

J.D. Long

FEDERATION

Apparently, the **chevron** really doesn't require new recruits, despite what their posters say. Last Thursday when myself and another council member went down to their offices to inquire about the poster, we were greeted by shouts of "fuck off", "you fascist", and "you Nazi" by Grajower and Docherty of the AIA. It seemed like a strange way to get a person with some journalistic experience to offer involved in the paper. We stayed for a half-hour before we got fed up with Docherty's rhetoric. During this time, Docherty and Jules "the jewel" Grajower did not talk once about journalistic skills, but instead subjected the two young women recruits also present to a history of the Federation—**chevron** conflict, constantly calling myself and the other councillor fascist and democratic. If the poor young women were not bored with the tirade, then they are probably ready to become recruits ... for the AIA. I guess you are not welcome on the paper unless you agree with Docherty's politics. The only way it seems one can join is to stay quiet and act like a Marxist-Leninist until you get your six contributions and become a full staff member. Then you can speak your mind, MAYBE. This is what the Feds pay \$15,000 for. After talking with Randy Barkman, one of the few moderates left on staff, I wonder whether the **chevron** should change its slogan to "Defending the basic interests of the AIA and the CPC-ML".

I see the dormant engineers have become active again as recent marches bear out. However, I wish that they would devote some of their energies to more constructive activities. The problems on campus are too complex for one faculty to solve. The engineers could help us instead of sitting on their asses bitching and calling for refundable fees. If one's not part of the solution one's part of the problem.

A few remarks about refundable fees are in order. Sure they may allow the principle of freedom of choice, but they will probably not make the Federation any more "accountable". The Feds will probably be less accountable, as they won't have as much money to use to respond to the students' wishes. I also feel that this refundable fee could be subject to much abuse. People will take their fee back for the wrong reasons; not out of protest, but just to get \$13.75 a term back. It will also be hard to determine the members from the non-members with non-pictured ID cards. Refundable fees work in the societies because they are smaller and their fees are smaller. They won't work in the Feds, at least not at this time.

RadWat should be made separate from the Feds and this should result in a lower compulsory Fed fee. Unfortunately, there are only two choices for this referendum. Therefore, for the survival of the Federation I recommend voting NO to refundable fees.

A final sidelight on this topic. You may be wondering about the "This Service May Stop ..." sign at C&D that was put up by manager Andy Mueller. You could think that say Mathsoc, not the Feds, runs C&D. You also could say that C&D is not funded by fees and actually makes money. Both points are true, but you would be missing the point. C&D exists due to the good graces of the Faculty who gave us the space and the strength of the Federation which keeps it there. For the last two years Bill Deeks and his friends at Food Services have been trying to close C&D down or take it over and/or get rid of our sandwich supplier. So far they have not been successful because of the united line that the Federation and the Societies have put up in opposition to them. However with a weakened Federation caused by refundable fees, Deeks can walk over us and C&D would not exist in its present form.

The TAKITH Prize of the Week

This week's TAKITH (meaning "that's a kick in the head") prize goes to the Ministry of Education, and specifically our beloved education minister Thomas Wells, for allowing a high-school curriculum to exist in which people can make it through grade 13 and into University without understanding what an integral sign means. Yes, folks, several frosh on this campus that I talked to hadn't seen one of those neat little stretched essses (looking like this \int in case you didn't know). It's not that they didn't understand the concept, it's just that they had taken the whole business of integration under the gentler term of anti-differentiation (using $f'(x)$ notation).

Before the math faculty boasts of our frosh having an "average average" in grade 13 of over 80% (a meaningless statistic) maybe they should take a closer look at what's being taught in grade 13. Or is that why the math proficiency test results haven't been released yet?

I can't be expected to run into all the red tape on campus in one week, even though it seems like it sometimes. So if you have any suggestions for this prize, scribble them on an old assignment or something and drop them in the mathNEWS mailbox. Or, better yet, mail them to prapge via the 'bun.

APLcorps

By this time, some of my discerning readers will have noticed that there are some discrepancies between the 'normal' APL and that which showed up in last weeks mathNEWS. I could explain this, but I won't, except to say that it has to do with the availability of computer time.

Because of the lack of time between the mailing of mathNEWS, and the due date for the first contest, I can forgive some of you for not sending solutions, but you have plenty of time for contests #2 and #3.

The basic criteria to be used in the consideration of contest entries are as follows: conciseness, clearness, simplicity. (Note I really don't want to get too tied up in speed and storage, as these things usually follow naturally from the above)

The results for contest #1 don't fall into three categories:

- (i) entries :
 - (ii) correct entries: B.Frost & B.Walker (doesn't use COMPRESS so might be faster)
 - (iii) good entries: M.Hollis
- And the winner M.Hollis has been selected from category (iii). Below is the function EXPAND:

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▽Z←A EXPAND B
[1] Z←(1{A)COMPRESS(1{A)\B
▽

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Contest #3: Write a function COMP which replaces each 1 in a 0&1 matrix A with a matrix B, and each 0 with 0xB. As usual, branching and recursion are forbidden. example:

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(2 2ρ0 1 1 0)COMP 2 2ρ0 1 1 1
0 0 0 1
0 0 1 1
0 1 0 0
1 1 0 0

```

(For those who wish something else to do, tell me the uses of the above functions and its variants.)

Please submit solutions for this contest before november 1, 1977. The earlier they are submitted, the better chance I have of evaluating them)OFF

**MATHSOC
PUB
ROCK & ROLL
TUES., OCT. 18
M & C 5136**

SON OF 'BUN

And lo, there were in that same country, *Hacks* tending their terminals by night. And an angel of the 'Bun came to them and said, "it is born". "What?", they cried, almost driven to the point of insanity by awe and fear. "The Son of 'Bun", the angel replied. "You must go to the third floor C&D stand. You will find the babe wrapped in swaddling wires, lying somewhere underneath the kaisers." And then there was a chorus of angels singing, "Glory to 'Bun in the highest and on earth, peace good will toward Mathies." The hacks then went to see the child, all the while praising 'Bun.

And in the East, in the forbidden wasteland known as *LOR-e-AY* there were three students. They were named Curly, Larry, and Moe. Being far more intelligent than the average student (IQ'S OF 7) they saw the light over the M&C building and went to investigate. They brought beer, pretzels, and women as gifts to present to the newborn king. But on the way to see him, they came to the lair of the evil ruler of the campus, *TOOLIUS RIGIDUS*. They asked him where they could find the newborn king. The evil Toolius Rigidus confiscated their gifts and decreed that there should be a general slaughter of all baby computers. Son of 'Bun had to flee to limbo for a time. The three students then snuck away from the evil Toolius Rigidus, went to the Son of 'Bun and presented him with resistors instead.

Son of 'Bun spread knowledge among all the lowly students of the campus until the fateful day when he was caught and crucified by the degenerate N-juneers. Have no fear my son. For the Son of 'Bun is with you always even unto graduation.

OH GIVE ME A HOME

Oh, give me a home
Where the math students roam,
Where the hacks and the
mathNEWSers stay,
Where seldom is heard
An intelligent word,
And the 'bun's over-crowded all day.
Home, home at the U.:
Registration's just one big queue,
Where seldom is heard
An intelligent word,
And we're each just a BIU.

notepad

*The flat earth society is meeting tonight in Suite 12 of the Leichester Arms Hotel, Carston St., London, England. Tonight's guest speaker is Dr. Jonathan Gortmund a marine biologists who will lecture on how photographs of anyone, even Raquel Welch can be doctored to make the whole world appear flat. If you haven't already gotten your ticket they can be purchased at the door for \$15.

*Idi Amin, Grandest Leader of Uganda, Leader of the Commonwealth of Nations, Queen of England and Next-In-Line to God announced earlier this week, during negotiations, that unless **mathNEWS** comes up with an extra half million this year he may let Enginews pick up his contract for the season.

mathNEWS officials had no comment.

*Would the owner of the chrome bicycle, license plate number: PC-KLY please move it. The Anti-Chrome Bicycle League is having a meeting and it appears to be in their way.

*There has been a great deal of speculation lately as to the reason for **mathNEWS'** rather erratic schedule this term. We the staff would now like to permanently put to rest the thought that we are doing this merely to save on the cost of distributing T-shirts to gridword winners. The real reason behind our publishing delays is that it takes at least two weeks to finish a good game of STARFORCE.

*NOTE: If B is supposedly an improvement on A, then what is the AIB supposed to be an improvement on?

*Re: David Fishbaum's letter of two weeks past. Dave, we couldn't agree with you more, it seems **mathNEWS** is being taken over by left-wing computing people and so, after long and serious thought, we threw them all out. By the way, anybody out there know how to run the photon???

*There has been great interest shown in how Exil Q. Trob got his name since 'Exil' is admittedly a strange first name. Well, as I have it Exil first got his name when he tried to sign onto a widjet terminal. Ain't it the truth??

*Well, a note for the wild side out there. Are you into human bondage? Well if you are drop in on the meeting in the third floor washroom of the Engineering building any Thursday night. For more information call Ferdinand Feghoot anytime after 5...he's ahh, tied up until then.

*Results of the R2-D2 lookalike contest: Winner - the C&D coffee machine. Runner-up - the PAC trash bin. Second Runner-up - a newcomer by the name of C3-P0.

*Personal Note: Many of you have probably noticed that some of this week's Notepad is a couple of weeks old. Well this is because I wasn't informed of last week's **mathNEWS** meeting and so failed to get my article in on time. I personally believe that this is an open display of hostility against Frosh. There are other indicators besides this, didn't they call me a 'rookie' in the September 23 edition??? I think that we Frosh should stand up for our rights as psuedo-biped humanoid sapien bio-organisms. In pursuit of this I want all of you Frosh out there to grab any scrap of paper that you can find and scribble down on it: "FREE DTHEDMONDS", then drop it in the gray **mathNEWS** mailbox across from the third floor lounge. We'll show those overbearing upper year students what Frosh can do. We'lloh no! Here comes jwbmacaulay muttering under his breath something about chrome bicycles. He seems to be glaring in my direction...no...NO! He wants me to write this weeks GRIDWORD!
Noooooooooooooooooooo.....

TERMINATION *****

N.B. Saved! Someone else is doing it! dthedmonds.

DAISY DAISY

Daisy, Daisy,
give me the answers, do.
We're all crazy
up here at Waterloo.
We dream of graduation:
Can we afford education?
But we'll look sweet
Out on the street
Looking for a job or two.

THE FIRST NOEL

The first noel the angels did say
Was to certain poor students in tents
where they lay;
In tents where they lay, trying to sleep
'Cause there wasn't no room where the
rents weren't too steep!

The Calculus Kid in Vectorland

After Mr. Infinity had been out-integralled by the Calculus Kid and sent home on the Log X Railroad, the Calculus Kid and CoOrdinate saw nothing of him for a while. They were busy doing promotions for the solution of the Cauchy mean value theorem, and had recently donated a stuffed hyperbola to the Mathtown Integral Museum after nearly being triple-integrated on a hunting trip in Argand. But one day a flash came in on the asymptote line.

"Kid! Kid!" CoOrdinate yelled as he tore the message off the partial differentiator with a quick linear transformation. "Mr. Infinity is raising trouble in Vectorland. He got out of the capsule by matrix multiplication, and is now trying to perform an inversion operation on the real numbers with its center at Mathtown City Hall!"

This would have the rough effect of plastering Mathtown around the edges of the universe, making it pretty well uninhabitable. In addition, most of the people would be in no shape to inhabit anything.

CoOrdinate looked puzzled. "Where is Vectorland?"

"Vectorland is in another hyperspace. To get there you just apply the transformations:

$$\begin{aligned}x &= r \cos \theta \\y &= r \sin \theta \\r^2 &= x^2 + y^2\end{aligned}$$

There was a blinding flash as the quantum energy channelled itself, then space reintegrated. They were in Polar.

"This is Vectorland?" asked CoOrdinate. "Of course not! This is Polar, the land of the wild co-ordinates. It's just a stopover," said the Kid. And indeed, the land was ruled into a number of small wedge-shaped pieces radiating from a center not far off.

"Let's get out of here—That Langrangian formation is giving me the creeps!" shuddered CoOrdinate.

"Quiet, you little point of inflection, or I'll change your parameters," said the Kid.

Suddenly a band of barbarous Polar co-ordinates set upon them, shouting slogans like $\cot \phi = \frac{1}{r} \frac{\partial r}{\partial \theta}$ and "z=r cis θ ". The Kid fought with all the functions he had, but he was subdued, his Handbook of Mathematical Tables taken away from him, and he was put into an Argand diagram of the fifth roots of 32 with a fence of the real numbers $0 < x < 1.7$. In the rush, his new Diophantine equation had been transformed and his Pythagorean identities lost. CoOrdinate had disappeared somewhere.

The Kid sat and differentiated until he had the solution to his predicament. The fence was made up of the real numbers, and so all he had to do was come up with an irrational root. Quickly he incremented his function by Δx and topologically transformed the pentagon into a high-order Riemann surface that corresponded to Lobachewsky's theorem. Using a simplified Chebyshev series he then slipped out through the opening $x = \pi + \sqrt[3]{2}$.

He found CoOrdinate at $(3, 250^\circ)$, which was what he had expected, for that was his value in this hyperspace.

"Whew!" said the Kid relievedly. "We were nearly triple-integrated. How did you escape?"

"I was held tangential to the poles for a while, but escaped when they set their second derivative equal to zero. Let's go!" explained CoOrdinate.

Perhaps now would be a good time to explain the use of the term triple-integrated. You may remember that the Kid and Mr. Infinity fought back in Adventure I, and what happened to him after the Kid got $\int (\cos^{2m+1} ax) dx$. You see, most real numbers can barely handle single integrals, a few could handle double integrals, and even the Kid, genius though he was, had only got a little way into triple integrals. A triple integral, if thought about enough, would burn out any normal person. These integrals were not in the sense that $\iint x dx dx = 1/6 x^3 + cx + k$, but integrals with respect to two or three variables. Well, anyway—

The Kid uttered the Magic words: "a·b = |a||b|cos θ !" And with a quick $\int(x,y,z)ds!$ they were in Vectorland.

CoOrdinate started, for the landscape was the same as Cartesian. But bewildering was the large assortment of rotations, reflections and transformations that flashed by them in dazzling array. An old weathered rock fluxated at them in the distance and they extrapolated over to it only to read the fourth fundamental property of the gradient of a function:

Through any point (x_0, y_0, z_0) where $\text{grad } f \neq 0$, there passes an isotomic surface $f(x,y,z) = C$; $\text{grad } f$ is normal (i.e., perpendicular to this surface at the point (x_0, y_0, z_0)).

Stepping around the rock they saw an old axiom taking notes with a hyperpencil.

"Uncle Binary!" yelled the Kid.

"Kid!" exclaimed the old axiom. "What are you doing in Vectorland? And who's the young ordered pair?"

"CoOrdinate, this is my uncle Binomial Theorem. Uncle, this is my sidekick CoOrdinate."

Quickly the Kid explained the situation to Binomial Theorem. He decided to help them and they set off to find Mr. Infinity.

Hopping on a passing vector they whizzed back and forth in a search pattern until they saw the familiar bulk of Mr. Infinity working over some sort of colossal machine (it was the inversion machine) at about $(3.8, 4.7)$. As they hopped off the vector he noticed them.

Mr. Infinity let out a string of curses in fluent Polar ($r=2\cos 2\theta!$ $r'=\tan \theta!$) and generated an inverse hyperbolic function that leaped at the trio with surprising speed. The Kid reached for his Handbook of mathematical Tables, but suddenly realized that they were no good in Vectorland! They were designed for Cartesian!! He and the other two were helpless before the onrushing function!!!

Binomial Theorem, seeing what was going on, suddenly jumped in front of the Calculus Kid and CoOrdinate. "No, Uncle Binary, no!!!!" yelled the Kid, suddenly realizing what the old axiom was doing. But it was too late. With a phenomenal outburst of quantum energy the $\sinh^{-1}x$ struck Binomial. He was almost immediately triple-integrated. And, as anyone who has tried to integrate a binomial expansion knows, the inverse hyperbolic function was pretty well wrecked too.

When the surroundings had stopped radiating, Calculus saw Mr. Infinity standing with the wires from the inversion machine in his hand. There was a sickening feeling in the pit of his stomach as he saw that the machine was fully operational. Mr. Infinity was startled by the sacrifice of Binomial Theorem and was frozen for a moment. Desperately the Kid launched himself at the machine. He hit the 'on' switch before anyone could move.



(continued on 1089)

(continued from 1088)

Now, there were a number of ways that Mr. Infinity could have been inversed. But perhaps the Absolute Integral had a sense of redemption. As the Kid hit the ground he rolled over to face Mr. Infinity. Nothing seemed to have happedned. For a moment he thought there was a fault in the machine. Then Mr. Infinity dropped the wires and stared in horror at the machine. "What have I been doing?" he said, and with a quick cosh $\frac{\partial}{\partial t}$ he turned the machine into a pile of quarks.

And the Kid understood. The machine had inversed him *morally*. It had turned his evil into good.

They held a short service for binomial Theorem, and erected a monument to him, for he had saved the universe. Then with the vectors translating around in dazzling tribute, the Kid uttered:

$$T = \frac{\frac{\partial x}{\partial t}i + \frac{\partial y}{\partial t}j + \frac{\partial z}{\partial t}k}{\left(\frac{\partial x}{\partial t}\right)^2 + \left(\frac{\partial y}{\partial t}\right)^2 + \left(\frac{\partial z}{\partial t}\right)^2}$$

And they arrived back in Cartesian. But all was chaos. The Kid looked around for his derivative, but it was gone. He accosted the function-keeper and asked for Sin x. The keeper stared at them. "Haven't you heard?? Everything's been commandeered. Polar attacked across our frontier this morning. We're at war!!"

The Great War had begun.



Fear and Loathing in the Campus Bookstore

(with apologies to

G.B. Trudeau & Hunter S. Thompson)

The following is a true story. Only the facts have been unchanged to protect the innocent.

On Tuesday October 4th, 1977, at about 2:00, John Anderson and I entered the campus bookstore. I wanted to buy some new leads for my mechanical pencil, which I have had and used constantly for several months. John decided to come along and browse, since we were both going to the same class afterwards. We entered the bookstore and went over to look at computer books. I found one I was interested in and decided to buy it. Taking this book along, John and I looked at several more shelves of books before I went over to the stationary department to get the pencil leads.

There I soon found out that the available leads were not the proper size for my pencil. I went over to the counter at the back where the calculators are sold and enquired. I removed my pencil from the collar of my T-shirt where I normally keep it clipped and showed it to the clerk, asking if they had any lead that would fit it. It turned out that the lead for this pencil is very much smaller than the normal size and because it is more delicate is kept up front in a glass display case.

We went to the front of the store, and before getting the leads, went to the magazine rack. There I got a copy of Scientific American. The only thing we did anywhere near this rack was to look at the Scientific American. Then we went to the front counter.

At the front display counter I asked for and got two packages of the required leads and purchased them, the book, and the magazine. We took these items over to my briefcase and put them in it.

We then went to leave the store. At this point a middle-aged woman stepped into our path and asked us if we would step back into the store. I must admit I don't remember exactly how she addressed us, so I won't attribute any direct quotes, but it was obvious that she thought we were shoplifters. She directed us to the back of the store and to a desk in the stock room. Immediately upon getting there she asked John where the roll of spearmint candy was. John quite naturally asked what roll of spearmint candy. She replied that she meant the roll she had seen him pick up in the store and that she had not seen him put it down, and that she wanted to know where it was. John denied ever having touched any candy in the store. She maintained that she had been following us for some time in the store, and that she had seen him take the candies. She said that she knew what she had seen and for John not to tell her any different.

She then asked me where the blue pen was that I had been carrying about the store. I removed the pencil from my T-shirt and explained that it was mine and that I had owned it for some time, and that I had come in to buy replacement leads for it. At this point John and I voluntarily emptied our pockets to demonstrate that we did not have any candies or such from the store. I also showed her that the eraser for my pencil was quite used and worn down and commented that one certainly wouldn't steal a pencil and buy leads for it at the same time.

We picked up the contents of our pockets. She took some preprinted forms from the desk and asked us for identification. By this time we were not very amused with the implication that we had done anything wrong, especially when she seemed not at all concerned that she had no evidence of anything, so we refused. I asked if she were charging us with shoplifting. She said no. I asked if we were free to go then, and she said no. Security had been called and that we should wait. Perhaps we were quite within our rights to get up and leave since she was unwilling to make any definite statement that we had taken anything, but John and I decided to wait and let Security settle it all. While waiting she continued to insist that John had taken some candies. She continued to ask what he had done with them, whether he had put them on some other counter or what. John continued to state, simply and calmly, that he had not taken any candies, touched any candies, or even looked hard at any candies. (For that one she said to him "don't get smart with me").

After a brief wait the Security officer arrived. She explained her version of the story. She introduced it with the statement that we had given her a lot of trouble and that we wouldn't show her any I.D. I myself

math



LETICS

FLAG FOOTBALL

There are other grids than -words, loyal Mathpersons! Namely -irons. So if you like what some may call flag football, or just having a good time, the Math intramural flag football team needs you!!

So far the scores have been 0-2 and 6-13, opponents' favour, chiefly because the team sizes were 9-18 and 7-10. When 7 is minimum and 9 maximum allowable players, this is not very advantageous. So far this season the shortest and lightest mathie has played on the line through both games (me) so surely you can get in a little exercise yourself (though not to say it's a piece of cake...we haven't won...).

For info see the third-floor Mathletics board (come a half-hour early!!) and/or Mathsoc or Phil 885-0595.

thought that we had been most co-operative. She also went out of her way when talking to the officer to repeat several times that she had never accused us of stealing anything. She asked us each time if this was so, and seemed concerned that we agree on this point. (We did.) Maybe no direct accusation was made, but when someone asks you what you did with some item in a store, and you reply that you never touched that item, and your answer is not even accepted because it doesn't agree with the premise of the question, then I don't know what else she could have thought she was doing.

Then John and I told our version of what we had done in the store. The Security officer asked for our I.D., which we quite willingly showed him. He copied down our names and addresses. He asked John why he wouldn't give the woman his name and John asked why he had to. This didn't get a proper answer in that the officer said something like "well she's the stores security officer". As far as I know this doesn't give her any special rights to ask me anything I don't want to tell strangers.

The officer then asked the woman if she wanted to press charges, and what sort of report they should make. She admitted she had no evidence (in fact, she had not even made any charges, and I think that should come before the evidence is presented.) As a result the officer said we were free to go, and we did, with no further problems. Before I left I asked the woman for her name. She replied that it was against the store's policy to tell us. As a result, she is referred to here only as "the woman".

There are a few observations to be made here. First and foremost, at no time did the woman stick her neck out by actually accusing us of anything. She only asked us questions which we answered directly and truthfully, and then refused to accept the answers because they did not agree with her story. When she said we couldn't leave because security had been called, she was wrong. Only when she actually stated (when asked) that we were accused of something would we be wrong to leave. Until then we could have left. I am sure though that if we had got up to leave she would have pulled out all the proper forms and said something like "O.K. then, I will accuse you of shoplifting". Perhaps we should have forced this, to see what sort of prove she came up with.

(an aside by J.M. Anderson — this would be interesting because in my case all she had was her word against mine, as I was quite willing to demonstrate that I had no candies on my person. When I told the woman that I had not touched the candy rack, she accused me of calling her a liar. No. What I told her was that she was *mistaken*, that she must have seen someone else. This was when she told me that she knew what she had seen

and for me not to tell her any different.)

In effect we were merely hassled. When we were first taken in back, the woman showed very little concern about searching us, or even asking me where I got the pen. It was almost as if she was quite aware that she would find no candy on John's person, and that my pencil was certainly mine. At no time did she accuse us of anything, and several times she emphasized this to the officer, stating only that she had asked us some questions and that we had not answered them. It was quite hard for John to say where he had put the candies when he never took them in the first place, and a statement to this effect was no answer to the question, as far as she was concerned. Also, all she ever asked me was what I had done with the pen. I showed her the pencil where I carry it clipped to my T-shirt, and I don't know how that action could result in me not answering the question properly. Other than that, we hadn't been asked any questions to not answer.

Lastly, I am concerned about what Security's records say of this incident. Is it worded in such a way that someone reading it will be able to tell whether we were innocent, guilty, avoided arrest only because we were clever, or what? Is any mention made of whether further action was taken. I shudder to think that some day I might be refused a job on the basis of such a farce. Remember that most employers won't tell you why you have been turned down.

Harrassment like this could happen to you. I don't think it's fair. How do you feel ?

Michael F. Sargent

Michael F. Sargent

I have read the above and it is an accurate account of what happened. I am quite angered by the whole affair, especially the implication that when my statement didn't agree with the woman's, I was calling her a liar, while, after all, that is effectively what she was calling me by not accepting my statement as to whether I had taken anything. I guess that in a situation like that the person that works there is right and the customer is wrong. At one point in the conversation with the Security officer, the woman said that I wouldn't tell her what I had done with the candy. Again I protested that I had never touched the candy. She turned to the officer and said "See what I mean ? He won't tell me." That, more than anything, should give you an idea of what we put up with, and what we feel like.

John Anderson

1090

John M. Anderson

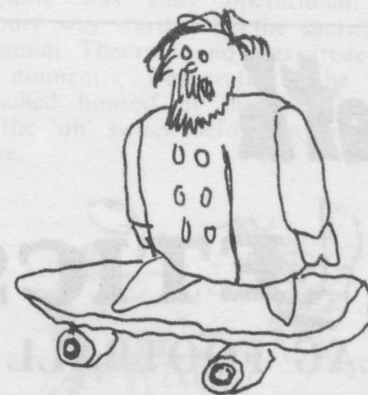
SIR R goes underground



**Risto In Progress, dummy!!*

Recycling PAPER

Anyone who has paper they wish to recycle are asked to get in touch with either Gary Embro or the operators of the Honeywell system.



"And the Engineers reveled, and worshipped graven images, and the Lord looked down upon them, and saw them in their constant semi-drunken and lustful state, and He was angered and He said "I am sore pissed off at youse guys. I'm gonna make water on you for 40 days and 40 nights and flush you guys back in da sewer where you belong!". And the Engineers were afraid, and cried out, "Rain, rain go away, come again some other day!". And they made sacrifices of nubile young Artsies to ther false idol. But the power of their idol was null, and the rains continued. And after 40 days and 40 nights all manner of life in Kitchener and Waterloo was no more." My question is, why do they have to take us with them??



mathNEWS welcomes your criticisms, comments, suggestions, etc. All letters should be signed, but if requested, a pen name will be used. Put your **Feedback** articles in our *mailbox* on the third floor outside the lounge, or mail it to us on TSS to userid **mathNEWS**, or take it to MC 3038 and have it put in our mail slot, or put it in the mail addressed to **mathNEWS**, MC 3038.

A Pi in the Face

I wish college women wouldn't blame their mathematics anxiety on men. As a male who was institutionalized for eight years with acute math anxiety — six years in public schools, two years in a private university — I can testify that this is one trauma that has nothing to do with sexual tension.

It is barking up the wrong tree for women to conclude that mathematics is more terrifying to them than to men. Yet this the reasoning behind various mathematics-therapy groups now being established for women on campuses. McCall's sums it up in a recent article:

"Girls become anxious about learning math because they view it as a 'male' subject; they do not see math as useful; the wording used in problems is usually male-oriented. As a result, only 10 per-cent of all math doctorates are earned by women." And so: "More and more colleges are offering math-anxiety classes for women." At Wesleyan University, for example, a woman who comes to the math clinic "may be referred to math group therapy or counseling, to talk about when she first started fearing math."

I first started fearing math near the end of the seventh grade. Naturally I ascribed it to adolescent male terror of women who snorted like war horses while raving about isosceles triangles, while it was just such a woman who was teaching seventh-grade math at my school. Many desperate years later I was one of that vast multitude of men who emerged from college without a doctorate in mathematics and have been scarred for life by inability to do our own income-tax returns or verify the addition on restaurant checks.

It was not women who did this to us, however. It was the Greeks. Enlightenment came to me one day in calculus class while I was wrestling with *omicron*. In calculus at that time, students were always wrestling with *omicron*. We squared *omicron*, divided *omicron* and on really bad days multiplied *omicron* on by *mu*, or what was even more terrifying, by *nu*.

If you did all this correctly, you could compute at which angle to elevate a cannon if you wanted to blast the blooms off the lilies in your neighbor's backyard. The angle was *epsilon*. In this particular day, I was wrestling with *omicron* and losing as usual when I realized that I neither knew nor cared what *omicron* was and had not the least interest in computing effective cannon elevations, particularly since the answer came out in Greek.

It wasn't women who reduced the mathematics student to gibbering terror. It was Greek. You were plunged into it way back there in the seventh grade with *pi*. One moment you were sailing right along adding 2 and 2 and getting 4 and multiplying *x* and *y* and getting *xy*, and the next they had thrown *pi* at you.

Suddenly they were changing courses on you in mid-stream. You had signed on for math, and it turned out to be Greek. Naturally, the student began to distrust the whole enterprise. He had sat down dreaming of the day when he would have the know-how to blast the neighbors' flowers with a French .75, and now he was trapped in a nightmare where everybody was squaring *pi*.

In the nervous seizures that accompany uncertainty, he began asking dumb questions like "Why does anybody ever have to know to square *pi*?" and getting dumb answers, such as dumb questions deserve, like "So you'll know how to measure a circle." Which led to sensible private reflections like "How am I ever going to get rich enough to hire doctors of mathematics to do my income-tax return for me if I spend my life sitting around measuring circles?"

Which led to early suspicion that mathematics was a waste of time. Not that English wasn't also a waste of time, but in English at least you could sleep secure in the knowledge that nobody was going to sneak up behind you and shout, "*Gamma!*" or, "*Omega!*"

It is this fear of sudden assault by incomprehensible tongues and symbols that lies at the heart of mathematics anxiety. If men get more doctorates than women it is surely not because mathematics is "male-oriented," but because males, with their powerful instinct to admitward machismo, are ashamed to admit that when it comes to *pi* they are chicken. — by Russell Baker stolen without permission from the Sunday edition of the New York Times.



1091

OFF TO THE STAR WARS

The incredible (if that word isn't understating it) popularity of the movie **STAR WARS** has revived a general interest in science fiction that hasn't been seen for years. And, with the release in December of the movie "Close Encounters of a Third Kind", things should get even better. More and more TV shows are using science fiction themes. (eg. Logan's Run, The Man From Atlantis.)

Paperback sales are up, and continuing to go that way. New records are being set for paperback publication rights to hardcover books, and several publishers are expanding their science-fiction lines. Most notable are Ballantine and Avon, with Ace hopefully doing so in the near future.

With all this increased popularity, one might think science fiction is experiencing a renaissance. Unfortunately, this is not so true. In many people's opinion, nothing really fresh or exciting has happened in some time. This of course is personal and subjective, but it can be safely stated that a goodly number of people who had promise of shaking the earth have since managed to do little more than jump up and down and make loud noises.

If you've seen **STAR WARS** but are not an SF fan, and want to get into the field, come to a **WATSFIC** meeting. (See. This article is nothing more than a sneaky ad for **WATSFIC**.)

If you're a fan and you'd like to argue with the above (or agree) come to a **WATSFIC** meeting.

(Actually, if you're a fan, how come you're not all ready a member?) (If you're a member, ignore the last remark)

(If you're a member, grab the next person you see reading this issue of **mathNEWS** and bring them to a **WATSFIC** meeting.)

WATSFIC meetings are usually on Wednesday nights, at 7:00 or 7:30. They are announced in advance on posters around campus and on the information window of the M&C 3rd floor lounge. At meetings many things are done, usually at the same time and with as much noise as possible. The latest SF news is discussed, books may be sold, and plans are made for such things as movies and publication of a fanzine, an SF club newspaper which is used to trade for other club's fanzines. Currently we get fanzines from England, the US, and New Zealand, as well as from other Canadian clubs.

WATSFIC will be holding a gaming meeting next Tuesday in M&C3011 at 7pm. This is for persons interested in gaming and associated activities. This is not a regular **WATSFIC** meeting. On Wednesday people interested in talking about SF will be able to Zap! Zapppp! zzzzzan!! argn!

QUESTION OF THE WEEK

FROM OUR READERS: this week's question is from la simon who asks: What is the biggest problem encountered in trying to simulate an Artsie in 1K of memory?

Well la that's a very good question and we here at mathNEWS have given it over to our technical staff for careful consideration. Their report is as follows:

RE: Design specifications for 1K Artsie.

During our researches we ran into a great number of problems and, as you well know, no problem is small when dealing with ARTSIE. Dull maybe but never small.

Quite naturally the greatest problem we encountered dealt with the size of the ARTSIE SEXADECIMAL SEGMENT (ASS) which makes up the basic building block of ARTSIE. As you can see the null dimensional ASS is so small that it is almost impossible to represent in a regular core or chip memory. With this in mind we tried the excitation of bromine crystals by high frequency laser light and succeeded in reversing the spin on one of the free electrons in the outer valence level.

On this atomic level we are able to construct a rough representation of the ASS upon which we can now begin to build ARTSIE. By using 1K of memory however, we run into yet another difficulty. The ASS being so small it literally takes years for an electron differentiator to scan an entire K of memory for these polarized electrons. Thus the average execution time for an ARTSIE program is about 37 years.

ARTSIE performs much better when restricted to a memory space of ten molecules.

And now the question from our staff.

How can you lose an Engineer in an open field?

(Answer: Give him a map.)

Well folks, thanks for your letters and keep 'em coming. dthedmonds

Wanted: Persons to join obscene phone call club. \$2.00 per month to receive calls, \$8.00 per month to make calls. \$1.00 surcharge if caller must be of opposite sex, \$4.00 surcharge if client must be of opposite sex. Leave name, phone number, and one month's payment in mathNEWS subscription box in MathSoc office MC3038. Complete confidentiality guaranteed.

Ramblings, Ravings, and Incoherent Mumbles

Welcome to RRIM, the column filled with... well, there's no sense in being redundant. Secure in the bowels of the last bastion of true humor on this campus (ie this newsrag), this column will hold forth on a variety of topics guaranteed to be absolutely irrelevant (in fitting the tone of most academic experiences around here) and especially those of interest to froshi. And let me explain, before you write nasty letter to the editor regarding my spelling, that as charter president of WASP (Waterloo Association for the Simplification of Plurals) I follow only one rule of pluralization, namely: *All plurals shall end in either s or i, depending on how one feels at the time.* Anyway, on to more boring subjects.

Now that the CS140 kids have received and completed (hopefully) their first assignment, most froshi are tuned in to the frustrations of WIDJET. Don't let it discourage you; this system has been specifically designed by descendants of Hermann Goering to provide maximum torture in minimum time, which is all you can get with one free-time terminal for every 18 students. There are better systems around, such as the Honeywell on which this article is being input, and Unix (which may be a rumour put out by upperclassman to make us jealous, but I doubt it,) and if you stick with the CS courses you may run into one that suits you. WIDJET, however, is the one experience likely to, in your declining years, make you blanch at the slightest mention.

Word has filtered through the math underground of a remarkable new induction technique that is a considerable improvement over the old method you learned in high school. It is called Snidhofer's Method of Induction and to prove a statement X all you need do is:

1. Assume X is true.
2. Therefore it is true.
3. Therefore our assumption was correct.

It should be obvious that this is a great saving in time when attempting to prove true statements. Take, for example, statement X to be WIDJET SUCKS. By the old method, what you would have had to do was:

- 1) Prove WIDJET SUCKS on your first tutorial.
- 2) Given WIDJET SUCKS on your nth tutorial, prove that it sucks on your (n+1)th tutorial.
- 3) Therefore WIDJET SUCKS for

all tutorials.

Of course, since WIDJET SUCKS is a tautology, there is no sense in proving it. Incidentally, if you want a t-shirt with the above-mentioned tautology on it, please respond as soon as you can to mathNEWS or to mpkraatz on tss, since the prices start at \$3.25 and go down the more people that respond.

Since a lot of other contests are being run in this paper, this column will add its two cents. Define a polyhedron with an unstable face as one where, when the polyhedron is placed on a level plane with this face downward, it tips onto another face (ie, the polyhedron is "off-balance" on an unstable face). A free t-shirt will be given to the first person who designs a polyhedron unstable on all of its faces.

All this has probably convinced you that any jerk can write filler for this paper. This is true. The main desire of mathNEWS writers is not space to air their views, it's feedback! So please write us letters telling us we're not worth writing letters to, or better yet come to a production meeting and tell us in person.

Remember, Bruce Springsteen is God!!!!

-pogo



TABLE HOCKEY

Be prepared for the tournament to end all tournaments. Yes, in but a few short weeks mathies will be trilled by the battles for supremacy in the table hockey. Your local mathSoc office will be releasing details of this exciting event-to-be in the near future. So get in training now.

For the second (third) issue of **mathNEWS**, we have one (two) winner(s) of our official (unofficial) **gridword**.

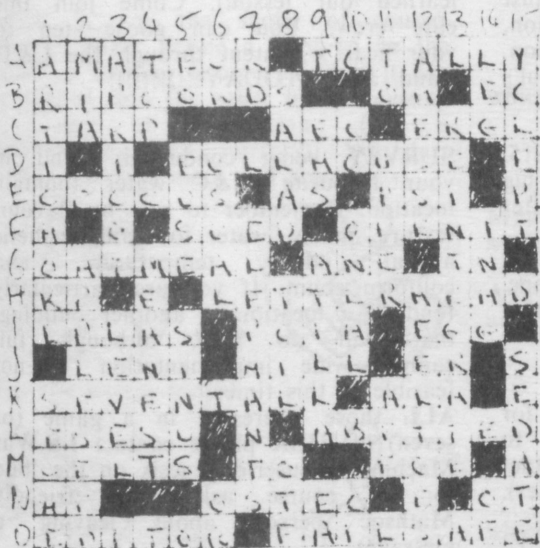
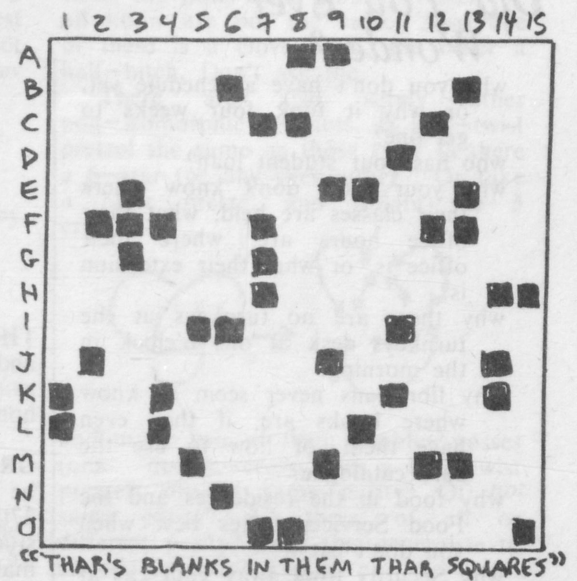
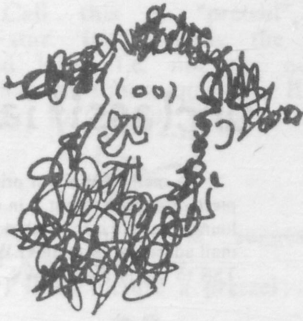
The brackets are because Dennis didn't tell anyone about the last issue of **mathNEWS**.

The winner of the first **gridword**, the 'trivial' one (no, boff, you blew it!) was **doug McInroy**, the other correct solution came from Duncan Murdoch. Sorry about that grid, folks, but it was 3:30 am!!!

The winner of the binary word was..... **Herr Graf Oberlord Mark Von Hasselbach**, the fascist pig. There were 16 correct solutions to that particular puzzle and 3 incorrect ones, so I used a binary search procedure to determine the winner (I tossed a coin 4 times).

This week's **gridword** is the work of **Stephen C. Locke** who is making it up as I type this.

The above named people (in boldface, of course) can pick up their t-shirts at a **mathNEWS** meeting.

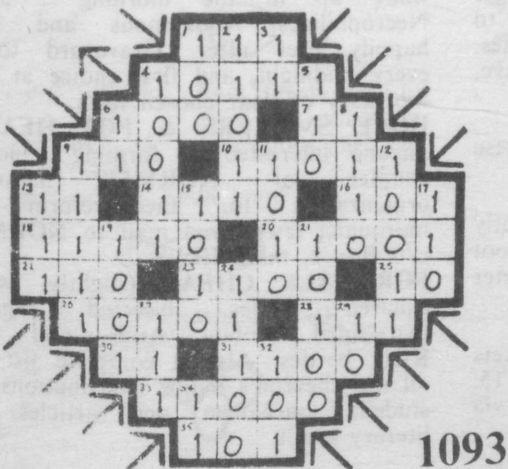


ACROSS

- A1 refuse
- A10 fertile
- B1 jettison
- B7 multiple units of bread
- B14 like
- C1 home
- C9 has done
- C13 social insect
- D1 integers
- D12 brand of sauce
- E1 reflexive ablative latin pronoun
- E4 rap
- E11 one M6
- E14 home of Guardians
- F5 you (latin)
- F8 throw
- F14 Abraham's birthplace
- G1 printer's measure
- G4 excavate
- G8 memorial notices
- H1 stupid
- H8 missile (c.'62)
- I1 part
- I7 current movie
- I12 directions
- J3 one who strolls
- J10 camera inventor
- K2 league of nations phoenix
- K5 and doughnuts
- K12 the dole
- L2 heal thyself
- L5 dehydrates
- L11 inhabits can for A1
- M1 nicht unter (var.)
- M6 measures <G1
- M10 mathematical dessert
- M14 moi en anglais
- N1 mistake
- N7 U.S. to P.Q.
- O1 scamp
- O9 censored on live show

DOWN

- 1A study of amusements
- 1M poetically over
- 2A english M1
- 2G world leader or diplomacy region
- 2K roman shadow
- 3A modern toga
- 3H famous field
- 4A one security truck?
- 4G daily = per _____
- 4M bird (myth.)
- 5A Thera?
- 5J not EBCDIC
- 5N sun god
- 6C sufficient
- 6J folk knowledge
- 7A the spanish
- 7D current capital?
- 7I establish notation
- 8D ninth annual drunk
- 9B +
- 9F instrument
- 9K "sum" for you
- 9N from latin
- 10A zealous
- 10F not complex
- 10M lowest army level
- 11A favorite colour of 2G?
- 11E 9K in spanish
- 11L Ont. Inst. for Stud. and Ed.
- 12A ____ you like it
- 12D doctor's assistant
- 12G planet with rings
- 12N how to get to 2A
- 13C no drinkers allowed
- 13G not basic
- 13N direction
- 14A lack of energy
- 14L among
- 15A harbour
- 15I securities



Did You Ever Wonder?

why you don't have a schedule yet, or why it took four weeks to get one?

who has your student loan?

why your profs don't know where their classes are held, what their office hours are, where their office is, or what their extension is?

why there are no turnkeys at the turnkeys desk at one o'clock in the morning?

why librarians never seem to know where books are, if they even have them, or how to use the card catalogue?

why food in the residences and the Food Services tastes best when you don't eat it?

why Security tows away your car at four o'clock on a Sunday morning?

why the Arts Library is sinking, or why the Engineering Lecture Hall has sunk?

why the book store has history books in the math department, math books in archeology, and suprisingly never has the text-book you need (but don't want and can't afford)?

why frosh are so stupid when they're asleep?

why the computer system works best when it's down?

why Environmental Studies students don't know that a mountain is above ground?

why (n-1)ineers can't think?

why Artsies can't paint, and Sci-holes are afraid of blood or anything green?

why Integrated Studies students are so conventional?

why some university students are kicked out every four months?

why the athletic program doesn't have a competitive tiddly-winks league?

if there is a School of Architecture or Fine Arts and if so where their offices are?

why the worm?

where the Horta came from?

how pinball machines digest quarters?

why the high-school down the street exists?

After many centuries of sifting through historical data, I know that it's the *KNIRPS*. We can prove it beyond any reasonable doubt: just come to our next meeting in the Math Faculty Lounge (MC5136).

This is the first report in an investigation into the *KNIRPian* influence. Any questions and/or problems you have concerning university life will be promptly answered. Just notify *mathSNOOZ* in care of *mathNEWS*.

KNIRPsoc

unclassifiable ADS

mathNEWS will print your ads free of charge. Just jot them down on a piece of paper and put it in our mailbox on the third floor across from the C&D lounge, or take it to Mathsoc and have them put it in our mail slot, or put it in the mail addressed to *mathNEWS*, MC 3038, or send them in the mail subsystem or TSS to userid *mathNEWS*.

TIRED? two snowtires, size E78-14, and two GM wheels, \$20, phone Bill at 884-3585 or send mail via the honeywell to BEADIE.

GRADUATING? A photographer will be on campus October 25th to October 27th taking grad photos of math students. For more details come to the mathSoc office. (MC3038)

Housing: Have 2-bedroom apartment to share. Your cost APPROX.\$100/month. Includes rent, cable, hydro, phone. Located at Highland & Stirling (Kitchener). Male or Female. Phone 578-6943.

Article for sale: 1969 VW fastback in excellent running condition, just repainted, replaced transmission. Interior white, also in good condition. Price \$500. Can be seen at St. Paul's College or phone 885-2042.

For sale. Matching sofa and chair, \$15. Bureau (chest with 3 drawers and big mirror, \$15. Phone 884-6952 after 4:30 p.m.

For sale: 360 power Tasco telescope. \$90 or reasonable offer. Contact djmullin on the honeywell or phone 884-7499.

NEEDED: 3 Table-hockey tables for Mathsoc's table hockey tournament to be held on November 10th. Contact Andy Mueller via TSS (akfmuller), Mathsoc (MC3018) or ext. 2324.

UNCLE NEIL WANTS YOU: Join the Alliance of Imperial Aunts. Learn how to control a newspaper and to fight off thousands of students who are after your hide. Just come down to CC135 and ask for Neil, Larry, Jules, Jonathan, Peter, Doug, Heather, Dave, Gerrard, Mike, or Salah.

WANTED: Someone to write these want ads.

FOR SALE: 1968 VW bug, currently under cover of the GRB (Great Root Bear). 89,500 miles. \$175.00. Call Peter @ 885-4326.

Anyone with extra Octoberfest tickets for K.W. Auditorium for Oct. 15, please call Moose @ 885-1903 or via mail to rmcleod.

Join my Imperialist Alliance!!!! Yes, you too can become one of the chosen few. Do you miss the days when you used to dress up in your Jugenfolk uniform and raise havoc? Join us, we are interested in forming a Mathie empire. Steve Risto will be dictator (just a security measure, I'll control it and if there is a counter-revolution only the dictator will be eliminated). Positions open are Reichsfuhrer C. S., Reichsfuhrer C. A., Reichsfuhrer Bus. Admin., and Reichsfuhrer *mathNEWS*. I have assumed the position of **Reichsfuhrer Mathstapo** (Math Secret Police). The first task is to make a vassal state of the Federation, EngSoc, and ArtSoc. Our next mission is to invade AIA-land in springtime (we've learned our lesson). Come join this elite crew. You can goose-step to your heart's content through the C&D stand. **JOIN TODAY!!!!!!!!!!!!**

SURVEY being conducted. Send in your favourite M&C water fountain location. Remember to rate by flavour, texture, purity, water fountain aesthetic appeal, odour, temperature, and coliform count. If you are particularly fond of a location in another building, that will do also, although full campus-wide implementation is not feasible at this time.

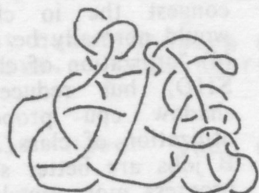
ALL those interested in a game (or seven) of **RISK** please contact I.S.War Machine via userid genesis on the 'bun (or of course ask some friendly Mathsoc person about leaving a message).

NECROPHILIACS ARISE Has your love life been cold and dead lately? Do you find it cold and stiff when you wake up in the morning? Join Necrophiliacs Anonymous and live happily ever after. Graveyard tours every midnight, and first choice at the mortuary of your chosen faith.

DOPE SMOKERS & POT HEADS anyone interested in forming a local chapter of **NORML** (national organization for the reform of marijuana laws) send mail to **NORML** c/o Box 8, *mathNEWS*.

FOR SALE CHEAP (slightly used) squared circles, bisected angles, two-sided Mobius strips, and full Klein bottles. Also a complete list of all the chevron's major contributions to student journalism and articles of literary merit.

So! Suppose you are walking down the street and a



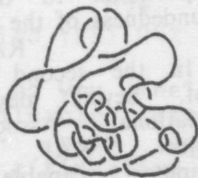
walks up to you. Well! For all you know it could be an old school chum, or your aunt's sister! So we are motivated to look a bit at

KNOTZ

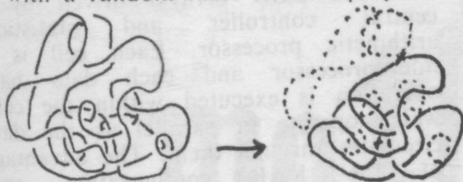
Imagine a simplest closed knot, so:



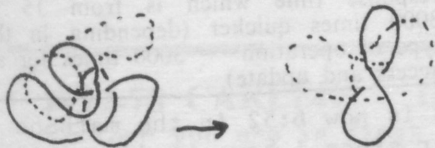
and to knot it, cut it somewhere, tangle things up a bit, go to the A&P maybe, and join the ends again. Now you have, say,



which is not the same, of course. Maybe. Well: define a knot to be the same as another (isomorphic?) if it can be turned into the other by *not* cutting it, or by reflection (in a three-dimensional mirror?). So start with a random mess and simplify:



(kill the excess loops)



(this I call a flip:) So it's isomorphic to an old friend.



Some "simplest" knot forms now (a knot drawn with minimum intersections; all intersections are of two lines only).

ϕ) none: the "null knot"



i) one: all isomorphic to ϕ)

ii) two: ditto

iii) three:



Call this a "pretzel", or a three-star. It's actually the simplest knotted knot, i.e. not the null knot (say that 50 times, quickly). It is how you start to tie your shoes:



The "star" name is suggested by further knots but first

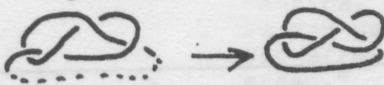
iv) four: picture a pretzel



and instead of the top single cross put in two crosses



which has four crosses and cannot be drawn with fewer. It is in fact a figure-eight knot



(are there any different simple 4-knots?)

This is a two-twist pretzel. The three-twist pretzel is

v) five:

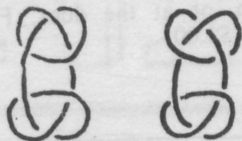


which is not the same as a five-star.

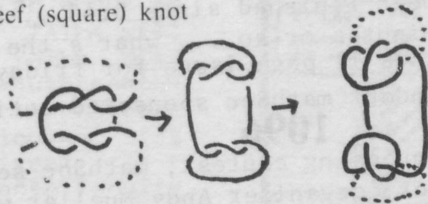


Maybe there are more 5-twist simple knots. I should know?

vi) six: is very interesting indeed! And complicated! Some notable points are double pretzels:

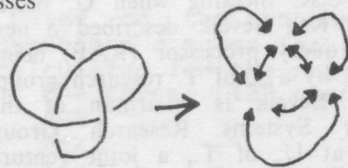


which are not isomorphic; the first is a reef (square) knot



while the other is a granny. Which we all know are not the same. Also one of these is a clove hitch, the other a half-hitch. Don't ask me.

There are also surely other non-isomorphic 6-knots. Is a 4-twist pretzel the same as those two? Is there a 6-star (or any even-star)? Or take a basic pretzel and isolate the 3 crosses



and make two of them double-crosses (one double-cross gives a two-twist pretzel) of the same parity? Of *not* same parity? All three, of all or different parity? Does this generalize to all odd n -stars? And so on.

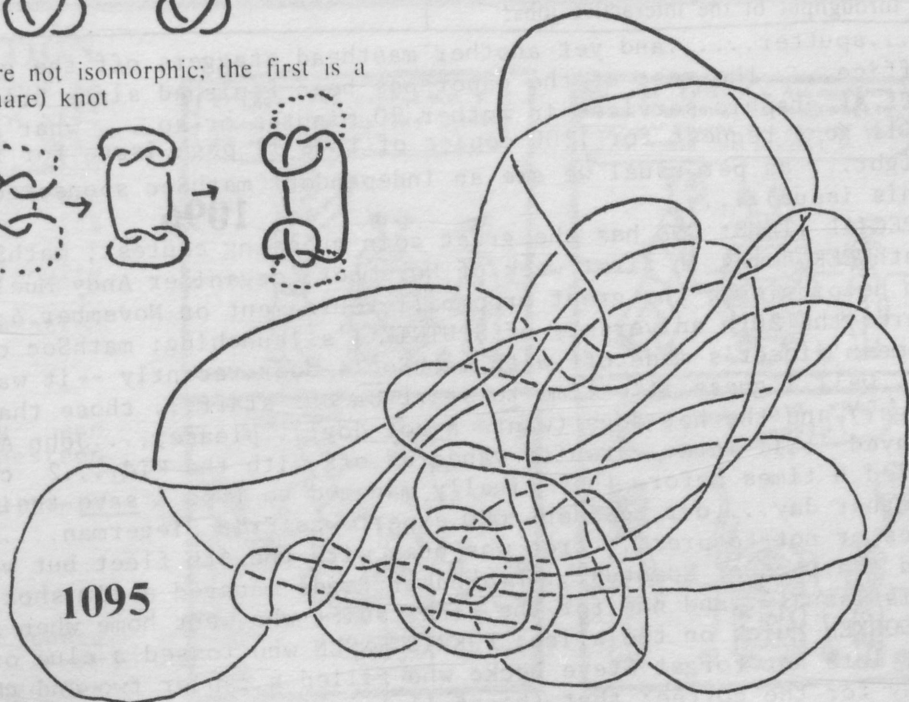
As for nomenclature, you could always write pretzels so:



and call them three-twist eights. Or kidneys. Then all n -twist pretzels would be $(n+2)$ -eights.

And so on. See what doodling lines makes you think about! Anyway, I welcome any comments, ideas (nomenclature, unravelling, generating) or solutions (I do know some of them)(think I know?). Mail pckelly or **mathNEWS** or drop something in the wooden mail box or at Mathsoc. And I leave you with this (**I KNOW THE SOLUTION!!**):

What simplest knot is this isomorphic to? (with some proof. If you can't do it on paper alone, tie up a piece of string...)



CSC FLASH

(left over from the summer)

When is a disk not a disk?

When it is an array of charged-couple devices... or at least that is what one was led to believe at the last CSC meeting when U. of T. Professor Ken Sevcik described a new database query processor (RAP) being developed by a U. of T. research group. Professor Sevcik is chairman of the Computer Systems Research Group (CSRG) at U. of T., a joint venture of the E.E. and C.S. departments. He is involved with system modelling, performance evaluation, storage structures for database management systems, and medical databases. He spoke first on the theory behind priority queueing network models and later about the special "backend" database query processor now under development at U. of T.-- the RAP Project.

In the first half of the talk, Prof. Sevcik touched on the need for a model which will allow one to predict the effect on a scheduling system of changes to cpu, channel processing, etc. Due to the complexity of existing systems, modelling techniques are over preferred over sampling ones. The model which Prof. Sevcik considered was a 2-class system, class A being interactive jobs (high priority) and class B being batch jobs (low priority). A system overview (see diagram) would show a single cpu and several service stations, each with its own queue of jobs awaiting service. We assume that the jobs in the cpu queue get serviced on a priority basis, while those in the service center queues are served on a first-in-first-out basis (s. c. service times are exponentially distributed, for those who care about such things). The problem to be considered is this: how do various priority schemes affect the throughput of the interactive jobs?

MODELS

Some of the techniques tried were:

- (1) "no b" (NOB)— assume that there is only one class of job in the system, class A (interactive). This approach provides a lower-bound on the throughput of class A jobs.
- (2) "exact solution" (EXT)— produce an exact solution from a set of global balance equations equating the rate of passage into the system with the rate going out. This method is expensive and suitable only to small systems as the size of the state space grows exponentially with number of channels, jobs in system, classes, etc.
- (3) "shadow cpu" (SHD)— provide a second cpu for the exclusive use of batch jobs. This method provides unrealistically good service to batch

jobs, thus allowing these jobs to congest the io channels more than would normally be the case.

(4) "utilization of class a" (UTA)— like SHD, but reduce service rate on shadow cpu proportional to actual utilization of class A's cpu. Here class B jobs are better served; class A jobs progress more slowly than in the SHD model.

(5) "processor shared cpu" (PSC)— treat jobs in a round-robin fashion.

UTA WINS

How do these various methods affect mean response time for Class A jobs? Well, NOB provides a lower-bound on response time and PSC an upper-bound, in all simple cases tested. EXT lay consistently closest to NOB, followed by UTA and SHD. Thus UTA provided the best approximation to exact system responses, (The accuracy of the approximations was directly proportional to the degree of cpu boundedness of the jobs in the system.)

RAP

In the second half of the talk, Prof. Sevcik described the RAP (Relational Associative Processor) Project. RAP is a "backend" computer capable of supporting hierarchical, network, and relational views of data. Its architecture is based on the observation that data base operations are inherently associative and set-oriented. Architecturally, the design consists of a series of linearly-connected "cells" (the notorious CCD arrays) driven by a central controller and statistical arithmetic processor. Each cell is a microprocessor and each data base operation is executed within the cells which operate in parallel as the data circulates through them. The advantage of the RAP configuration over conventional configurations is a response time which is from 15 to 3000 times quicker (depending in the type of operation-- 3000 times for an access and update)

SCREEN

EVEN DWARFS STARTED SMALL - OCT. 11 FIRST OF INTERNATIONAL FILM SERIES

A searing satire on half-baked revolutions, *Even Dwarfs Started Small*, the first feature of the International Film Series sponsored by the UW Arts Centre will be screened in the Humanities Theatre on Tuesday, October 11 at 8 p.m. Admission is by membership only and memberships, at \$2.00 each, are available all season at the Main Box Office, Room 254, Modern Languages building, University of Waterloo, or at the door. Film fee per night is \$1.00.

....sputter.....and yet another masthead staggers off the ground... it is now 6:52 in the mathSoc office.... the rest of the paper has been finished since 5:45... however since i have to drop this off at graphic services in anther 90 minutes or so.... what's the hurry... while I'm at graphix in will go a request for 1200 copies of this 12 page issue for friday distribution... start Thanksgiving right... as per usual we are an independent mathSoc sponsered activity... (at least until they read this issue)....

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SPECIAL ITEMS: C&D has the great coin guessing contest; mathSoc sets up a Game-of-the-Week Committee; mathWEEK comes in first week of November, organizer Andy Mueller would appreciate anyone interested in helping out; the great broomball tournament on November 4; Uranus has rings around it; this week marks the 20th aniversary of SPUTNIK 1's launching; mathSoc council meeting every Thursday at 5:30pm some n'jineer's made off with mathSoc's door recently -- it was worth 75 points in a scavenger hunt;well i guess it's time to start on our staff... those that managed to survive the coffee (sans sugar) and the hot dogs (wanta a hot dog?...please)....John Anderson and Mike Sargent sounded off and stayed 'till late...arwhite wandered off with the kid...2 characters who claimed to be from KNIRPsoc tried 6 times before they finally managed to type & save their article....Wil Macaulay gridded for another day....our resident QED expert was Eric Siegeman....J.J. wrote LONGhand....Steve Risto to pres or not to pres....trob was busy with the 6th fleet but we stole his poems anyways....then we had the Dean of Edmonds....Prabhakar Ragde managed a rim shot....Dave Thorpe was too paranoid for this issue....and now for the final shift who went home when all but the masthead was done..... KADORKEN quick on the slice; PJKRISTENSEN who tossed a clue or two; PCKELLY our resident artist and lets not forget Steve Locke who filled a gap or two and gmteichert who baked us a pie...and andy for the coffee; that (hopefully) covers everyone except for the final final shift: DJMULLIN