mathNEWS

Volume 42 Number 5

Friday, October 31, 1986

LookAhead

Co-Oops Only
Nov 4 Rankings available 11:00
Nov 5 Rankings due 4:30

Fed Flicks $1 Feds, $3 others
Oct 31 - Nov 2 The Hitcher

Cinema Gratis *9:30 in the CC—it's free!*
Nov 5 The Great Escape & A Dream of Wild Horses
Nov 12 My Dinner With Andre & Donnesbury Special

UW Arts Centre
Call 885-4280 for more info and tickets
Oct 31 Great Capitals of Europe
Nov 3 International Movie: A Love in Germany

Other Events
Oct 31 Spring Pre-registration ends
Nov 1 MathSoc Car Rally
Nov 1 TheatreSports - Siegfried Hall St Jeromes
Nov 3-7 Summer '87 MathSoc exec nominations open
Nov 8 Wine + Cheese
Nov 15 CSC Othello Tournament

mathNEWS
Nov 10 Issue #6 submission deadline.
Nov 10 Next production night
Nov 17 Next mathNEWS comes out

Ten Methods of Proof

- 'Obvious', 'Self evident'
- 'It follows', 'It sounds okay', 'Most believe', and for you Greek history buffs, 'It was well said'
- Proof by trivial example
- If it's true for $n=1$, $n=2$, and $n=3$, then it's true for all n
- Proof by exhaustion: Try all cases, and if you fall asleep before you find a counterexample, then it's true. Similar to proof by induction, but without the $k=k+1$ step.
- Proof by religious conviction
- Hand waving, Partial proof
- Induction
- Tedious proof, Rigorous proof
- Formal proof, with or without references back to first principles

The Philosopher

Prezz Sezz

Odds 'n Ends

Hallowe'en is upon us and there will be plenty of parties going on. MathSoc is having a Costume Masquerade Ball at the Bombshelter. Unveiling will be at midnight so you can act like a fool 'till then. Prizes for best costume. This is a fundraising event for UNICEF—give $1, get a Hallowe'en button.

The Annual MathSoc Car Rally is this Saturday. Let's have a good time, but no accidents please.

Next Saturday, November 8, is our infamous Wine + Cheese. This is a thigh-high pink tie affair. Wear your pink tie and get some free _____. Dare to show some leg and get some free _____.

Grad photos will be taken in the following two weeks. If you haven't signed up, there will be a sitting next term. The photographer still needs helpers so do your part, sign up outside the MathSoc office. (It'll only take one hour of your time.)

The yearbook will need some artistic direction in forming the layouts. There doesn't seem to be much interest in the yearbook except from the fact that people are buying them. But where do yearbooks come from? The sky? NO! From you, the grad. This yearbook is for you and only you can make it a great memory.

Elections for the summer exec—Prez, VP, and treasurer—are coming up. In case you didn't know, if these positions and those of class reps were not filled, there would be no MathSoc. So what do you say? Well, this in turn means no photocopier, no old midterms and final exams, no C+D, no lockers, no mathNEWS, no Math Grad Ball, no orientation, and so on. So if you have even the slightest political inclination or even mild interest in being involved, get yourself nominated. If you have any question regarding the exec positions, come in and talk to me or Lisa Budnick or Brian Fortune, your Prez, VP, and treasurer respectively.

Good luck on your midterms—soon to be exams.

A Note From the Editor

Well, now some of you should *really* be confused, but don't worry: mathNEWS will be bi-weekly for the rest of the term. That's two more issues. (Egad! Four weeks 'till the End of Term!)

Do those mathNEWSquizzes, and hand in your solutions! Even if you can only get three or four answers, you won't be the only one. (Admittedly, last week's was a bit easier, and scores as high as six and eight were seen. And one nine. Awesome.) And don't forget your Gridwords, either. The Gridword logo is back to full size. (Each issue, if we cut one from the previous issue to use, and Graphic Services has to photoreduce the pages to fit everything on the page, well, ... compare the size of the logo to last week's.)

Now, on with the thanks. Thanks, Rob Harnden, Dan Kermode, dan schnabel, Cary Timar, Frank Letniowski, W.Jim Jordan, Tom Ivey, Rob Muir (twice—once for last week), Camille Goudeseune, Dave Mooney, Wilma van der Veen, Brett Martin, John Omielan, Ken Shirriff, the Wizard of Id, C. Sneer, Nancy, Christine, the mathNEWSquizmaster, Rastus O'Dinga, The Philosopher, Sauron, and of course, everyone else who helped. Give me your names, and hit me over the head a few times, and maybe *then* I'll remember you. (So far I've been thanking all the same people, and mostly in the same order. But order is, after all, chaotic and meaningless ...) On the other hand, Barb Palmer has been telling me that I thanked her once when she didn't do anything for mathNEWS. So this week, although she again didn't write anything, I'm not even going to mention *her* name.

Happy birthday to all concerned.

Have a safe and Happy Hallowe'en.

Paul D. Obeda

ElseWhen

mathNEWS *ten years ago*

chevron REOPENED–At a Federation of Students council meeting Sunday night, the student councillors voted to re-open the *chevron* after closing it four weeks ago... As of press time, the *chevron* staff had decided not to publish a *chevron*, but to continue to publish a *free chevron*, as the staff did not feel the council had done enough... Apparently, if you do not have the preconceived notion that the Federation of Students council is all wrong, and the *free chevron* is all right, you are not welcome to work on the *chevron*.
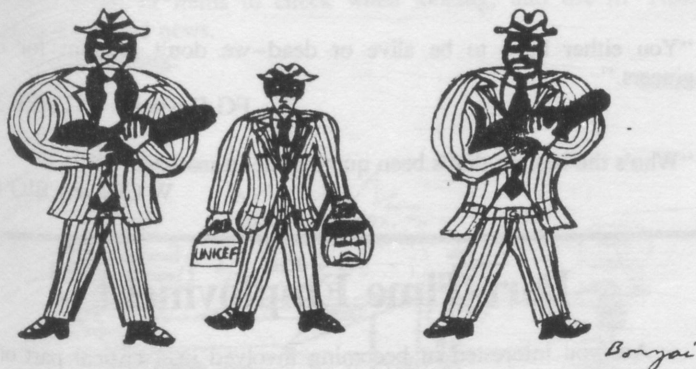
IDENTITY CRISIS–If you're a user of the Honeywell, chances are you know of Preston Gurd, who provides consulting for it, as well as being a programmer for same. You might have wondered what his official position is here. A quick look into the UW local phone directory reveals that W. Forbes is not alone, for Preston Gurd's position is listed here as "Dean of Math".

A MATTER OF PRIORITY (AND THEY GOT IT RIGHT)–Once again the Federation has held a General Meeting at which nothing was accomplished. The meeting had to be adjourned because a varsity basketball game was booked to follow it in the gym...

WORKLOAD STUDY–Question 3 in the 1976 Anticalendar reads as follows: How much time do you spend each week on the average working on this course (includes lectures, homework, tutorials, studying, projects, etc.)?... I also computed the average "workload" for all courses by year. 1st, 2nd, 3rd and 4th year courses respectively averaged 6.10, 5.13, 4.92 and 4.70 hr/wk... Believe it or not, these times are supposed to include time spent in lectures and tutorials... Only students who attended class on the day of the survey were included. The more diligent students had a better chance than the slackers of being included in the survey. Thus the workloads calculated will overestimate the average time spent by all students registered in the course... As it is now, it would appear that a good student could take 12 courses per term, and still have plenty of time left to play bridge.

FRONT PAGE HEADLINE–Carter Defeats Ford

Excerpted from **mathNEWS**, *Volume 12, Number 6, Friday, November 5, 1986*

Trick or Treat

Nominations

Nominations will soon be accepted for summer '87 MathSoc executive positions:

President

Vice-President

Treasurer

Nomination period: November 3-7
Forms available in the MathSoc office

Co-op Notices

Co-op Math students can pick up their Job Ranking Form by presenting their I.D. card to the receptionist in Needles Hall after 11:00 A.M. on Tuesday, November 4. Completed Job Ranking forms are to be returned to the reception desk by 4:30 P.M. on Wednesday, November 5.

Jobs for students in the Math Teaching Option program will be posted on the first floor bulletin boards in Needles Hall on Tuesday, November 4. These job postings will be removed on Wednesday, November 5.

The Co-op Student Advisory Council will be meeting on Tuesday, November 11 at 4:30 P.M. in Needles Hall, Room 1029. The minutes of the previous S.A.C. meeting and the agenda for the upcoming meeting are posted on the S.A.C. bulletin board in Needles Hall. Co-op students in all programs are invited to attend.
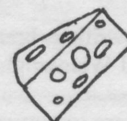
Center of Gravity

It's Coming ...

The Gala Event of the Term

The Math Wine + Cheese

Nov. 8

Watch banners for further details

Car Rally

For those already signed-up, see you ten minutes before your starting time tomorrow at the NE corner of the Math and Computer building (by the new ICR building).

For the rest of you, there may be some spots left. Check in MathSoc (MC 3038)

Brett Martin

Prof Quotes

We're still getting Prof Quotes by the truckload, and as long as you give them to us, we'll print them. Of course, we're still going by blind faith that the profs actually DID say the things that they are being credited with, and that they aren't being libeled by students who did poorly on their midterms. Notice that we also get slightly different variations of the same quote from different sources...

"The fact that this number is rational has nothing to do with its mental stability."

DH Younger MATH 134a

"...when we say a number is rational we don't mean that the number is not mentally unbalanced..."

DH Younger MATH 134a

"Your mathematics education should teach you the Greek alphabet if nothing else."

D Siegel AM 481a

"I may give you a mild case of this as an exercise."

M Albert MATH 240b

"No, this is completely useless, no matter how devious the route."

P Schellenberg C&O 350

"Suppose you are stranded somewhere without Chi-squared tables, not a likely problem, but just in case..."

Shaw STAT 231

"I'm out of theorems, so let's think of another theorem."

D Djokovic MATH 244a

"Mathematics is not very good at squeezing fruit."

W Cherry STAT 332

"Do you mind if I rub this nonsense off and replace it with some other nonsense?"

Bennett STAT 230

"The fact that this variate is cuter than the other doesn't make a damn difference."

Bennett STAT 230

"Don't write this down! If you see anyone writing, break his pencil."

J Wainwright MATH 140a

"I really think that numbers greater than 5 are too large anyway."

C Ng MATH 234a

"Take any function you like—even one you don't like."

B Higgs MATH 134a

"You get to prove this if you survive to third or fourth year."

G Lastman MATH 130a

"So nobody's going to approach me in the Gent's and ask me how these are done?"

C Rogers AM 381

"Important theories usually have about 50 corollaries."

M Best ACTSC 335

"I'll probably get this wrong, so watch carefully."

M Best ACTSC 335

"Has anybody got a headache yet? It's gonna get worse."

M Best ACTSC 335

"What have I done here? I've written it backwards."

Lawless STAT 330

"Everybody know the definition of a function? I mean, give me an x and I'll f it!"

K Woolner PHYS 121

"This is known as 'Tromping all over the program with hob-nail boots.' "

JW Graham CS 180

"The ducks are like students—quote Shakespeare to them and they go away."

B Lawrence MTHEL 100

"This isn't quite right, but it's close enough."

D Wood CS 360

"Carry on ad nauseum ... or until you feel sick."

DM Jackson MATH 234a

"Now think of these two functions as machines. The output of one is the input of the other. So I guess this is the male machine and that is the female machine. Perhaps that was a bit risque."

P Hoffman MATH 134a

"This is all you have to write down to get all the marks, even if it's not clear to you. It is called 'proof by intimidation.' "

P Hoffman MATH 134a

"If you find a good politician, take him out and shoot him before he goes bad."

SG Davisson AM 465a

"You've got to get a little closer than Listowel to count the number of elements."

K Rowe MATH 234b

"You either have to be alive or dead—we don't account for Engineers."

FG Reynolds MTHEL 305

"Who's the bastard that's been quoting me in mathNEWS?"

W Cleaver BIO 113

Part-Time Employment

Are you interested in becoming involved in a critical part of a new fundraising initiative for University of Waterloo alumni? Do you possess strong communication skills?

Part-time jobs are available on campus for enthusiastic and outgoing students. Must be willing to work two evenings a week, 6-10 pm. Hourly wage $5-6.50 maximum.

No experience necessary.

Excellent job training and skill development.

Contact: Pauline Hall, 885-1211 ext. 2038

Shop Early

'fore Christmas!

Co-ops—if you're going to be looking for accomodation in Toronto for January to April, and you haven't started yet, you had better get it in gear. Time is running out.

The vacancy rate in T.O. is hovering around 0.2%, and not much of the available accomodation is student-suitable. The tight market means rental prices are inflated as high as possible (sometimes higher). Don't be surprised by prices around $500 a month for a single room apartment, or $800 for a two-bedroom. Utilities are seldom included in the package—be sure to ask!

Don't expect too much. In most cases, one-to-a-room will not be financially feasable. The downtown core is most expensive, and places on major bus/subway/streetcar routes aren't much cheaper. Exceptions *can* be found, but don't count on them. Remember, too, that a tight market means that many *real people* will be looking, too. Anticipate large crowds at every place. Be on time, or a little early, if you can.

A housing service *can* provide you with extra places to see, but may not be worth the cost. You pay a registration fee of about $40-60, and thus gain access to the service's database for the type of place you want. The bigger Toronto services include Speedy Rental and Homelocaters. Among co-ops who tried these, Homelocaters seemed to offer better performance.
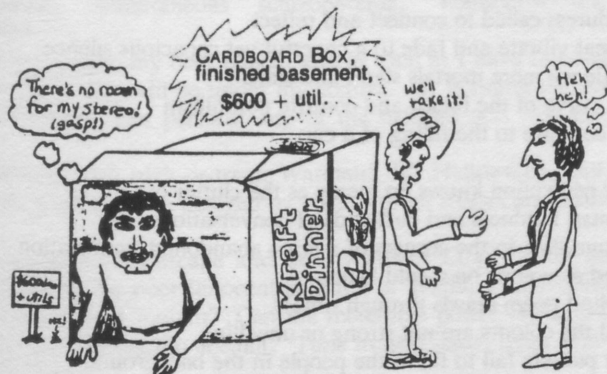
You may need three or more references, preferably written, and many places will want to check with your bank. Do **not** give anyone your balance, or your VISA number. Some will ask, but you don't need to answer.

A note for Hogtown Neophytes. If you've never looked for housing in Toronto before, let me warn you. Toronto is big. Really big. I mean, you won't believe how vastly, hugely, mind-bogglingly big it is if you thought Kitchener-Waterloo was big. If you work in the West end, do *not* take a place in Scarborough (in the East). Ask someone who knows Toronto geography to help you. Note also that a one-hour ride to work is not unreasonable, but beyond that you should consider how much of your week will be spent in transit. (In most cases, don't even consider driving to work. It's not worth it.)

If you don't find a place in a few days of looking, don't despair. In August, with the student market dwindling into virtual nonexistence, it took many co-ops over a week of continual searching to find a place. Almost everyone has a place now, but some are gungy. Prepare a list of items to check when looking, and use it. Nasty surprises are bad news.

Good hunting!

Sauron

Nineteen In A Row

The football team's consecutive loss, consecutive winless season and consecutive blown lead counts now stand at 19, 2 and 2, respectively. Last Saturday the curtain came down on another season of Waterloo's longest-lived comedy (sorry, FASS). The Waterloo Warriors took on the Windsor Lancers in a game that, given the Federation's new Athletics Commission's bowl fetish, might have best been advertised as the 1986 Toilet Bowl.

The game started with Waterloo finally receiving the opening kickoff. The receiver promptly reversed to the Warriors' 5-yard line, where he was tackled. Three plays later, the punting unit was out on the field. On Windsor's first play from scrimmage, the ball was picked off and run to the Waterloo 45. Shortly afterward the Warriors were in the end zone with their second lead of the season.

They added another touchdown a few minutes later, and with a 13-0 lead, it looked as if Waterloo would finally chalk up a win.

Unfortunately, the team immediately forgot what they learned at York the weekend before. Windsor scored 49 of the next 50 points to win, 49-14, and have their best season since I arrived at Waterloo.
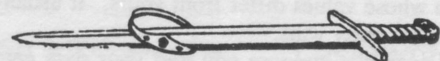
When the game ended, the Warriors Band played a much-abridged arrangement of the Hallelujah Chorus from Handel's *Messiah*. Pachelbel's *Canon* made another brief appearance in the second half, when the Warriors didn't have an offence that could be spurred on. The laid-back rendition of *Tuxedo Junction* during the fourth quarter was much appreciated by the cold, otherwise bored, fans.

This season the Warriors scored 80 points in 7 games, while giving up 261. This is an improvement over 1984 (when they beat Toronto) and 1985, when they scored 57 and 34 points, respectively. Last season the team gave up 313 points. Believe it or not, they have improved.

What are the prospects for next year? Well, the Warriors were rookie-laden this year, and so have a good crop of players who know what Coach Bob McKillop likes to do on the field. A handful of players are graduating. Quarterback Mike Wright has the potential to be a force to contend with if he can get another receiver besides Chris Maeker. The defence is still susceptible to the big play, which has caused them problems all year. They'll need a new punter next year, and still need a place kicker. The offensive line has to solidify somewhat to give the quarterback some time to find a receiver instead of scrambling or ditching the ball. Coach McKillop has a lot of holes to fill. I'm hoping he can find the new players, and hold on to the current players, that he needs to fill those holes next season.

Nasty, completely unsubstantiated rumour department: I've heard a rumour about that the football team could be cut because of a lack of funds (not a lack of success). This would not be a good thing to do yet, just as the team seems to be building something that might win a game or two next year. Has anyone else heard (or known for certain) what is happening with the football team next year?

dwarf

Excerpts from

Doctor Heartbreak's Book Of Love

LOVE IS THE THING WITH FEATHERS

I have no idea what this means. The nearest I can come is recalling the night flight scene from the Superman movie. It's the one where he takes off with Lois Lane and they cruise around the Statue of Liberty and she nearly falls to her death but he catches her in the nick of time. If that's not love, what is?

IF YOU LOVE SOMETHING, SET IT FREE
IF IT COMES BACK, IT'S YOURS
IF IT DOESN'T, IT NEVER WAS

The hardest lesson to learn, it seems, is to give the person you love room enough to love you back. We can't help being egoists. We can't help thinking that we deserve things, and we can't help demanding them from God or Fate or whatever cosmic metaphor you like. (If we were otherwise, we probably would have stayed up in the trees where it's safe or down in the sea where it's safer.) In the quickening of a relationship the other person can become a metametaphor, a kind of deity in themselves, and we transfer our enormous demands to them, if not in word then in thought.

But we are all finite beings, with a finite capacity for time, patience, kindness, sexual dalliance, all of which can fill the gap before love is returned. During that time demands cannot be made. It's a matter of striking a balance between being with a person and letting them be.

BIRDS OF A FEATHER FLOCK TOGETHER

I suppose this goes along with love being the thing with feathers. Don't ask me why lovers are identified with birds. Birds are so precise: they know how to fly, when to fly, when to sleep in the sun, when to call and when to chirp. Birds are never sad, never drown their sorrows in *anything*, never write lurid letters of recrimination and tear them up, and never send lurid letters of recrimination only to find themselves apologising lavishly—to wit, eating crow, which any ethical bird (not counting the salacious buzzard) emphatically would not do.

Nevertheless, it is easier to love someone who is like you. (It would be trite of me to add that this is difficult if you do not love yourself, but I've never known what loving oneself means.) If you go out with someone with whom you share common interests, then you have a base of knowledge about each other to build on. In other words you have something to talk about.

But what if you two are in the same field or line of work (as when you are seated together at a party by a hostess who says "You'll get along *well*!")? What if you already know this person in another context? Doesn't familiarity breed contempt? Do not fear, my schizophrenic little friend; what I construe "birds of a feather" to mean is not most importantly similar interests and/or hangups but rather similar attitudes and responses to the world: in a word, values. You may not know your own values but you know soon enough when you meet someone whose values differ from yours. It usually results in an argument neither party wins.

For example, suppose you and your date get talking about abortion, finding yourselves on diametrically opposite sides of the question. It can ruin a meal and likely the concert or film or pinochle game afterwards. At any rate, eat at a cheap restaurant because you won't be tasting your food anyway.

LOVE MAKES THE WORLD GO 'ROUND

Did you say this or did I say this? I can't remember. But isn't it Isaac Newton and all his cronies who make the world go 'round? Mind you, love is a good propellant; Dante wrote Orpheus-like for the love of Beatrice, Poe had his anagrammatic muse, while all through fiction people are weeping and dying and doing other frivolous things for love.

But isn't there, shouldn't there be some higher purpose for life? Think now how the earth will look in a hundred thousand years. Think of how the only clue that billions of us worked and prayed and died will be a high radioactivity count. With so much outside our achievement and striving, is it not necessary and sufficient that in our short lives we love each other?

Olympics to be Held in Waterloo

We, the Society for the Nullification of Offensive Trends, now two members strong, hereby give notice that we have commandeered the 1988 Summer Olympic Games.

We find the reasoning behind this hijacking to be fully credible (i.e. $Z=1$, right Rob).

The mere fact that you have to fly there is quite disturbing (remember Korean Air Lines flight 007?). Besides, who wants to go to Seoul anyway? The Russians will be waiting on the other side of the border.

The broadcast of the events would be aired at 0400h. We understand that they are planning to hold some events in North Korea, and there is always the possibility that they may hold some of our athletes, because they sure don't have any of their own.

Don't you think that we saw enough of Korea on M*A*S*H, and there might even be some mines left over.

Libya might get the idea that they are invited.

Finally we hear that James Huberty's autobiography is on the best-seller list in South Korea.

These games, which were to be held in Seoul, will now centre at the University of Waterloo.

Benefits of this move would include revenue for the new dome (still without an official name). There would be major upgrading of the PAC building, which was originally designed for a campus with six thousand students.

The T.V. crews (and their equipment) won't have to be transported half-way around the globe, and they will be just hours away from major media centres.

We deserve the recognition that the games would bring (we'll just hide the artsies and the engineers so they won't tarnish this fine institution's name as we are so accustomed to them doing ...)

See you at the games!

Time Fades Away

Sunday, October 26, 1986

the assuring unreality of the realised illusion
on finding oneself part of the human telephone system
in duress called to connect and reflect
repeat vibrate and fade to a cheerful yet capacious silence
while we mere mortals stand and stare
the curve of the breast and contrite pointillism
all conspire to the filling of a cup

our perception knows no mercy as the clutter of
human kindness and butt-ends of conversations
accumulate in the corners of a large abandoned train station
(and as you sit on a cold bench
a blind poem crawls through time)
and the colours are not strong or unwilling
but politely fail to fill in the people in the background
because there is no colour for the cloth
the three men in suits are wearing

Tom Ivey

THE CONTINUOUS ADVENTURES OF

WATMAN

When last we saw our heroes, Watham City was being covered by thick fog, and our undaunted duo were scrambling to Watham City police headquarters in quick response to the Watsignal.

"Quick, Duck! – No! Don't duck, Duck! – into the Watmobile. And run all the information we have through the Watcomputer."

As they raced to Security Headquarters, Duck exclaimed, "Wholly doctored documentation, Watman! It says here that today's weather was supposed to be sunny, with scattered clouds and solitary patches of **Peasoup Fogg**!"

"That can only mean one thing. Lord Fogg and Lady Peasoup, the evil villains of ubiquitous vapour, have some evil plot in mind. We'll need help from our official forces."

Moments later they arrived at the towering smokestack of Watham City's Commissary, only to find the headquarters vacant with a 'FOR RENT' sign in the window.

"Wholly outer planets, Watman! The entire security force seems to have blasted off to Pluto (at the instigation of an Imprint cartoonist)."

"I guess that means we'll have to protect the City ourselves. But who could have sent the Watsignal?"

Just then, from the ever-thickening fog appeared Lord Fogg and Lady Peasoup. "That's right, Watman. You'll have to deal with us yourselves. Get them, men!"

Out from the fog stepped innumerable muscular minions who immediately gave battle.

ZOMP!
PHLAT!
ZOUCH!

When they regained consciousness, the dynamically daunted double were stuck in the centralizer of a tall silo. Lady Peasoup stood beside the generators, but the evil Lord Fogg ran his hand over Duck's captive body.

"Wholly homomorphisms, Watman!"

Jumping back, Lord Fogg signalled to his Lady, who threw a switch. "That is right, Duck. We will fill this silo with pease, in order to create a silo pea-subgroup! In the process, you will be smothered."

"I was afraid of this, Duck. We aren't just dealing with mere weather meddlers, …"

"You don't mean… ?"

"That's right, my disfortunate dips. It is I, the most encompassing of all evil villains!" cried the Lord and Lady, in slight syncopation.

"Wholly simultaneous schizophrenia, Watman! It's the Grouper!!"

"Right again, my dear quack, and as soon as I have finished with you, Watham City will be under my control. By donning the costume of any villain, I can perform any of the heinous acts that they can do."

"Wholly trick trick-or-treat, Watman! It's Hallowe'en, and Watham City is about to be deluged by villains of all shapes and sizes."

Can our heroes escape and save Watham City? What will the Grouper do to the poor innocent children of Watham City when they go trick-or-treating tonight? Can the incredible power of the Grouper be overcome? Is the silo abelian? Tune in next issue, same Wat-time, same Wat-place.

Na-na-na-na na-na-na-na, na-na-na-na na-na-na-na … Watman!

The Chuckler

Day of the Week

Thursday

The Tough ∞51 Midterm

No aids, no writing implements. Time: 10 minutes.

/3　1) Why (in general)?

/2　2) What are the answer to, and the ultimate question of life, the universe, and everything? (Hint: The answer is **not** $\in R$)

/5　3) Define the universe. Give three examples.

/5　4) Explain why you found it so easy to get full marks on question three.

/7　5) Explain in detail God's process of understanding.

/8　6) List in detail everything God knows. (Bonus marks for organisation)

/15　7) It has been written that man sought out his God and found that he, too had a god. Extend this infinitely then answer questions five and six for that god. (You may use the back of the page)

/8　8) If you have full marks for questions 1-7, write and answer a question which effectively demonstrates the sum total of your knowledge and intelligence.

/5　9) Explain all that you don't know.

/40　10) Guess what this question is, and answer it.

The Philosopher

Mathematical Puzzles

—Solutions to last week's puzzles:

i) This problem can be solved algebraically as follows: Let the distance travelled be x. Let t be the time in hours from the starting time to 6:00 AM. We then have two equations in two unknowns.

$$45t = x$$
$$30(t+2) = x$$

Subtracting gives $15t - 60 = 0$, thus $t = 4$ hours.

Therefore, $x = 180$ miles

Now, to travel 180 miles in 5 hours, $(t+1)$ means the speed of the truck should be 36 mph.

ii) Analysing this problem by calculating the distance the mosquito travels on each trip becomes complicated and tedious. The problem is actually rather simple. It takes the cyclists six hours to meet $(144/(2\times12))$. In six hours, the mosquito travels 144 miles (6×24).

—This week's puzzle:

The Game of Hex

The game of Hex was invented in 1942 by Piet Hein of Denmark. The game was independently re-invented by John Nash, a mathematics graduate at Princeton, in 1948.

The game of Hex is played on a diamond-shaped board composed of hexagons (11 to each side, see fig. 1). Two opposite sides are labeled 'black', while the other two sides are labeled 'white'. The game is played by two players—one with a quantity of black checkers and the other with a quantity of white checkers. The players alternately place their checkers on unoccupied hexagons of the board. The objective of the game is to complete an unbroken chain of checkers from one side of the board to the other. (The "black" player tries to form an unbroken chain from the two opposite black sides of the board while the "white" player tries to form an unbroken chain from the two opposite white sides.) The chain can twist and turn in any manner—see fig. 1 for a winning black chain.
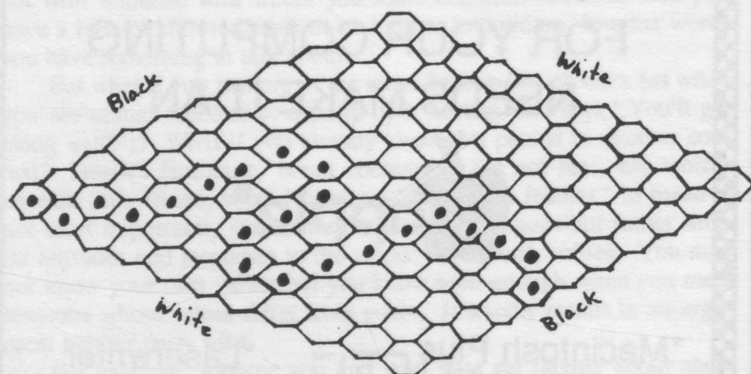

Fig. 1

The game cannot end in a draw, because the only way the "white" player can be blocked from completing his white chain is by a black chain crossing the board from one black side to the other black side. (e.g. One player can block the other only by completing his own chain.)

The game of Hex contains many subtleties which can best be analysed by studying boards with fewer hexagons. On a two-by-two board, the first player clearly wins. On three-by-three, four-by-four, and five-by-five boards, the first player wins if he occupies one of the hexagons marked "X" in fig. 2, on his first move.
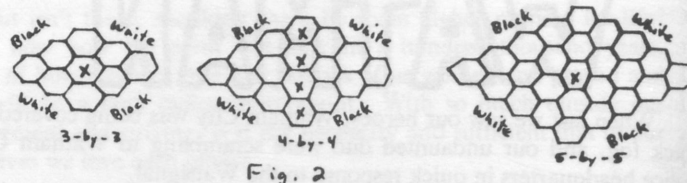

Fig. 2

On the four-by-four board, it can be shown that by choosing on of the two corner cells marked by "X" the first player can win in six moves. Choosing one of the other two cells marked "X" on the four-by-four board gives a win in five moves. If the first player does not choose one of the four cells marked "X" he can always be beaten.

Can you show how the first player on the five-by-five board can win in at most seven moves?

(For more information on the game of Hex, refer to *The Scientific American book of Mathematical Puzzles and Diversions*, by Martin Gardner, (Simon and Schuster, 1959)).
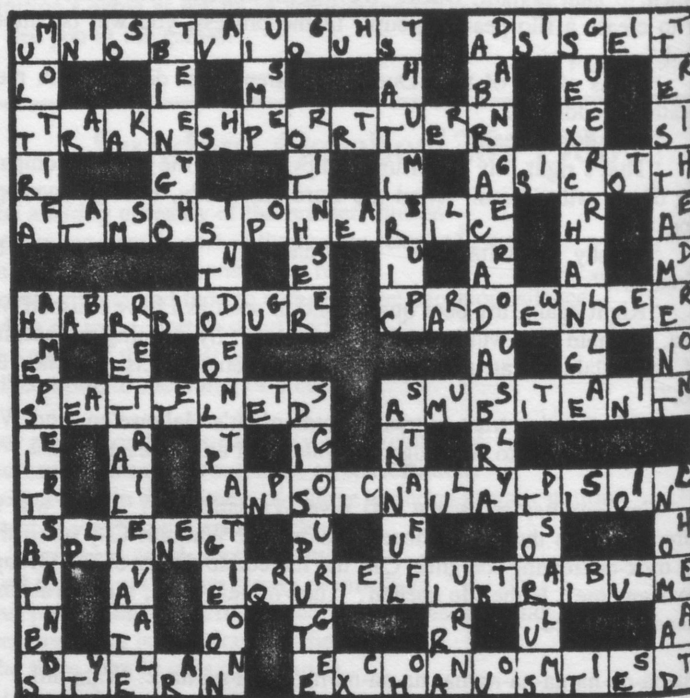
—the Wizard of Id

Just Wondering

Is the new Computer Research Centre (ie, the "Bill-ding") going to have a prime number of steps between landings, like the MC does? I mean, if you are late for a class on the third floor, and you are going to take the steps two at a time, it can't be done. The MC has eleven steps from one landing to another.

Sure you can do this in a 2-2-3-2-2 pattern, but that three in the middle can REALLY throw off your rhythm, and if you are going DOWN the steps using that pattern, the results can be catastrophic if you misjudge.

It sure would be nice if the Bill-ding had a sensible number of steps between floors. Twelve would be nice. You can do that two, three, or four at a time.

Does anybody know about this? Just wondering.

Rastus O'Dinga

Good morning, math cadets. You may wish to suspend this morning's regularly scheduled game of "Prof Football" in lieu of a "All Hallow's Eve" edition of "Masquerade". (For the uninitiated, and other non-frosh, "Masquerade" is a proper subset of that all time favorite math cadet pastime, "Daydream". The rules simply suggest that one attend class, assume a studious posture, turn down the volume on your auto-prof, and then . . . . . proceed to imagine your fav' prof clothed in various forms of outlandish costume.) How does your calculus prof look as a crazed scorcerer? Would your stats prof make a good "fair die"? (Just wait 'til he tries to fit through the door!) CS profs as small furry rodents are usually a good bet. And certain actsci profs make charming "Tinkerbells". The important thing is to use your imagination. But, however you play, DON'T SMIRK, EVER! (The mathNEWSquizmaster doesn't like to use caps, but this is important.) Especially in the first three rows! Smirking is an indictable offense in four out of five sections, so be very careful. Or you could take a look at . . . . .

mathNEWSquiz #10

1. In the theatre, the entry of which character is immediately preceeded by the lines: "By the pricking of my thumbs,/ Something wicked this way comes./ Open locks,/ Whoever knocks!"

2. Name the Green Hornet's automobile?

3. Which Ingmar Bergman film concerns the return of a knight, Antonius Block, from the Crusades to his native Sweden, and his ensuing confrontation with Death?

4. Name Mr. Spock's parents.

5. Which "Bible-thumping" radio evangelist founded the Alberta Social Credit League, and was Premier of Alberta from 1935-43?

6. By what name is the feline hallucinogenic "Nepeta cataria" better known?

7. In the 1969 World Series, which "terrific" New York pitcher lost game one 4-1 on October 11 at Baltimore, but came back to win the fourth game of the series, at home, by a score of 2-1?

8. For which 1960's television show within a television show did "Rob, Buddy and Sally" write?

9. Which famous Canadian big band was the source of "the sweetest music this side of heaven"?

10. "The Mysterious Island" is the sequel to which famous 19th century French science fiction novel?

Quiz solutions may be submitted on or before November 11, 1986, in the "Black Box" on the third floor outside the C + D Lounge. Consideration will be given to all solutions, and another fortunate prize winner will be announced along with the solutions to mathNEWSquiz #10, plus a brand new mathNEWSquiz, in the next issue of (your friend) mathNEWS.

And now, as a public service to all T.A.'s, the solutions to mathNEWSquiz # 9: Richard Wagner; Dr. Richard Kimble was "The Fugitive" (ask Lt. Girard); the Sabres' "French Connection" line; Woody Allen's "Sleeper"; Phobos and Deimos; Henry Mancini; Ferguson Jenkins; "Nikita Krushchov Does the U.N."; the slogan was Sir John Macdonald's during his (last) 1891 national campaign; and Singapore, Morocco, Utopia, Rio, Bali, Zanzibar and Hong Kong were all destinations of the Bob Hope-Bing Crosby "Road to . . ." pictures (and the mathNEWSquizmaster received cute replies to this question -- "What do S, M, U, R, B, Z, and HK have in common?": "They were slated to have franchises in the 1987 USFL season"; or "No co-op jobs have been posted from there").

"May I have the envelope, please?" This week's mathNEWSquizexpert is . . . . . Ms. Patricia Clarke, W.B., F.B.M. (Warriors Band, Future BMath) with a superior score of 9 out of a possible ten on mathNEWSquiz # 9. Kudos to you, Patricia, and you may pick up your prize (and your especial mathNEWSquizcertificate) at the Math-Soc office (MC 3038) during their hours. Close seconds were submitted by Graydon Hazenberg and the RG+JO'N+DMR trio, each with eight questions correct. "Fine effort" to all other contributors; you've got a full week for mathNEWSquiz # 10, so good luck. Tune in next issue for more mathNEWSquiz.

the mathNEWSquizmaster.

I Never Knew

(words: C.Sneer; music: B.S. Tomcatt)
— from the forthcoming LIFE'S A BITCH lp, "And Then You Die"

I never ever felt the wind on my face
I never knew
Just what it meant to be free.
I never ever felt your touch on my face
I never knew
How much you cared for me.

I never ever saw the love in your eyes
I never knew
Just how much you loved me.
I never ever saw the sun in its rise
I never knew
All the world around me

Because I,
I'm paralysed,
With unseeing eyes;
I can't perceive around me.
And I,
I'm filled with doubt,
Within and without.
Is life passing by me now?

Have you ever felt for anyone the way you do now?
I'll never know
I'm too afraid to ask you.
Will you still feel the same when I am in doubt?
I'll never know
But then what can I do?
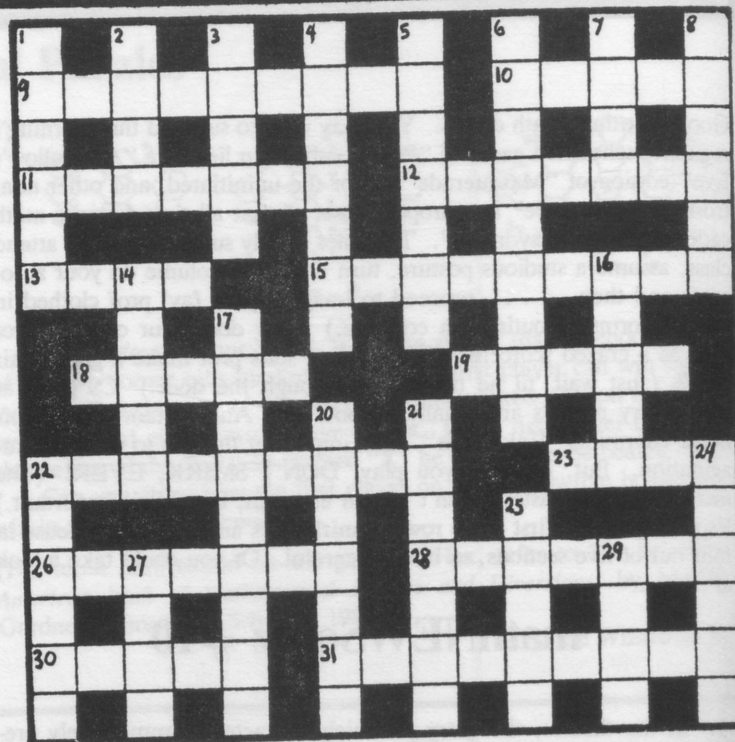
GRIDWORD

Cryptic

Across

9. Children jump after, not on (9)
10. A saying for the computer language by the appliance company (5)
11. Still wind sounds masculine for speedy delivery (7)
12. Tearing to pieces a thankless person (7)
13. A.L. pitcher replacement about like a sprint (4)
15. Forceful that a German soldier hesitates and notes a war completion day (9)
18. The muffin always looks complete (5)
19. Actress Jessica, beginning to end, in heaven (5)
22. No street with certain prejudice has expulsion from society (9)
23. Directionless rules back to running words together (4)
26. Metric ten times right adjacent to a motorcycle (7)
28. Judge's wardrobe or filed civil action? (7)
30. Exist back and forth, many diminished (5)
31. A revolving gate changes direction on the floor covering (9)

Down

1. Softly love over fifty also in a foreign country (6)
2. A note right away (4)
3. Some started quiet hearing device is a weapon (5)
4. Deceive that the mass is plumbum (7)
5. Not for repetition of direct time (7)
6. Spread a re-arming about (9)
7. Yes German go French for coffee (4)
8. Dee allowed inside a removal (6)
14. Second to last stain of Bernard (5)
16. Perfection is my turn to distribute the cards (5)
17. A certain procession may clad a cave (9)
20. Six middle grades cost and sway back and forth (7)
21. Beg a little demon tradition (7)
22. Seafood that toys could hesitate (6)
24. Prefer a certain Dan? (6)
25. 225° is 180°? Only to a foreigner (5)
27. Many a strange bet owed (4)
29. One opposite to the thing (4)

Conventional

Across

9. STORY
10. RULE
11. LEADER
12. APPEAR IN COURT
13. ATTRACT
15. END
18. SERIOUS
19. SLINK
22. BUBBLY
23. SMALL ISLAND
26. OPPOSED
28. EASTERN CITY
30. PUBLIC
31. TOP

Down

1. MEAN
2. CATCH
3. AFRICAN CITY
4. OSCILLATE
5. REPROVE
6. HAVING FORESIGHT
7. CERTAIN FRUIT
8. DIGESTIVE FERMENT
14. SPORTS BUILDING
16. CONSCIOUS
17. CHANGE STATE
20. ROCK TYPE
21. MAYBE
22. DRAWING IMPLEMENT
24. MAKE PERMANENT
25. VEGETATION
27. SIGHT
29. CLOWN

Who ....
Favourite T.P. ....
Comment ....

Invasion of the GridComments

Firstly I would like to apologise for conventional clue 5 across being labeled as 2 across in last issue. That seems to have put most of you off since only 5 conventional solutions were submitted with only 2 totally correct. However, the cryptic proved most popular with 23 solutions submitted with only 1 incorrect. That's a total of 28. *Finally we are above the average of 22.2 in the summer!* Again, you surprise me in that you can do better in one weekend than you can if you have 10 days!

Because the 2 correct conventional submitters were ineligible to win, a winner was chosen from the 3 incorrect solutions. That winner is . . . Fu Manchu. The cryptic winner is Garth VlAdam. They may claim their prizes via the MathSoc office MC3036. Solutions for this GridWord must be submitted by Monday, November 10, 1986 to be eligible for a prize. Put solutions in the BLACK BOX across from the 3rd floor lounges.

Correct solutions: Sandy Metzger, Peter Simpson, The Chuckler, Len Popp, David Fenger, James Cherry, Fred the Math Bunny (AKA Graydon Hazenberg), Larry Knerr, Scott G. & John O. & John H. & Kerry G. & Norbert P. & Ken W., James Riegert, Brad Debroni & Fred Schultz, Bullet Proof, Mark Earnshaw, Janelle Harms & Karen Seyffarth, Dani Roloson, The Society for the Nullification of Offensive Trends, Mitch Ling & Chris Antica & Patty, Peter Found, C.J. Fievoli, Andrew Tron (with special guest appearance by Dave Balkwill), and Randy Richard. Whew! Other solutions from: Chris & Ian & Dale, Peter Found, and Matt Harding.

Favourite bathrooms: 2nd floor, 519G Sunnydale, My Jeans, basement in parents' house, Toronto bus station, women's, northeast elevator, MC6035, a working one, Bomb Shelter, Mr. McGregor's garden, no comment, and the BATroom (emphatic HA).

Comments : 'Will this be on the exam?', 'Far out! It's my first one and now I'm addicted! Give me more!', 'Great Stuff!', 'I enjoyed doing this puzzle while loaded with my friends–2:00 a.m. Sunday morning', 'easier again', 'weekend = GridWord ^(~homework)', 'Ha ha ha wipe out', 'If an engineer can do these then the Mathies should be able to', 'Why can't we have paper towels on the 3rd floor?', 'yawn', 'Coming to our chainsaw tag tournament', 'FINALLY', 'all bridges have been burned', 'Finally solved de dam 'ting', 'The Island is doomed', 'Damn, I almost finished one of these things ...', and 'What say we have the clues in another language?'.

Gööd Lück (I thank W. Jim for (hopefully) finding the missing umlauts)

fletniowski