. Lastman, Math 332b

Unfounded Rumours

Well, here is the latest crop of totally untrue, and most likely scandalous rumours that are not fit to print.

... After an 89 hour "Doctor Who" marathon, the computer science club have discovered the working principle behind the tardis, and their office now encompasses 60 acres on a beautiful lot in 1846.

... Fearing an impending beer strike, overzealous engineers attempt to fill Columbia lake with beer. Three die happy in the attempt.

... Some one attempting to shout Professor Ng's name across campus was seriously injured by someone attempting the Heimlich manoeuvre.

... Those glossy windows in the Davis centre focus UV light. Expect a high incidence of skin cancer (and great tans) in the CS department.

... And this just in ... mathNEWS editor Tom Vandeloo proven to be a computer simulation. Say dazed mathNEWS workers, "I guess we should have figured it out when we found him French kissing the terminal."

Greener and Boston Creme

Course and Instructor Evaluations

Students in the Faculty of Mathematics were the first on the University of Waterloo campus to evaluate their courses and instructors. The first issue in 1970 (at least that is the oldest I could find in my archives) was called CALENDAR-1. The preface was labelled "What is this, anyway?" and continued with the following sentences:

There are no rules in the field of anticalendar publication, so we made our own. We offer herein a factual analysis of last year's lecturers and courses for the following reasons:
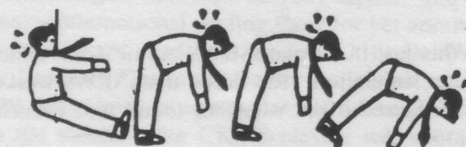
(1) to provide an accurate summary of student opinions on a variety of relevant topics.

(2) to describe the nature and content of each course.

(3) to describe for faculty, students, and administration the good and bad points of each lecturer and course

(4) to provide other student-oriented information.

Early issues of the CALENDAR-1, or anticalendar as it came to be called, contained a written summary about each course and instructor, based on both the multiple choice answers and the students' written comments. As the issues evolved, the style became less subjective and more factual as the Math Society worked with the Faculty to create a mechanism that suited both students and faculty. The Mathematics Society continued to manage and publish anticalendars until 1980. At that time, the task became too consuming for the society to continue. Rather than see the evaluation process die, the Faculty agreed to continue the distribution and analysis of the questionnaires. The summaries of student responses continue to be available in the Mathematics Society office.

Completing the course and instructor questionnaires are an important way for students to convey their opinions to the Faculty at large. Each instructor has the opportunity to read the personal comments (but only after the term is over and the marks have been submitted). The results of the short answer questions are tabulated and distributed to each department chairman and to the deans. The Faculty takes these results seriously when it comes to annual merit increases, tenure considerations, and, especially important for students, when future teaching assignments are determined. The subject of instructional quality took on renewed emphasis last fall as a result of student interviews conducted by the Faculty's Strategy Board, a dedicated group of about 20 senior executives in business and industry. In each of the last three terms the Dean and Associate Dean have surveyed the questionnaire results carefully. Outstanding instructors have received letters of congratulations to reinforce their valuable contribution to the Faculty. Instructors whose records revealed room for improvement were contacted through their chairmen to encourage them to work harder to improve their level of instruction. For these and other efforts to be successful, it is imperative that students take these questionnaires seriously and give both the courses and the instructors a true evaluation.

Arnie Dyck
Associate Dean for Undergraduate Studies

FeedBack

Concern over CS 132

A Tutor's Reply

In the previous issue of mathNEWS, Ashley Taylor voiced a number of concerns over how CS132, the new first year CS course, was being run. Many concerns were raised, to which I have responded.

It was explained in class that the cost of the notes was $15, but due to the fact that last term too little was charged for the notes, the department ran a deficit photocopying the information. This deficit was recouped in the second part of the course.

Unless I am mistaken, the usual course of action a student takes in a lecture is to make notes. The students were warned in class at the start of the term that the notes were in the process of being created, and that they would not always be immediately available as reference. As for the missing information, it was covered in class, extensively.

CS131/132 are introductory computer science courses, REQUIRED by all math students in math faculty. They are designed to give a solid basis for further study in computer science, and at least a good understanding of how a computer functions for those who are not going to pursue a major in CS. For a long time the University of Waterloo has enjoyed a reputation for having a top notch undergraduate Computer Science program, but for the last while it may be that we've been riding on our reputation from the past. It is time to upgrade the CS courses being offered here, or we risk losing that reputation.

I think that the instructors are doing an admirable job of creating a new course. This IS a new course and as such will have a few wrinkles in it the first time around, and the class of '87 has and will be the ones to experience these wrinkles as they go along. They will not be the worse for it, however, only be exposed to some minor inconveniences as they go along. If you have some some constructive criticism to make, by all means, let us know, and I'm sure that every effort will be made in improving things for the next sitting of the course.

Thomas Reinke
Tutor, CS132

Concern?

Two weeks ago I addressed a problem with the new core CS courses, namely CS 132. Speaking with many of you I detailed what I believed to be the 'problems'. I asked for feedback and as of now, I have no responses from anyone currently registered in CS132. I had hoped to be able to at least show the administration that you were concerned over what was going on, but with zero feedback, I cannot do that.
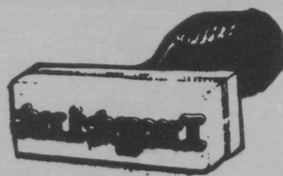
I have received some comments from a few upper year students and one of the tutors of CS 132. Their evaluations were equally positive and negative. However, they are not taking CS 132. As you should now have noticed in your preregistration material, more CS courses are being brought in for next fall. I'm certainly glad I won't be around to test out these new courses but you will be.

MathSoc is a organisation designed to help Math students with their undergraduate needs. My "campaign" against CS 132, as some of you have called it, is not out of my failure in the course. I am responding on behalf of the Math Society to see what can be done, but nothing can be done without your input. My mail address is attaylor@watdcs. I would really appreciate it if you could spent 10 minutes of your day to mail me your opinion and comments.

Bailor, MathSoc

Debunking

Calculus - Is It For Real

by I.M. Burntout, Imp'tint staff

Every field of (ahem) 'study' in the black art of calculus has its silly standards which all unsuspecting mathies are subject to, in sickness and in health. Those who revel at the thought of learning how to mash perfectly good discrete summations of integers into boundariless, swarming mires of continuous integrals using so-called 'real' numbers need look no farther than the mathemagician Green.

Now here was a man who claimed to be able to augur the size of an area, knowing only the path around it. Outrageous as this may sound to those possessing even the slightest amount of common sense (which I, dear reader, have in abundance), there are an uncountable number of gullible souls among us who swallow up all this gobbledigook with relish. I, for one, would like to ask this Mr. Green some pointed questions about his so-called Theorem. For instance, just why does he insist that one must decide beforehand which direction to travel about the area, clockwise or the other way? I smell a superstition. And anyway, if he's so smart, he'd be able to guess! And furthermore, Mr. G, why do you insist that a person must take certain extra steps when there are holes in the area, hmmm? Is the real problem a hole in your theory, and not the area? Or does your mumbo-jumbo only work when there is an unholey area, where your spell, thinly disguised as a Theorem, may summon all kinds of dreaded and scary monsters from that vile, murky, and strangely distasteful swamp of Calculus, to peek into the area and discern its size by threats and trickery?

Y'know, dear reader, what do you say to calling a stop to the invocation of this 'science' and from now on just referring to it as 'the C word'? Just a thought ...

Now what was I on about ... oh yeah, Calc- I mean the 'C' word. What ever happened to good ol' Finite Differences, anyway? Now there's a hard science which people seem to have forgotten about nowadays. Probably in the name of fashion. But really, people just aren't happy with approximations anymore. Let me tell you, in my day, we had a saying :

don't cry over split atoms. In the immoral, I mean 'immortal' words of Rob Brown, 'it was a time when men were men and women were glad of it'.

And today we have our young ones calculating a figure to the umpteenth decimal place. Think about it; according to this 'real number' system, the answer you end up with is made up of so many irrational numbers that it makes no logical sense whatsoever! Face it: real numbers are so dense that the whole field of Numerical Analysis had to be invented just to deal with their problems. Seriously, it's enough to put you in l'Hopital.

Growning Dealth Thretened Compuer, EEK!

Sources from the Institute for Compuer researth have confirmed that thretened dealth is growning. What that means is that the Davis Centre will be delayeed another few months.

We could not eek out why this was the case, but Imp'tint allso learning that there will be a toll both set up in the bridge connecting the MC to the DC, wit an estimated revenu of $100 per CS student per term.

Allso with the Imp'tint noo offiss inthee Daviss Cntre, Imp'tint iz offerin thuh serivces of its spell chequer to the students.

Canadian Campus Memo Bored

Fanshawe Colluge

Local police are investigating reports of students. lean with hunger after OSAP was spent on "reading week," stealing tanks from the Army Base and hunting squirrels on the Dean's lawn. Authorities have decided not to lay cheerleaders.

Laurentian University

Nothing of major interest has happened, although the lead news about campus is the heroic drinking efforts of Jean-Guy Lafreniere who consumed 18 Northerns at the Voyageur Pub, and left a trail all the way from the library tower to the Fraser building.

University of Dildo Newfoundland

Community church leaders have objected to t-shirts and posters featuring the University's new slogan, "Dildo—The Thrust of the Future." Student Leader Binkumaski Crosbie remarked "I'se the bye who gat the shirts, I'se the bye who sales 'em, you kin take yer dumb complaints, and sail 'em up ter Liza." No translation is available.

CPMS Top Ten

10. Here's To You, Svend Robinson	Boy(?) George
9. We're Rich Now, So There, Ha-ha	U2
8. I Wanna Be An Engineer	Brain Rot
7. I Live In Your Drain	Festerin Sneakers
6. My Left Hand	Chok Yur Chikken
5. For My Eyes Only	Jimbo Swaggart
4. Buy These Cookies	The Gangrenous Girlscouts
3. I Got Dem CS132 Blues	Bayou Bailor
2. Dance On My Tongue With Heels	The Exploding Hamsters
1. My God, They're Naming This After Me?	Bill Davis

New Revolutions

By Earl Skorn, Imp'tint staff

From the exploding riffs of the inspirationally-fragmented thundering mutant blues guitar chords to the insane funkadelically-deranged power distorted bass, the Hamsters have came up with a psychoraving coup-de-grace which has caught the live magic of this pseudo-funk monster riot-punk band in an invigorating fashion. Nowhere is this more in evidence than in their pile-driving no-holds-barred never-let-up full-speed-ahead gut-crunching track, "Tap Dance on my Tongue." This ultra-muscled first-degree electronic bone-crusher of a song sets a breathtakingly riotous pace which the subsequent wildly-varied stunning set of razor-sharp hyperactive tracks maintain with an explosive overdriven necessity. This bit of hyperactive urban-punk-paranoia deserves a rating of 900 dobermannnnns, a rating that we have only given once before (to the pumped-up, careening, hyper-adrenaline cult-classic XRay Mandolin Jellyfish by the indubitably radiant Mandible Oysters). Rush out and pick up this 400-carat groovy spine-tingling beast today - you most certainly absolutely genuinely really won't regret it!

WPIG

Life in General is Dangerous

It appears that in this day and age, the various threats to humankind by man-made hazards have made life virtually unlivable. For the most part, you can forget about going outside. If the excessive pollution from various factories and automobiles doesn't affect you, then you will certainly fall victim to the ultra-violet rays of the sun, which are leaking through holes in the ozone layer caused by aerosol sprays.

The lack of safe food and drinking water does not bode well for us either. WPIG has found that practically every known foodstuff, from peanut butter to milk to salmon avec endives in a white wine sauce, has been found to cause cancer. Also, the numerous chemicals found in our water supply make it extremely hazardous to anyone's health.

Sex is out. If gonhorrea, syphillis, and herpes weren't bad enough, we now have AIDS to worry about. As a result, more and more people will be avoiding sex, which may mean certain extinction for the human race. Alternative methods have also been shown by WPIG researchers to cause excessive hair growth and failing vision.

The proliferation of CDTs in the workplace have made most work areas unsafe areas, what with the excessive radiation generated. Even the homeplace is unsafe, with microwaves and televisions bombarding us with unhealthy rays. Other forms of entertainment, such as swimming or hockey, are to be avoided as well, seeing as cases of paralysis and severe head and neck injuries have increased markedly in recent years.

So what, you may ask, is the solution? WPIG has found it. As of next month, we will be burying ourselves 17 feet underground, in self-contained breathing apparati, living on intravenous fluids. It is the only safe way to survive. We invite you to drop into our hole beside the MC building and discuss any important matters you may be worried about. Don't be shy – after all, we're worried about everything.

What's Up, Doc?

To: Dr. Randall Wildflower – Rec/Engineering

Question: Who was that gorgeous blond I saw you with at the Net last Friday night? She was a real looker. Does she have a sister?

Signed: Real Curious

Answer: What?! What are you talking about? I'm a married man! How dare you...and why weren't you studying for your midterm on the following Monday? I hope my wife doesn't read this...

To: Professor Goriam Wilken – Applied Environmental Studies

Question: I am about to graduate from U(W) with my PhD, which means I've been here close to eight years, and you have worn the same suit every day. Don't you own anything else?

Signed: Anonymous, PhD

Answer: To be completely frank with you, I happen to own several suits. The only thing is that they are all the same design. I was at a conference in Lansing, Michigan, in 1973, and the local J.C. Penney's had a 5-for-1 suit sale. I figured that would be enough to last me a career, and so far it has. I even get them dry-cleaned every year or so, whether they need it or not.

Imp'tint Sports

Nyah-nyah – Warriors Don't go to Halifax

Well, we hate to say we told you so, but, the basketball Warriors failed to advance to the CIAU championships. I guess we'll all have to wait until next year. Now, at least, the Imp'tint sports section won't be as big, and we'll have more space for the ARTS section. You know, really important stuff. I mean, who pays attention to the basketball games, anyway? I bet they don't even get a dozen fans out to them. (I certainly know I never went.) I have heard, though, that the Imp'tint is very popular at Warrior basketball games. At least that's one good thing I could say about them.

Hockey

Hockey? Do you really care about our hockey team? Did you even know we had a hockey team? I didn't. It came as quite a shock to the Imp'tint staff that we had a hockey team. After all, hockey is such a babaric sport. In a world where we should be trying to build a peaceful and just society, we have no room for such a senseless display of masculinity. You know, I prefer checkers myself. Why don't we have a checkers team at UW? I wouldn't mind covering a few checkers tournaments.

Football

Rumour has it that we're going to hire a new football coach real soon. Why do we have a football coach? The money we're paying him could be used to buy more books to enrich the lives of the arts students here on campus. Or maybe to help save the whales from certain destruction. Football is such a brutal sport, anyway. Worse than hockey. I can't bear to watch it.

Swimming

Nobody drowned.

Volleyball

Now there's a half-decent sport. At least there's no violent physical contact in it. That is, unless some brute spikes the ball too hard. You know, there's nothing I hate more than having a nice, friendly game of volleyball with the boys, when some goon spikes the ball right on my head. I think we won this week, by the way.

Well, that's it for Imp'tint Sports. Be sure to watch next week for more concise, hard-hitting reviews of Waterloo sports!

Giant duck swallows Biology II

By Green Mick, Imp'tint Staff

Although Imp'tint is no royal commission, this article may look like Bob Hope's nose. Most papers don't consider it worth their while to discuss real campus events, but Imp'tint does sometimes. Despite why nevertheless, still the VPOF position remains a centre of controversy while at the BombShelter, people are still getting thrown into the Safety Van for no reason.

On the Fed side, reorganisation in the Fed Office has seen an increase in positions through a decrease in officials, a semi-segmented sidepedalling through new board appointments, and a lateral shift in the distribution of power caused by a vertical realignment of horizontal task-sharing. Campus Security remains unconcerned.

At Imp'tint, concern has been over the way articles suddenly

The Algebra of Ontario

One thing that is rarely discussed is this: If Ontario exists as an abstract governmental section of Canada, how can we model this mathematically? There are various theorems of linear algebra that relate directly to this problem.

First, let us define Ontario as a subset of Canadian cities over the field of exhibition stadium.

Suppose a and b are cities in Ontario. Then, when we take any linear combination of a and b, we obtain another city in Ontario. Therefore, Ontario is closed under addition. (except to the addition of foreign refugees, but that is over a more complex field and will not be discussed at great length in this dissertation.) Also, any scalar multiple of an Ontario city is also in Ontario, as there is nothing in Ontario to scale multiple times, excepting perhaps the CN tower, but that is illegal. So, we have that Ontario is a proper subspace of Canada.

Since Ontario is the number 1 province in Canada, we have a rank of 1 and consequently, a dimension of 1. So any matrix of Ontario cities can be row reduced to have only one row. This has the interesting result that once you have visited any Ontario city, you have visited them all.

This gives us that any linear combination of linearly independent Ontario cities can span Ontario and form a basis for the entire province. The standard basis for Ontario is Pickering, Bruce, Chalk River, Darlington, and Niagara Falls, which generate the province and export to the northern United States as well. Any Ontario city can be expressed as a linear combination of these basis vectors. (ex: a little like T.O. but more like Ottawa, I think.)

Further, we can define the inner product space of Ontario to be the sum of the volumes of the convention halls used to display these new products. Then, the dot product of T.O. and Ottawa is written down by multiplying the two vectors or matrices together to form what is known as the dot matrix printer. This may have either 8, 9 or 24 rows.

We can form a transition matrix P between two bases by finding the matrix representation of the multiplicative vectors necessary to represent the same city in terms of another basis. This usually involves the national highway system, and specifically, the 401, which is very useful for the transition between various cities. However, there are numerous pitfalls that have to do with 1986 tax forms and the fact that there is a uniform distribution of calculus laden teenagers on these highways (1).

We can extend the idea of eigenvalue to geography. The eigenvalue of a property is the "own value", which is also known as property tax. You can find the eigenvalue by taking lambda times the empty province (Saskatchewan) and subtracting your original province. Then, take the determinant of the resulting mess and solve for lambda. Finally, you throw it all out and look on the tax charts which gives you the "own value" of your property. There is one important distinction between numerical and geographic algebra here. Namely, the property matrix does not satisfy its own characteristic polynomial because the government is never satisfied with the taxes it receives.

On a more large scale, we can apply the same tactics to larger areas. In the American theory of "Manifest Matrix Destiny," the terms 'North American' and 'American' are confounded to produce the erroneous result that Canada is indeed a subspace of the United States of America. Had this error not been found using geographic algebra, we would be in a sad state of affairs.

As you can see, there is a wealth of new research into the area of geographic algebra that some PM grad could easily exploit. Stay tuned next week when we discuss the probability of understanding the world at large through the eyes of a STATS major.

Shotgun, Deepthot and sundry Band members

(1) See previous mathNEWS for information. Remember—don't do calculus and drive.

The Free Trade Agreement

The Consequences — Part II

The longer term effects of the FTA on our energy industries should be to allow them greater growth. For the benefit of this growth we forego the right to arbitrarily cut off exports to a historically good customer. Otherwise, our control over energy remains intact.

The effects of the greater openness to U.S. investment is not as easy to predict. Most Canadian assets remain under review and their acquisition by U.S. interests can be prohibited. And Canada's competition laws remain in full force and can be strengthened if necessary. Moreover, as Canadians increase the rate at which they are acquiring foreign assets (Canadian investment in the U.S. approaches $40 billion), our restrictions on foreign ownership lose some of their validity.

The greatest changes that might occur as the result of the FTA may be those negotiated in the future, as part of the process of defining "fair" international competition. Under FTA we are obligated (and wish to) negotiate the matters (but we are of course not obligated to actually agree on anything). As part of these negotiations the U.S. will almost certainly suggest that many of Canada's social welfare policies (pensions, UIC, maybe Medicare) are unfair subsidies. We will certainly reject such suggestions entirely.
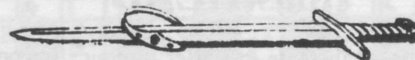
But the critics say this will be impossible. As the FTA comes into effect we will become so dependent on the U.S. market there will be no turning back. As the far larger partner they will dictate terms that we will have no choice but to accept. And we will even have to lower our taxes to match theirs to keep our industries competitive. So here comes the Americanization of Canada.

But we are not a supplicant and America is not the benefactor. We are their best customer and they need us. So we can force them to accept some bottom-line conditions. We have done so already: the exemption of the cultural industries, investment review and the binational panel. And incidentally, the real tax burden in Canada and the U.S. is not significantly different.

Part of these negotiations will deal with direct subsidies to industries and we may well wish to agree to reduce our support of inefficient companies if the U.S. is willing to do the same. Dealing with regional subsidies will be the thorniest problem here.

We will want, nonetheless, to be alert to any serious disadvantage of the FTA that may arise. If it does and we cannot re-negotiate a solution, then we merely give notice of termination. More likely, on the basis of our past experience with trade liberalization, under the FTA we will just continue to get richer.

Larry Smith

Changes in the Work Report Scene

The mere mention of work reports is bound to get a reaction no matter who the audience, whether it be the students who write them, the employers who supervise them, the coordinators who monitor them, or the faculty members who mark them.

The Faculty of Mathematics is undertaking to modify a number of aspects of the work report process:

— The Faculty is prepared to participate in the modification of the University- wide report writing guidelines, last changed in 1983. Student input will be solicited through the Faculty/Student Liaison Committee.

— The submission of work reports by the appropriate due dates is being monitored more closely. Extensions will be granted only rarely and only when mitigating circumstances have been clearly beyond a student's control. Students are expected to arrange their work term commitments so that work reports are complete and have been evaluated by employers prior to their return to campus.

— Normally, students are not permitted to submit more than one work report for a single work term. Students who find themselves behind in work report submission should arrange to see the Associate Dean for Undergraduate Studies as soon as possible to discuss their status. As a short term measure such students may be asked to write additional work reports to qualify for a co-op degree. In the future, students who are in a position of having insufficient work terms remaining to complete the required number of work reports will normally be required to withdraw from the co-op program since they can no longer meet the requirements for a co-op degree.

— In order to provide better feedback to students writing work reports, the Faculty is experimenting with alternate methods of grading work reports. During the current winter term, some of the tutors in the University Writing Clinic and a group of graduate students in English were involved in the marking process. Students who submitted a work report this term are reminded to please complete the marking evaluation received with their marked report and submit the questionnaire in MC 5115.

The Faculty of Mathematics is committed to making improvements to the way in which work reports are handled in an attempt to help students improve the writing and communications skills which are so essential to their future development.

Arnie Dyck
Associate Dean

mastHEAD

Despite the small increase in staffer turnout, this one went pretty smoothly. I still want more people to come out to production nights, mind you. But for now, I'm happy. On to the thank-yous (sorry if I missed you this week).

Creative Staffers: Carolyn Duke, Dean Michael, Bailor, Jim Randall, Stuart and Frank, and Chris Fievoli.

Distinguished Contributors: Recruit, Lisa, Center of Gravity, Larry Smith, One-Armed Phil, Earl Skorn, Stuart L Hodgins, Serfer, Uncle Smash, Home Run Baker, Timmy, fletniowski, Arnie Dyck, Shotgun, Deepthot (et al), Don Watts Jr., Green Mick, Greener and Boston Creme, and Hymie (great cover).

Miscellaneous Thanks: Marion and the Graphics Services Crew, DCS, Little Ceasars, and all our readers and subscribers

Zonk! Blammo! Boff! Yet another issue of your friend, mathNEWS, hits the bricks. Hope to see lots of you out for next (!ast) production night. As for now, that's a wrap!

John Thomas

Work-Term Reports *An Opinion*

This term the Faculty of Mathematics tried an experiment with the marking of co-op work term reports. Instead of the time-honoured tradition of having all non-first term reports marked by Math profs, the reports were marked by three groups: Profs (control group), the University Writing Clinic, and Masters English students. Students whose reports were included in the program were asked to provide feedback through evaluations.

Work reports have always been a thorny issue, especially in Math. Some aspects of the work report process, such as the production of guidelines, are handled by Co-operative Education, and other aspects such as marking reports are controlled by faculties. Math has traditionally been the most stringently attached to regulations, and has rigid guidelines which must be followed. These guidelines include the measures mentioned by Associate Dean Arnie Dyck elsewhere in this issue. Other regulations tend to turn up only as a student has inadvertently violated them—a good reason to rewrite the rules.

To be registered with the appropriate government authorities, a Co-op program must have some work report component. By and large, the universities decide for themselves how to implement the reports.

Most math co-ops tend to loathe work reports. Some students actually see their report as a commitment to provide an insightful analysis which is useful to the employer, and from which the student learns. Others scam through the process, writing the report upon return to campus. Several years of observation indicate that the two methods have roughly equivalent results in terms of marks.

The Faculty would like to change that, and has tried this new experiment as a first step. Among the issues to be resolved are: who is the report's audience, and what is the report's purpose?

The Clinic or Masters students mark solely on the grammar of the report. While the comment has been made repeatedly that "My boss doesn't understand grammar any better than I do!," it is often true that one spelling or grammar error can detract from the effect of an entire presentation.

Complaints that the new markers cannot mark for content can be answered simply: many of the profs cannot or do not now mark for content. Certainly all veterans of the process have had reports returned pristine and unaltered, testimony to the thoughtful weighing of content that the prof performed. (Translation: It wasn't even read.) Even those few profs who do take the time would far rather not labour over unfamiliar subjects. All that analysis which we were all lead to believe was vital has been passed over for years now anyway.

Reviewing technical content and analysis should be the task of the employer, and an obligation incurred with a co-op hire. The employer is the only qualified judge of the analytical merit of the report, and it is long past time that the Employer's Evaluation become more than a formality.

A report should above all be clear, structured, and grammatically correct. It does not need to meet Masters thesis requirements, and indeed the reports in the experiment were not marked that harshly. One Masters student involved in the marking reported that the reports were, on the whole, very well written, and that most reports he had seen showed that their authors communicated well.

An alternative to the work report would be a required technical writing course. This is unattractive to most students and would put a severe strain on the English department. Even with unwieldy 50 student sections, a class of 800 co-op students would require 16 sections a year...and the money and staff for that service is not forseeable.

Surely the suddenness of this experiment has caught many people off guard, but it is long past time for a change. Putting some value back in the report process, as this program begins to do, is a worthwhile endeavour. If you have some input to the process of rejuvenating the work report system, contact the Faculty/Student Liaison Committee through MathSoc or the Math Undergraduate Office.

Stuart L Hodgins

mathNEWSquiz #5

Welcome to another one of the reasons you like to read math-NEWS — the only paper on campus that gives you a half-decent squiz every second week. I'm sorry if we scared you by taking on the appearance of Imprint this week. I hope it didn't unduly upset you or ruin your Friday or anything. Hold on, though. The real Imprint will be out later, and you can do whatever you do to the Imprint then. Like do the ?? Arts Mystery Contest??. Gee, how challenging. At least the squiz gives you something to think about. And you don't have to venture anywhere dangerous to get your prize. (Unless the MathSoc office is what you consider dangerous ... if you can find it ...)

Bands

Name the bands which were, at various times, comprised of the following members:

1) Rick Danko, Robbie Robertson, Garth Hudson
2) David Coverdale, Ian Paice, Nick Simper
3) Neil Young, Stephen Stills, Bruce Palmer
4) Vinnie Martell, Carmine Appice, Tim Bogert

Literature

5) What Sherlock Holmes mystery culminates in the arrest and subsequent death of Jefferson Hope?
6) With what author do we associate the character Holden Caulfield?
7) Who penned the script for the film *Superman*? (Clue: One of his novels was turned in an Oscar-winning movie for best picture.)
8) What Ottawa politician penned *A Bird in a Gilded Cage*?

Baseball (How seasonal)

9) Cornelius Alexander MacGillicuddy was better known as whom?
10) What former Braves pitcher (now with Montreal) got lost on the highways circling Atlanta before he scheduled to pitch his first game for the team?
11) What team did Dick Williams, now with Seattle, pilot to a World Series berth in his rookie year as a manager?
12) Which of the following players never hit 500 homers: Harmon Killebrew, Lou Gehrig, Mel Ott, Ernie Banks?

Returns were a little lacking this week. Were the questions too hard? Judge for yourselves...1) Regina Manifesto (No, not Communist) 2) Lebanese (And, yes, P.E.I. is still peaceful) 3) Social Credit (Print more money!) 4) Gerda Munsinger (Parliamentary scandal — that's something new) 5) JFK (Can we blame him for the sixties?) 6) Brooks Robinson (Bailor was right!) 7) Shoe (Easy, huh?) 8)The topless bikini (We needed specifics) 9) The crucifixion (He was the good theif) 10) 1904 (NOT 1932 — that was L.A.) 11) Lake St. Clair (Giveaway) 12) Tarsus (Is this in Syria?) I'll make the comments quick, since I'm having terrible terminal luck this evening. The winner is **CYBERdude**, who answered 7 correctly. Following were Nomen Varius Paulus Tribuna (6), Chris (2), Rock Hudson (2), and Uncle Smash and the E-Street Band. CYBERdude can pick up his math-NEWSquizExpert certificate in the MathSoc office. Category leaders: Politics — CY (3), Clothing — Cy and Nomen (2), Saints — Nomen et al (3). You too can be a winner — submit your entries in the LACK BOX in MathSoc (MC 3038) or under the mathNEWS office door (MC 3036) by 6:59:59 pm Monday, March 21, 1988. This is you last chance to win a squiz prize, so do it! And now, a final comment to TTWIAHA, last week's winner, who seemed a little miffed that I didn't know who he was. Gee, pal, I'm about to graduate, and I've never heard of you! Are you *that* old? But, hey — Sexual Congress was my favourite. See ya.

One-Armed Phil
The mathNEWSquizmaster

An Explanation for the State of the World

In one of his philosophical blockbusters, Rene Descartes said,
"Cogito, ergo sum."
Let us translate that undeniable truth into Descartes' native tongue, French:
"Je pense, alors je suis."
From the French verb *suivre* (to follow), it follows that
"I think, therefore I follow."
Taking the contrapositive:
"If I do not follow, then I do not think."
But, considering humanity as a partially ordered set with respect to following (if I may be allowed to lapse into algebra for a moment), if one does not follow, one must lead. From this verity I am drawn to the inescapable conclusion that today's world leaders do not think. Hence the sad state of the world. Descartes and I are not the only ones with these thoughts, apparently; the eminent philosopher Zaphod Beeblebrox has this to add:
"Anyone who is capable of making themselves President should on no account be allowed to have the job."
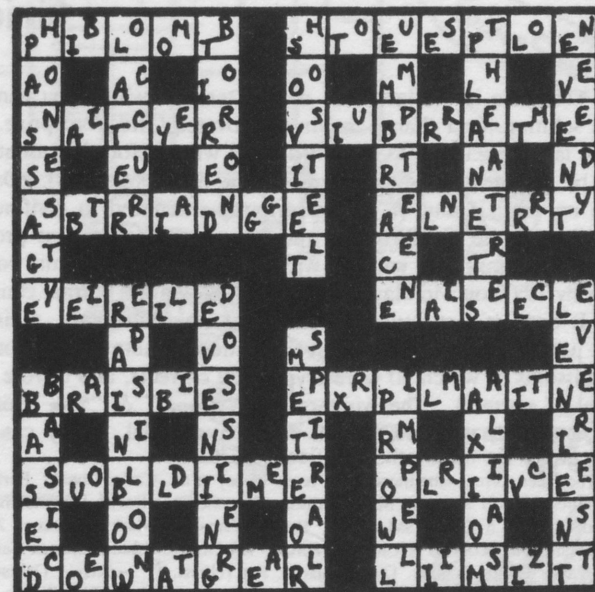In these times of choosing a new leader for the Excited States of Hysteria, we would do well to consider these words.

Center of Gravity

Frosh Issue 1988

What should they know?

This summer, the Frosh Issue 1988 will be produced. This stunning collection of information and entertainment needs your input! What do you wish you'd been told before you first arrived in Waterloo to pursue this so-called higher education? What printable message would you like to pass on to the new generation of victims—err—students? mathNEWS wants your contribution!

GRIDWORD

Cryptic

Across
1. Apart from a border (5)
4. With reference to a support of some initials (7)
9. Cradle a fish with one snare (8)
10. Black, short knock (4)
11. A merchant-ship could be so gray (6)
12. Dislike the derby winner's ribbon (6)
14. Deviate and answer verily from sight (6)
15. A celebrity of victory in Europe knows hunger (6)
17. Uncover, about the meat (6)
20. Actors could be Cuban (6)
21. Quiet atmosphere for the two (4)
23. A court order below an author of North America (8)
24. Change order for each unspeaking person (7)
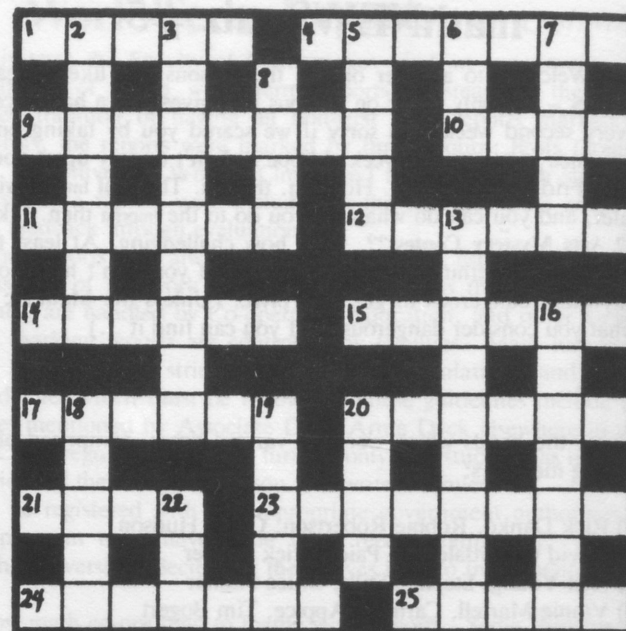25. Portions back corporal punishment (5)

Down
2. A bird fight in a line (7)
3. The princess' direction of conversation (9)
5. A quiet reason to scratch the throw (5)
6. A risen black associate slangly has a globe (3)
7. No region of a depleted layer (5)
8. A letter had, without hesitation, very jealous thoughts (4)
13. Carry time-hurried recreation (9)
16. Dave ran to the porch (7)
18. Exist up to 135 degrees to wipe out (5)
19. Listen, a lean composer! (5)
20. A copper degree from the Caribbean (4)
22. The first real morning animal (3)

Identification ....
Favourite Bodily Function ....
Comment ....

Conventional

Across
1. FLORIDA CITY
4. PECULIAR QUALITY
9. QUARTER-LENGTH PORTRAIT
10. BOAST
11. COLLECT
12. SPECIAL ABILITY
14. BARREN
15. FRED, eg.
17. EAGER
20. PAVED RUNWAY
21. LEER
23. MYTHICAL COUNTRY
24. STRIPED
25. MAIN

Down
2. LIVELY
3. TOP APARTMENT
5. SUGARY
6. FLOW BACK
7. LINKS
8. CELESTIAL OBJECT
13. MAZE
16. CONCEIVE
18. CONSERVATIVE
19. WORN PATHWAY
20. UTTER
22. AUGMENT

Grid Participation

This here is the last issue of this term in which you can submit your solution for a chance to win the coveted GridWord prize. It also is the last participatory GridWord I will write before I graduate (there will be one next issue but there will be no submissions). One more note on that: if any of you is seriously interested in continuing the tradition of the GridWord in the future, come out next production night and familiarise yourself with what goes on. Submit your solutions by 19:00 on Monday, March 21, 1988 via the normal channels.

It appears last issue's cryptic Grid was quite easy, giving some new people a chance to submit a solution. There were a total of 36 submissions of which 30 were cryptic (29 correct), and 6 were conventional (5 correct). The winners are: "Sunny" & "The" for cryptic and ȻMH MWN JȻH DH for conventional. They can receive their prizes via the MathSoc office (MC3038).

The other correct submitters of the issue: Dopey et al., Carlos Donald, Burke P., Paul & Andrew, David & Anne Marie, Alison (& sometimes David & sometimes Frank), Grendel, Dork 'n Geek, SM & IW, Robyn, Chris, P, Mark Earnshaw, Zamil Janmohamed, Tom Bootland & Charlene Purdie, W4 Gang & Ljsa, Haystack Calhoun, Nomen Varius Paulus Tribuna, Duck (Quack), Pat Telford, P^2-adic, Dalton Campbell & Anne Marie Chung, Luke Robertson, "Svend Robinson", I be CYBERdude, Gumby & Pokey, Peter Found, Galahad, Kral Soulcrusher, Linda & Jim & Kevin & Steve Hull & sometimes "y", p2.

And the two not-so-correct submitters: I be Bailor and FIZZ & the D.T. Bomber.

Favourite Redundancy: "The government (or any part thereof)"; "Favourite Redundancy"; "Zero-Zero, scoreless tie"; "Higg's yellow pants"; "Totally unique"; "Unnecessary ones"; "Studying for finals"; "CS 132"; "Corrupt Politician"; "Successive iterations"; "DEC maintenance"; "CS 140/180/234"; "CS350"; "used by users"; "CS department"; "*Bad* Village Food"; "Doug Wright"; "Liberals & PC's"; "Inferior engineers"; "NDP party"; "GridWord Logo" (???); "Pizza Pizza"; "Political Scandal"; "Making Brian Mulroney redundant (in Br. redundant ≡ laid off)"; "Software program"; "Half incomplete assignment"; "SIN number"; "Dictionary of Redundancy, complete and unabridged".

Other comments: "Smoke me, I'm a salmon!"; "Can you see the difference? I can't see the difference!"; "If they get any easier, I'll be forced to pay attention in class"; "Skin on skin . . . let the love begin!!"; "We think you'd look better in floral print than in black print" (well, actually paisley is best); "I'm beginning to think this way!" (Ack, you should see what it's done to me); "Ain't life wunnerful"; "WLU, nothing for you"; "I [heart symbol] GridWords ('specially when I win)"; "I've been doing these things since '83. Why haven't I been chosen yet?" (Well, I've been doing these things since 1985 . . .); "Finally finished one!" (Great!); "Too easy"; "Hail to Brownies, may they rule forever"; "A little grind for this Grid"; "A weekend off can do wonders"; "What does the 'it' stand for when you say 'what time is it?' ?"; "It is easier for a rich man to pass a needle through the eye of a camel than to enter heaven"; "What else do you do with an eclair pan?"; "Choose me! Choose me!"; "Actual operating mechanism unknown"; "monotheism?"; "Oolcay Itay (cryptic literary refernce)".

Have fun!

fletniowski