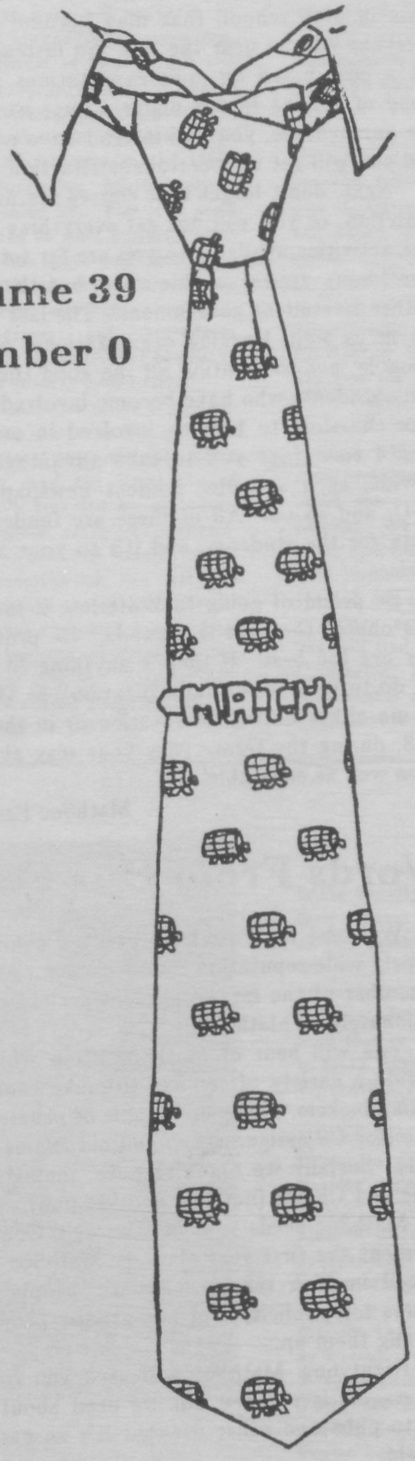
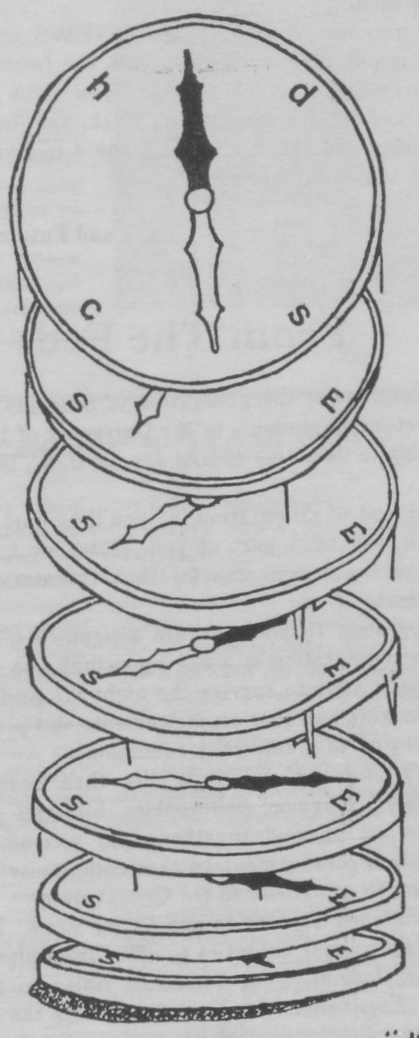
Your friend,

mathNEWS

Volume 39
Number 0



Special Frosh Issue 1985



What *is* this thing called mathNEWS?

OK. Right now you're probably wondering what this thing you're reading is and why it was sent to you. We'll try to answer these questions with a minimum of pain, embarassment and confusion. First, you must understand that from the moment you got your Orientation Package, you are a **Frosh** (short for freshman). Even better, you're a Math Frosh, which means you're now reading a special issue of **mathNEWS**, the quasi-official Mathematics Faculty student newspaper.

The regular **mathNEWS** appears regularly – usually every second Friday – in the Fall, Winter and Spring terms. We are funded by but independent of the Mathematics Society (hereinafter, MathSoc) and aim to keep math students informed, entertained, and provided with a forum where they can express themselves. We also provide a haven for hapless punsters, unsung poets, ravenous pizza eaters, and whoever else wants to show up on production nights (usually Mondays – watch for them!).

The irregular, frosh-style **mathNEWS** appears each August and is put together to help you, the frosh, get an idea of what university life is like, to give you some tips on how to have fun *and* survive Orientation Week, and (hopefully) how to sail smoothly and smartly through the 4-to-5-year undergraduate career that awaits you ...

Tom Ivey
Once and Future Former Editor
mathNEWS

From The Feds

As President of the Federation of Students, I welcome all new and returning students to the University of Waterloo. This year is going to be a very special one for U.W., because **you** are here.

By the end of Orientation '85 you'll be part of the University, and it will be a part of you. MathSoc has scheduled a week full of fun experiences for that Orientation. Find them and participate!

Coming soon to your life are assignments, midterms and all-nighters; Orientation is a key opportunity to make the connections you'll need to survive the night life **and** keep up your grades. Working together on assignments and peer tutoring are an essential part of a university education.

There's more to university life than academics. U.W. mixes cultures, religions, philosophies, lifestyles and personalities. When we all pull together, that mixture comes alive! You've made a commitment to that community and you have an obligation to contribute to it. Get involved!

Our academic reputation speaks for itself. But U.W. has lots of extracurricular activities to offer: from disc-jockey training to flying lessons, from horseback riding to politics! Seek them out. Experience the diversity that is the University of Waterloo and wear your pink tie with pride. It's a symbol of success and your place in the school.

If the Federation of Students can be of assistance to you (or you to it), give us a ring (Ext. 4042) or stop by the office (CC 235). Remember that Waterloo's the best – it's got you!

Sonny Flanagan
President, Federation of Students

Prez Sez

I would like to officially welcome all of you Frosh to Waterloo on behalf of the Math Society. As much as MathSoc promotes the social side of university life, I would like to say a few serious words first. This is a time of change in your life, as you're moving from high school to a university environment, specifically the Faculty of Mathematics at the University of Waterloo. Although you might have been near the top of your class in high school, that may become impossible here – not everyone can be near the top. So instead of aiming to be best, set a goal based on your expectations and desires. Then, instead of getting buried under a huge workload, trying to reach the unreachable, you will instead have a goal that is reachable, and you will get that certain satisfaction in reaching it.

Next, don't forget that classes are not all there is to life at Waterloo, or you will not get everything out of your education. The activities available to you are far too numerous to be listed here (many appear in this issue) but they range from sports to culture to student government. The last area is where MathSoc fits in as well; learning organizational and teamwork skills is valuable, not to mention all the good times you can enjoy with other students who have become involved. If you feel you don't have the time to become involved in an organization such as ours, I encourage you to take advantage of the services they provide, such as pubs, student newspapers, photocopiers, the C+D, and so on. All of these are funded and run *by* the students *for* the students, and it's to your advantage to use their services.

Be proud of going to Waterloo; it may not be perfect, but it *is* one of the best in Canada. Be proud of being a Mathie; they *are* the best. If there's anything MathSoc or I personally can do to help your "naturalization" at Waterloo, do come and see me either during Orientation or in the MathSoc office, MC 3038, during the term. May your stay at Waterloo be successful as well as enjoyable!

Tom Haapanen
MathSoc President, Fall 1985

Words From Our Fearless Lida

Welcome to Waterloo. You are coming to a Faculty with a world wide reputation for excellence. As a mathie you will be a member of the largest student society on campus, known affectionately as MathSoc.

You will hear of MathSoc often while you are here. We provide a variety of services to make courses a little easier, including lockers, a stapler capable of penetrating 3 inches of concrete (for CS assignments), and old exams to help you study for finals. Socially we organize pubs, pink days and the infamous Wine and Cheese (not just another pub).

MathSoc needs your help as well. Councillors are needed to represent the first year class on MathSoc council (like students council in high school). Artistic people are needed to paint posters for publicity and non-artistic people are always needed to hang them up.

Right now MathSoc will need you to make Orientation a success. It is planned but we need about 700 people to come out to pubs and other events. It's an easy and enjoyable way to help.

In September I will be starting work in a different city (my 12th move since I began co-op). Good luck with 1A and see you in January.

Lida Cepuch
MathSoc President, Summer 1985

Message From The Dean

Welcome to the Faculty of Mathematics! We are delighted that you hae chosen to pursue your undergraduate studies here at the University of Waterloo. We hope that you will enjoy the challenge of your academic program in Mathematics, as well as the new lifestyle that attending university provides.

Your first few days here will probably be spent "finding your way around". Not surprisingly, there is a certain amount of bureaucratic red tape associated with program selection, course changes, and related matters, and it is a good idea to become familiar with the rules right away. In order to provide you with information and assistance, we conduct **Operation Mathstart** in Room 5158 until September 20. This is a good place to ask questions, and to meet professors and fellow students. (The free juice and doughnuts aren't bad either!) In addition, the Undergraduate Office in MC 5115 provides information and consultation about programs and procedures throughout the year. The *Math Circles* booklet is also a valuable source of student information.

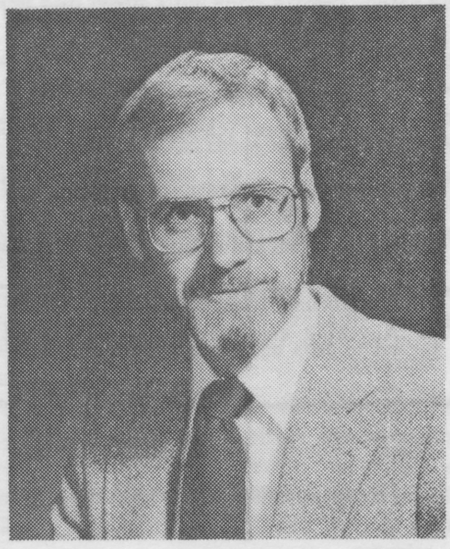
The Faculty of Mathematics offers a wide array of academic programs, the majority of which have substantial involvement in computing. Over the years, the Faculty, and the University of Waterloo generally, have provided an extraordinarily high level of computer service to students. These services are expensive, and unfortunately, continued provincial underfunding has left the University with an unpleasant choice: curtail computer services, or institute computer service fees. We have, with great reluctance, chosen the latter course in order to ensure that the computer services that support our academic programs continue to be maintained and developed.

The fees have two components: a general levy of $70 per term that all students pay, and an additional fee of $30 for those students enrolled in Computer Science and related programs. The general levy will be used to support University-wide services while the additional program-based fees will accrue to the Faculty of Mathematics. These latter funds will be used to maintain and enhance the specialized computer support and computer laboratories to which students in Computer Science programs have preferential access.

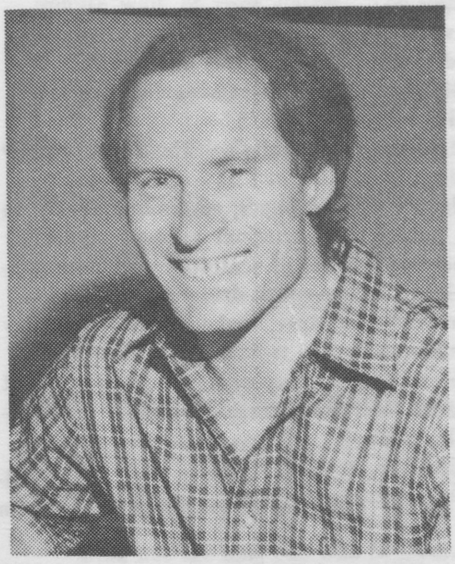
However, the news is not all bad. We are in the process of constructing a new building which will substantially improve the environment for you and your fellow students. It will be called the William G. Davis Centre for Computer Research, and will house the many computer related research groups on campus associated with the Institute for Computer Research (ICR). The entire Department of Computer Science, along with some Engineering departments, will move to the new building. The Engineering, Math and Science Library, now on the 4th floor of our building, will also move to the Davis Centre. Thus, in addition to the improved facilities for Computer Science provided in the new building, the remainder of the Faculty will get some welcome space relief by expanding into vacated space in the Mathematics and Computer building. We plan to provide much-needed student study space and classrooms on the 4th floor, along with improved office and laboratory facilities on the 3rd, 5th and 6th floors.

Once again, welcome to Waterloo. I know you will find your years with us stimulating and challenging. I wish you the very best in scholarly achievement and personal satisfaction as you embark on your university career.

J. Alan George
Dean of Mathematics



The Director's Message



Arnie Dyck
Acting Director
Undergraduate Affairs

As Acting Director of Undergraduate Affairs in the Faculty of Mathematics, I would like to extend a warm welcome to all of you as you embark on your freshman year at the University of Waterloo. We are fully aware that your first few weeks on campus can be rather hectic ones as you adjust to a totally new environment. However, we also hope that you will take advantage of opportunities to make things as pleasant as possible for yourself. **Operation Mathstart**, in particular, is intended to assist you in coping with registration and scheduling problems that often face new students. It is also a chance to meet other students and Faculty members in an informal atmosphere. In addition, your Orientation Package contains all kinds of useful information, and I would hope that you take the time to read through this material with considerable care.

At a large university it is easy to get the impression that nobody really cares about you, and as a result, you can become very much a "loner". I would urge all of you not to fall into this trap. There are numerous people around the Faculty and the campus-at-large who are more than willing to help you get started on the right foot and in order to initiate some contacts with your fellow students and to become more familiar with facilities and fun events on campus, let me draw two all day events to your attention. You are urged to participate in **Math Day** Wednesday, September 4th and in the campus wide **Frosh Day** to be held on Friday, September 6th.

Along with a "Welcome to Freshmen" expressed by the President of the University, there will be a pep rally, a Warrior's Band performance, some theatrics by the FASS group, and the introduction of the Deans of the various faculties to the freshmen students. Tickets for the barbecue lunch the same day will be included in your 'Frosh Kit' and the day winds up with an evening concert. **Frosh Day** is supported by the Federation of Students and the University Administration.

The amount of work facing you in the next few months is probably greater than most of you have ever encountered before. Nevertheless, if you plan your time carefully, you should be able to give your academic studies their fair share of your hours and still have time left to devote to social and recreational activities. There are innumerable activities on the campus to suit everyone's tastes. The secret is to find a good mixture of enjoying yourself and doing justice to your studies. The actual blend in this mixture will largely depend upon individual interests and academic ability, and these vary considerably from one person to another. Nevertheless, it is vital that you devote some of your time to both scholastic and social activity if you are to have a rewarding time at university.

I urge you not to delay. Get involved and start working right at the beginning of the year. Don't wait until "later". "Later" may just be too late!

Coming-to-Campus Checklist

Just when you thought it was safe to pack up again...

Top Priority - must bring

- ☐ Clothes (1-2 week supply before washing)
- ☐ Towels
- ☐ Warm clothing, including winter coats (winter is coming...)
- ☐ Cool clothing (...summer isn't quite over, yet)
- ☐ Suitcase, trunks, boxes, etc.
- ☐ Good clothes (for those semi-formal occasions, or interviews)
- ☐ Binders (at least 2—you'll have lots of notes by November)
- ☐ Notepaper (to put in those binders)
- ☐ Pens, pencils, rulers, etc.
- ☐ Alarm Clock (for 8:30 classes)
- ☐ Financial items (chequebook, bankbooks, some forms of cash, etc...)
- ☐ University registration items (if you didn't pay by mail), and any other university documents (like *The Timetable*)
- ☐ Suitable identification (driver's licences, birth certificates, etc)
- ☐ Toothbrush, toothpaste
- ☐ Anything else you can't do without the first thing in the morning.

Medium Priority—should bring, but may not be totally necessary

- ☐ Detergent & laundry items
- ☐ Blaster, stereo, or other music playing device
- ☐ Umbrella or other rain gear (*Water*loo??)
- ☐ Flashlight (for those exciting power failures)
- ☐ Calculator (scientific, preferably)
- ☐ Scrap paper for rough work (but once those CS classes start, you can generate enough paper from assignment attempts)

Low priority

- ☐ Books, magazines, and other such tomes
- ☐ Portable TV, other electronic entertainment devices
- ☐ Games (role-playing, or otherwise) and other non-electronic entertainment devices
- ☐ Anything else we forgot....

This checklist may not be complete for your particular needs, but we hope to give you some idea of what to bring to Waterloo this Fall. Oh, by the way, make sure you bring yourself! Happy packing.

A Frosh Dictionary

Read and memorise the following terms; should you choose to accept them, your vocabulary will self-destruct in five minutes.

Math: the greatest art and science known to mankind; also a good way to meet interesting people.
MathSoc: the Mathematics Society (you're a member!), a neato organization that provides social events, funds stuff like **mathNEWS** and serious things too, plus some 30-odd other services like photocopying, old exams and Mathletics.
MC 3038: the MathSoc Office; the place where everything haapanens.
The Pink Tie: a once and future former mathscot for MathSoc; occasionally dangles prominently on the southwest face of MC, when not being stolen by pink-eyed engineers.
The Natural Log: another former MathSoc mathscot; usually chained up in MC 3038, but don't tell the engineers that!
C+D: the MathSoc Coffee and Donuts shop, open every weekday, situated just off the 3rd floor lobby (follow the smell of fresh coffee and bagels); nourishes math's teeming millions daily.
MC: the Math and Computer building; contains all of the above; imposing grey structure wherein (or wherenear) you will spend a *lot* of time while at UW.
Club 750: also know as **Fed Hall**, **Allison's Wonderland**, **Uncle Tom's Cabin**, and **Allison's Palace and Grill**; new (1984) campus party place with multi-level dance floor and double-entendre waitresses; use it and enjoy — you're paying $7.50 a term for it.
The Bombshelter: the old campus bar and party-place, now rather laid-back (!); a favorite Friday lunch spot.
Watpubs: mobile Bombshelters for work-terms in faraway cities.
Co-op Student: a gypsy with books.
Village Zoo: The major on-campus residence at UW.
Village One: The other major on-campus residence at UW, except with single rooms. Villages One and Zoo are adjacent.
Village Food: illustrates the difference between well-cooked and cooked well.
Village Three: Sunnydale, a charming student ghetto; 20 minutes north of campus.
Village Four: Robinwood; more of the above.
$$$$$: What you need to remain here at this university.
$$$$$$$$$$: Like $$$$$, except after the Bovey Commission.
¢¢¢¢: What you will get when you finish.
mathNEWS: the Funny Faculty's Fearless Friday Phenomenon.
Imprint: the other decent campus paper; comes out weekly on Fridays.
Enginews: An engineering journal of scatology and pornography.
Gazette: The administration's paper; makes good Wednesday reading.
Chevron: former decent campus paper, now one of the last remaining sanctuaries for Marxist-Leninist jurinalism in Canada; highly infrequent but funny.

Chevron Bingo: pick a Chevron-style adjective (eg. "imperialist" or "running-dog lackey") and try to get three in a row on the front page.

Grop!: General comment, usually made at **mathNEWS** meetings by people otherwise at a loss for words.
Kitchener Transit: An oxymoron (cf. Village Food).
Guelph: The sound a dog makes as it woofs its cookies.
Orientation: A six-day blur.

Spatial Co-ordinates

The Perks Of On-Campus Living

By the time that you read this, you will already have your accomodations in Waterloo arranged. However, for those of you living off-campus, I would like to describe some of the advantages of living on-campus.

An important advantage, especially for frosh, is that you will be living with a group of other U.W. students, probably mostly frosh like yourself. Being new to this school, you will not know many people, and thus can feel very lonely. At least at first, it is difficult to make new friends in class as there is little time available to meet other students. In residence, however, there are plenty of opportunities to meet the other students and make friends in the friendly atmosphere of home.

Also, the upper year students in your residence can tell you all about life at Waterloo. In addition, for those of you who aren't exactly sure what you want to do, they can help make up your mind by telling about the various options and disciplines they are in or have been in. Finally, they can help you with your work, such as calculus assignments.

A common complaint about residence life is that it is hard to get work done because there are too many distractions and too much noise. In general, there are probably more distractions on-campus than off-campus. For those of you who completely lack self-control, on-campus life might not be appropriate. The noise level varies a lot depending upon which residence you are in, although usually it is tolerable by most students. However, for those of you who have trouble working with the noise or distractions, you can go to a library to do work or to the M.C. which is always open. I found that while in residence, I had no problems getting homework done.

Another important advantage to on-campus living is the convenience. All the on-campus residences are within a 5-15 minute walk of your classes. You don't have to worry about trying to catch a bus, or driving a car and then trying to park it. The quality of the food depends upon the residence, with the church residences being generally good and Villages I and II being not as good. For each meal there is usually a selection that is acceptable to you, but you might find that the food becomes boring since you keep making the same selections over the term. Finally, there are other fringe benefits such as a T.V. lounge, laundry facilities, and having your room cleaned and linen changed.

A factor which scares many people away from on-campus residences is the cost. Although residence costs around $1400-1600 per term, consider the off-campus costs. You will be living in a room or apartment for about $150 per month ($600 per term), plus food expenses (at least $400 per term). Then there are the costs of cooking, cleaning, and other incidental expenses. Also, there is the time expenditure in preparing meals, washing dishes, travelling, and the like. On the whole, on-campus living is worth its price.

I am not the only one who believes that frosh would benefit from living on-campus. The University of Guelph gives a guarantee of residence to first year students (or at least they used to).

Not all of the advantages of on-campus living have been described due to space limitations. However, whatever you decide to do, I wish you success at Waterloo. Happy housing!

Off-Campus Living

While there are admitted advantages to living in residence for first year to get to know some people on campus, there are also considerable advantages to living off-campus. You are off on your own, fending for yourself, gaining experience in valuable lifeskills. It will usually work out being at least a little cheaper to live off-campus, as you aren't paying to have somebody come in and clean up after you, or to cook your meals. Being on your own can also mean a bit more privacy, peace and quiet.

There are many possibilities for off-campus living. You might find a room with a family, or have an apartment or townhouse or some such device. In any case, the first thing you will be encountering is a landlord. Of these, some are nice and others are very hard to please. A word of advice here: if your landlord has biceps larger than your waist, it is wise to follow the silly rules he may post. Always deal with those having authority over you in a rational manner.

If you are lucky enough to have found for yourself an apartment or townhouse unit, then you will probably want to find somebody to share the place with, as the cost of having a place all to oneself is prohibitive.

You generally have more control over who you want to have as roomates when living off-campus, either by not taking a room with a person, or by not offering a room (depending, of course, on which perspective is yours). Often, too, you can make arrangements to return to the same place when you come back from workterms.

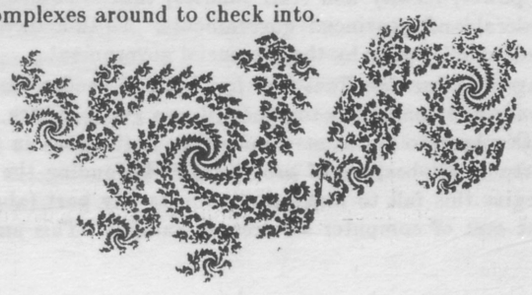
Having roommates means having to show some consideration for them and of course, doing your share of housework—about three or four hours a week. It might work to alternate jobs like vacuuming every week or so, and doing dishes together. Doing laundry is just one of those things we all must do ourselves every week or so.

Now, the presence of dirty dishes implies cooking. There are a few grocery stores around, but not overly many. You can count on spending between about $20 and $30 a week for groceries, or more, depending on your tastes. Eating out is also a possibility, but the cost of doing so more than once or twice a week will also cut deeply into your budget.

Don't forget to bring sheets, blankets, pillows, and the like, as well as possibly furniture, cooking utensils, and an initial supply of food. You'll be choosing your own menu—you just might want to bring a cookbook, or get mom to write out all your favourite recipes.

If you are still looking for a place, keep checking with the Off-Campus Housing Office on the top of Village One. They maintain current housing lists for the area, as well as lists for other cities if you're going out on a co-op work term.

Additionally, there are a number of townhouse and apartment complexes around to check into.



Dollars and Sense

(or, Introductory Accounting for Math students)

What should I do, financially, before coming to Waterloo?
Before you come to campus, it is a good idea to make sure that 1) you have enough money to get by at UW, and 2) you can get at your cash.

How much money will I need?
You need up to $950 for tuition, another $1200-1600 for food and housing, then there's that $150-$250 for books and other incidentals. In total, you will need at least $2400 to get by at UW for a *four* month term. See the article on the Fee Statement elsewhere in this issue for more details on what goes into your tuition fees.

What financial items should I bring to Waterloo?
You should have cheques or money orders to pay for tuition, residence or other costs. Make sure that the account on which the cheques are drawn will have enough cash to cover any cheques that you will write. You might wish to bring bankbooks, chequebooks, traveller's cheques along, too. Remember that many banks have computer connections, so that you can withdraw cash from a distant branch. Inquire at your local bank for more details (you may also need to apply for customer cards or other privileges first).

I'm financially strapped. What can I do?
You can check in the Undergraduate Calendar (the one with all the course listings) on bursaries, scholarships and the like. There is also an emergency loan available. And there is OSAP.

What is OSAP?
That stands for the Ontario Student Assistance Program. The OSAP people will provide loans for students who need more financing of their education. For more information, contact the Registrar's Office at Needles Hall when you arrive on campus. By the way, make sure you play by the rules, or you could be in a very sticky situation.

Where can I establish a bank account at Waterloo?
There is a branch of the Commerce on campus (at the Campus Centre basement). You can open an account there (however, if you can make it to Waterloo before Labour Day, you can open your account before the crowds pour in for Orientation). There are also other banks near campus (such as Canada Trust or the Royal Bank at Westmount Place, at Westmount and Erb Streets), and if you're living off-campus, you might find a bank very close by.

What about banking machines?

The Commerce has four automatic tellers in the basement of the Campus Centre on campus. You will need a Commerce account, of course, but this account can be from your home town. You can apply for Instant Teller at your home branch, or at Waterloo.

There are also banking machines in other parts of Waterloo, including a Canada Trust machine at Westmount Place. (Located at Erb and Westmount Streets, just southwest of campus), and a few Royal Bank machines in the area. Again, ask your local bank for more details on machine locations and specific machine services.

I don't like carrying too much cash, even when I'm paying for textbooks.
The university Book Store will accept credit cards or traveller's cheques. If you wish a VISA card, you can inquire at the Commerce branch on campus. Co-op students, even first-year co-ops, traditionally have few problems getting a card. Be warned that service charges apply on most credit cards these days. Banks and other institutions also offer traveller's cheques in $10's, $20's or whatever. Restaurants and banks will cash them, too. Ask for them at your local bank, also (they typically cost 1% extra for service/insurance charges).

How can I cut costs?
As a Federation of Students fee-paying member (which you will be when you register at UW), you are entitled to discounts on records, concerts and other services. Cheap or free movies (Fed Flicks, Cinema Gratis) are available, too; watch for more information. There is a used book store which sells old textbooks. And don't forget that other businesses may have student discounts and specials, too.

But by all means, plan ahead how much you are spending, and how much money you have. Then make sure you're not going over budget.

■ ■ ■

We hope that we have given you some idea of some of the financial options available to you at Waterloo. We could present a lot more information, but space is limited. We strongly urge you to prepare now, before you arrive on campus, so that you won't be stuck later on. Be sure to plan, and be sure to ask your local bank for more advice. Treat your money wisely, and have a productive, enjoyable time at UW.

Your Fee Statement

A few short weeks before you arrive on campus this fall, a nasty bill comes in the mail: tuition — take heart, it happens to us all! However, you may still like to know more about the breakdown of a typical frosh fee statement ...

Co-op Fee: If you are in a co-op program (Stream 4 or Stream 8), the $150 pays about 70% of the operating cost of the Department of Co-ordination and Placement, the people who (hopefully) get you a job each work term.

Tuition: Your basic six-course tuition fee amounts to $607.50. This pays for part of the operating cost of the university (light, heat, power, faculty and staff salaries) that is shared (sort of) by federal and provincial governments. Tuition increases are limited to 5% a year by the provincial government.

Computer Service Fee: UW has been a "leader" in bringing students and computers together (if you get a chance, compare facilities here to those at some other institutions in Ontario). Unfortunately, because of provincial underfunding the university begins this fall to make the students pay part (about 40%) of the cost of computer services on campus. This amounts to $70 per math student (we use them more), plus an additional $30 that goes to the Math Faculty if you are a CS major.

Compulsory Incidentals: The athletic fee of $21.75 pays for the operation of the Physical Activities Complex (PAC) — well worth it if you play squash or swim, etc. A health insurance fee ($13.68 or $25.65 for co-op) pays for the Federation's group policy with Mutual Life. The $10 recreational fee pays for the construction of Columbia Icefield, and the $7.50 fee goes to the Fed Hall fund.

Society Fees: The $13.75 Federation fee and the $5 MathSoc fee are well worth it; both student organizations provide services and put on events that are enjoyed by everyone (see the Fed Handbook and elsewhere in this issue for more details).

Refundable Incidentals: These fees don't have to be paid at registration; they can also be refunded by request in the first three weeks of the term. $2.50 goes to WPIRG, a research group that investigates public issues for the UW community at large. $3.50 pays for CKMS, the "campus radio station", and $2.25 pays for Imprint, the "campus newspaper".

Photo ID Card: As a frosh you will have to pay $4.25, just this once, to get your ID card with a colour photo that bears a reasonable resemblance to you. (Comb your hair, etc.)

CS or Not CS

"I know software verification sounds a lot like Computer Science, but I don't want a Computer Science major. I want someone who can think. I want a math major."
- an anonymous corporate recruiter

What is Computer Science? Once a person starts thinking about this, the answer becomes obvious: No one knows. You can name aspects of Computer Science, or applications of Computer Science, but there has been no concise yet all-encompassing definition of Computer Science given at all.

Enter the University of Waterloo, spotlight on the Faculty of Mathematics. The people of the Faculty (instructors, staff and students) are scurrying everywhere to prepare for the arrival of 800 frosh (this means you) in September. Of these 800, fully half intend to major in Computer Science. Only about 300 will be admitted to second-year CS. Roughly 200 of these will graduate to take their places ... where?

What makes CS so popular? For many people, computers were a fun diversion in high school, and programming them came easily. For others it was the pressure of a technically-oriented society and a feeling of responsibility to learn something, everything about computers. For still others the lure of glamour and money after graduation led them studying CS.

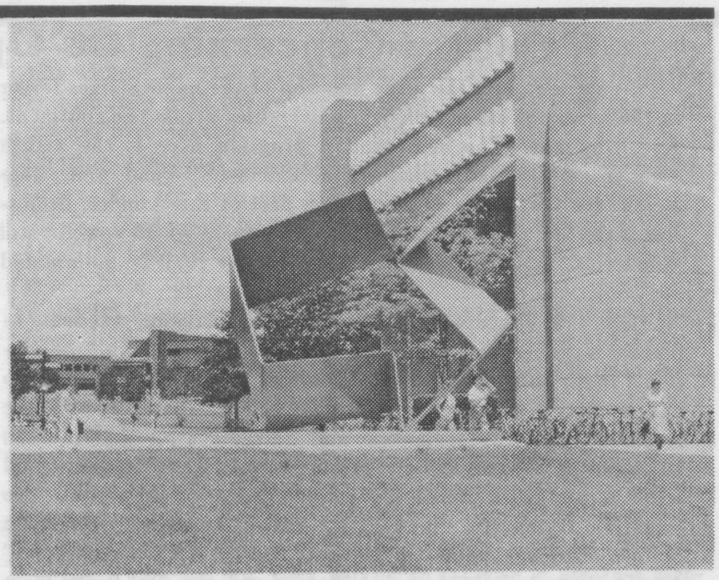
Mathematics, on the other hand, is a labour—a labour of love. There is no glamour for a mathematician. People study mathematics because they enjoy studying it, working at it, thinking about it. They don't study mathematics because someone tells them to.

Waterloo's approach to Computer Science and Mathematics is fairly straight-forward. Since the theory of computing is mathematical in nature, teach the students mathematics. If they're good at math, they'll be good at programming, since the logic required is similar. Thus, all CS majors from Waterloo get Bachelor of Mathematics degrees. There is another side effect of this: CS majors who decide to get out of the program can very easily major in another mathematical field, or study mathematics more broadly if they desire.

OK, now move to the real world. In France, if you know C and Unix™, and are a proven programmer, you can decide whom you want to work for, and for how much. In Ontario, Waterloo CS graduates are competing with Seneca College diploma holders for many business programming jobs. Most of the computer-related jobs are in business information processing—"glorified stenography," as one person aptly put it. There are comparatively very few research, design or system programming jobs. It is the rarer, latter jobs that lure people into CS.

The real world needs mathematicians. Mathematicians come in many flavours: actuaries, statisticians, researchers, even engineers. These people are more useful than programmers are to business, and their work is more interesting (in all facets) than programming in COBOL. But mathematicians are also capable of programming well if they have to, or want to.

Jump back to Waterloo. If you are in CS you will learn everything you need to know about programming by the end of second year. Third year is mostly theoretical; fourth year expands on this and allows specialisation in aspects of computer science at an engineering, research, design and system programming level—the "glamour job" level. If you are in another program within the faculty of Mathematics, you too will learn



everything you need to know about programming by the end of second year. You can specialise in a particular area if you wish, or take a broader program, and come out as a competent mathematician, ready and able to work in an interesting job in one of many companies. And the compensation, if that concerns you, is generally good, too.

Studying mathematics instead of specialising in Computer Science has other rewards. If you finish a math degree, you've learned how to think, to reason things out. A CS degree (without mathematics) only shows you can program, without showing that you can reason. There are many people in the work force (and at UW!) that program by brute force without thinking about how to solve the problem step by step.

Now to tie these sort of disjoint thoughts together. Computer Science is fun, glamourous, profitable, everything you want it to be; "The wave of the future," they call CS. It's been around for 25 years—who knows where it will be in 2010? Definitely, people will have to know how to use computers, but programming will not be a necessary skill. The engineering and system programming jobs will be around, but there won't be many of them. Business will eventually get more information from their systems than they can handle, and executives will be able to extract all the information they need from easy-to-use database systems, so business programming will be minimal, too.

Mathematics has been around for millenia. It is boring to the outsider, but the knowledge that there is more to be discovered makes it exciting for the people inside and the "dabblers" alike. It is pervasive: mathematical models can be made of any physical thing known to man. Mathematics has a future: people will need mathematicians to develop ideas which lead to new discoveries and practices in science, engineering and the humanities—for mathematics is not just a science or technology but philosophy as well.

At Waterloo you have a chance to study both. You will learn to program, and, if you choose your courses well, learn to think. Sometime before you graduate, if you are hoping for a degree in CS, you will have to decide on one of two choices. Do you want to be just a doer with no reason to think, or a thinker with the desire and capability to do? Waterloo offers you both, so choose wisely.

W. Jim Jordan

Crash Course Concerning Co-Op

Waterloo. Just the mere mention of the name strikes terror in the hearts of other technical universities across the continent. And why not? The co-operative program here is the eighth wonder of the industrial/commercial world—and you, dear Frosh, are very likely going to be a part of this wonder. Doubtless there are a few minor points about co-op which you are still wondering. Fear not, dear friends, for these shall be illuminated forthwith.

The first concept to clarify is that of "stream." Students in Stream 4 do one academic term in the fall, go through "the system" (q.v.) sometime during October and November, and go out into the working world under the watchful eye of the Department of Co-Ordination and Placement for four months beginning in January. They then usually alternate academic and work terms until fourth (academic) year, when they do two academic terms and hopefully graduate. Stream 8 begins with double academic terms in the fall and winter; "the system" grinds away in February and March; and the first work term begins in May. Academic and work terms then alternate until the final academic term in the winter, when the two streams are reunited. Of course, the Faculty of Mathematics has deigned to add a third stream (which is not as much a stream as an eddy), called the Math Teaching Option. Even *we* at **mathNEWS** don't pretend to know how this works.

The next concept involved with being in co-op is that of "orientation." This is a one-hour-long weekly seminar where the knowledgeable and helpful people from Co-Ordination and Placement, and a handful of experienced co-op students will tell you how to survive "the system." The topics covered in these seminars are resumé writing, selecting jobs to apply to, preparing for job interviews, job interviews, rankings, the placement run, "second round", work term behaviour and the infamous work term report. Since the Faculty of Mathematics has been blessed with the foreknowledge that you are eager to learn all about co-op, it has seen fit to schedule a Co-Op Orientation Seminar right on your timetable where it won't conflict with any lectures or labs. It's called **MATH 000**, and you get it in the fall if you're in Stream 4, and the winter if you're in Stream 8.

And now, the concept you have all been waiting for: "the system." This is the actual process which will hopefully land you a job in the real world. The chances of this are good; there were over two jobs for every co-op mathie going out on work term this September. Anyway, unless you have either one of these mythical items—A Willing Employer or Your Own Company—you will have to go through "the system."

"The system" requires you to do a little bit of preparatory work before it can get started. This requires writing a resumé and making 25 to 35 copies of it for Co-Ordination and Placement. Your resumé should contain a summary of schooling received so far, your work experience, awards, positions or office held (and not for ransom), and interests (having "trivia" on my resumé helped me land my current job!). If you start thinking about your resumé now, the pressure and urgency of producing a final version is somewhat reduced in September or January, depending on your stream. Your resumé may be typed, word processed or typeset—and there are many places in Waterloo that do them up nicely.

Once the copies of your resumé are delivered, "the system" begins. Your marks, previous co-op evaluations, and resumé are bundled together in one neat little package (of course, the resumés are placed on the bottom, right after the marks). These are then placed in your file, awaiting the arrival of your Job Application Form. A word of warning: late resumés will not be sent out to prospective employers. If your resumés aren't delivered on time, you have little chance to sell yourself to an employer.

The next step in "the system" is the Want Ads. These are the job descriptions given to Co-Ordination and Placement by the employers desirous of having a young, energetic, reliable and easily-taken-advantage-of co-op student to kick around. Then there are the companies who treat their co-ops well. Your task at this point is to weed the former out from the latter, and then find the jobs which will help you gain experience in your chosen field. Each job description is given a unique identifier, and you record these numbers on your Job Application Form. You usually have only a weekend to decide where you want your resumés to go.

When the Job Application Forms are in "the system" sets to work in full force. A copy of your next little evaluation/mark report/resumé package is bundled with packages from all the other co-ops who applied to the same job and sent off to each employer. The employers review the package, decide who they want to interview and send the list of students back to Co-Ordination and Placement, where an interview date is set and times for each student arranged.

Job interview schedules are posted in Needles Hall and the Math and Computer building. These are usually posted two days in advance, so you can arrange skipping lectures to go to the interview.

While this is going on, there are "late postings" of job descriptions which had no applicants (check the number of DATE REMOVED stamps for these ones) or which were called in too late to be printed in the Want Ads. Simply sign your name, term and ID number to these and your resumé package will, Canada Post willing, arrive at the employer's office for the same scrutiny as regular employers get to give.

And now, the job interviews. Rule One is "Dress Well." Rule Two is "Be yourself, as much as Rule One allows." Rule Three is "Don't grovel, but don't be smug." Rule Four is "Know thine adversary." Co-Ordination and Placement helps with Rule Four through the Career Information Centre in Needles Hall, which has information on many companies who go through the employer end of "the system." If you know the company interviewing you, you can ask intelligent questions and possibly land a good job or avoid a bad one. (How to avoid a nuclear reactor job: ask if you're working in the radioactive area. It worked for me!)

When the interviews are over, the employers rank the students whom they interview, dropping those who are unsuitable, and you rank the employers, dropping (with permission) those who are incompatible. The rankings from both sides are fed to a computer and a low-sum matching algorithm determines who goes where. The results of this placement run are made known to you at a confirmation of employment interview—unless you didn't get a job.

No job? Not to worry, for Co-Ordination and Placement has a parachute called "post-placement" or "second round." They'll explain all the gory details if that happens.

That is "the system." Of course, before all this can go on, people must *find* the jobs, so don't give the co-ordinators *too* hard a time when you get frustrated with "the system" (and don't think it won't happen—the pressure on students at UW is mounting each term). And, whatever you do, enjoy your work terms, especially after working hours. dwarf

Coarse Liszt

The following is the un-course calendar as approved by mysterious **mathNEWS** staff members. Don't let these course descriptions influence you too much.

ACC 121/122: 121 requires very little work, unless you've had accounting before, in which case it takes no work at all. 122 does teach a few new concepts, and requires a bit of work. Real accountants don't take these courses; these courses are geared to a general overview (the so-called "survey course").

BUS 111/121: Taught at WLU, these courses are good just to learn about the business world (and the stock market!!) This is the material WLU is best at teaching, and they do it well.

CHEM 123: Introductory Chemistry. Follows from Grade 13 concepts. Might get a bit nasty towards the end of the term (as do many courses!), but it can't hurt. You can also take an optional quarter-credit lab with this course.

CHEM 124: If you can cut through all the jargon and picture little atoms interacting, then you might be able to survive this one. Otherwise, this is a must miss. There's an optional lab for this course, also.

CS 140: Mathematical Number Crunching using Pascal or FORTRAN 77 except that you'll use Waterloo MicroPascal or Waterloo MicroFORTRAN, which don't match anything in the Real World. Find zeros of functions, intersection points, areas and volumes. Fun? Well...for a core course, I guess so.

CS 180: You are the director of the computer department of the Easy-Go Credit Card company. The reports generated are not quite right. This course teaches record and file processing, and helps you be useful in a business environment as you modify programs to work properly. The catch is: you're using COBOL. Not required, but the faculty likes you to take it. (It does help, however, for getting first term work term employment in many companies.)

ECON 101/102: Slightly dry (unless Larry Smith teaches) but beneficial. A good base in economics will help in various places in both your academic and non-academic career.

ENGL 109/110: Learn how to write essays. Helps with work term reports (if you're in co-op). Not the easiest course in the world, but not the worst either, and it should improve your writing.

ENGL 208A-Z: English reading courses for non-Artsies. You can choose from 208A, 208B, etc depending on your tastes. Usually enjoyable and not too difficult.

MATH 130A/B: The Required Calculus Courses, which are a lot of work, teach you a lot, and are truly difficult to pass (depending on the Calculus you learned in high school). This will be the most difficult course and the one where you learn the most. Your work habits will be forced to improve.

MATH 134A/B: The people who like 130A/B will likely dislike this, and vice versa. People who enjoy more abstract math, and less numeric manipulation, will enjoy this course. Studying 134A/B will help give you a break from studying 130A/B.

MATH 140/144 A/B: Like 130 and 134, but **advanced**. See the article elsewhere on this advanced breed of courses.

MTHEL 100: This course is taught by Mr R.G.R. "Barney" Lawrence, Q.C. and is an introduction to Contract law. Barney is very entertaining, and if you go to lectures and read the text, you can pick up the material, credit, and some useful knowledge easily.

MUSIC 100: Introduction to Music. This is a music appreciation course so you get to listen to a lot of music. Practice quizzes help with the course studying. You may even get to do concert reviews, too. Recommended.

MUSIC 125: Not necessarily easy to ace, but very, very difficult to fail (or even get a low mark). Talk about videos, see videos. Could even be interesting if you take it seriously.

MUSIC 150/151: These two courses are a survey of western music from about the 10th century to the 20th (but not Led Zeppelin). These courses are easy if you are the least musically inclined, and have a fair memory for melodies (and a few other sticky bits of information like attributes of music from each period, in which period particular composers lived, etc...) These are actually interesting courses (surprise, surprise!), so if you can't find something to fill in an elective, why not...

MUSIC 250/251: These are the first two of the four theory courses offered by Conrad Grebel College (one of the associated church colleges). They are good. If you are "musical", they are simple. If you are not, they will be an exercise in abstract algebra (ie. not simple). If you have taken some theory before, they are REALLY simple. Enough said...

MUSIC 275: Computer Applications in Music. VERY interesting, especially if David Huron is teaching. Learn how computers and music can fit together, and learn the history and theory of computer music. Don't miss it!

PHIL 140: Introduction to Formal Logic. It's not as much Philosophy as it is Introductory Boolean Algebra. Generally easy for Mathies. A recommended course!

PHIL 145: Critical Thinking. Learn neat concepts in logic with Logical Self-Defence (the title of one of the texts). Learn how to spot fallacies, irrational arguments and the like.

PHYS 121/122(A): Your basic set of Introductory University Physics courses. You can take the first term (121), which should follow nicely from high school Physics. However, by the second term (122), you may or may not find your average dropping. Like Chemistry, there is an optional lab which will give you an extra quarter credit per term.

P SCI 292: This is an interesting study of the workings of the criminal justice system complete with a multiple guess final. Be warned that there has been some pressure to toughen this course, although it hasn't been made too hard, yet.

PSYCH 101: If you want to know what Psych majors do while at UW, this course might give an indication. Multiple guess final. Generally well-received from those students taking it.

SCI 205: This is the famous "Sci-Fi Hi-Fi" course that teaches you concepts about stereo systems. Multiple choice midterms and exams. Guaranteed to boost your average, so leave this until you get a tougher upper-year term.

SCI 238: This course is called Descriptive Astronomy. It is a basic introduction to the mechanics of the solar system, the working of the stars and an improvement of your average mark. Don't let the "2" in the course number throw you off; this course can be done with just Grade 11 Physics and Grade 13 mathematics. For those seriously interested in Astronomy, take first year Physics, then Physics 250 instead.

These are only a small number of the many electives that Math students can take at UW. Look in the course calendar and try a course that interests you. If you don't like it, you can still change it (within the first two weeks of classes). Happy course-hunting.

Advanced Math, Frosh Style

You may have already noticed that two choices of math (i.e. Algebra and Calculus) courses are available— in the terms used by the official Powers That Be, {Math 130a, Math 134a}, or {Math 140a, Math 144a}. These two sets of courses are known to normal people as honours math and advanced honours math, respectively.

Credit value for all the courses (you can take one advanced and one regular, if you so desire), is the same, so no sensible person would subject himself to the torture of "advanced insanity," as some have called it. On the other hand, if you've chosen the Faculty of Mathematics at UW because you are keen to learn pure or applied mathematics, it would be worth your while to consider the "140's," as they are also referred to. The algebra that you will learn in your 1A term differs not much from what you just finished studying in the middle of June. Complex numbers, modulo arithmetic, fields, and inequalities were the major topics I covered from September to November 1984, and the only difference between them at UW and at Hometown High is that they are covered more thoroughly.

A fundamental difference between high-school math and university math does exist, and first year is the best time to make the change. If you did reasonably well on the Descartes, got over 85 in your maths in Grade 13, and definitely if you got a scholarship of some kind, you would do well to try advanced math. I can see you snickering out there saying to yourself, "This guy just wants to lure some hapless frosh into failing math next term! Well, I won't fall for that!" If nothing else, I do *not* want to go down in history as The Man Who Caused 75 Frosh To Swear Off Math And Take Up Therapeutic Underwater Basketweaving. If you enjoy the challenge of mathematics, consider learning something new instead of wasting a credit on review plus a little bit more. If you want to know why integration works, what the words "limit of f as x approaches zero" *mean*, or why any whole number has unique prime factors and what difference that makes to the rest of the world, you are doing Real Math, and these answers are more deeply explored in the 140's. (Even if you do take them and find it to be too much, it is no trouble to switch to the 130's at the start of the term. Even if you decide as late as November that you don't have enough time for this — everybody has their priorities — you can take the 130 final and get credit for the 130 course.)

If nothing else, one gets a real sense of satisfaction after battling with a proof for two or n hours and *finally* figuring it out, much more than can be put into words. The 140's are a very good preparation for the "afterlife," which I'm looking forward to after having finished a very enjoyable two terms taking these courses.

Center of Gravity
with Sweeney Todd

$\rho\theta\ell\ell\gamma$ NOMIAL

Once upon a time (1/T) pretty little Polly Nomial was strolling across a field of vectors when she came to the edge of a singularly large matrix.

Now Polly was convergent and her mother made it an absolute condition that she must never enter such an array without her brackets on. Polly, however, who had changed her variables that morning and was feeling particularly badly behaved, ignored this condition on the grounds that it was insufficient and made her way amongst the complex elements.

Rows and columns enveloped her on all sides. Tangents approached her surface. She became tensor and tensor. Quite suddenly, three branches of a hyperbola touched her at a single point. She oscillated violently, lost all sense of directrix and went completely divergent. As she reached a turning point she tripped over a square root which was protruding from the erf and plunged headlong down a steep gradient. When she was differentiated once more she found herself, apparently alone, in a non-Euclidean space.

She was being watched, however. That smooth operator, Curly Pi, was lurking inner product. As his eyes devoured her curvilinear coordinates, a singular expression crossed his face. Was she still convergent, he wondered. He decided to integrate improperly at once.

Hearing a vulgar fraction behind her, Polly turned around and saw Curly Pi approaching with his power series extrapolated. She could see at once, by his degenerate conic and his dissipative terms, that he was bent on no good.

"Eureka!" she gasped.

"Ho, ho," he said. "What a symmetric little polynomial you are. I can see you're bubbling over with secs."

"O Sir," she protested, "Keep away from me. I haven't got my brackets on."

"Calm yourself, my dear," said our suave operator. "Your fears are purely imaginary."

"I, I ..." she thought, "Perhaps he's homogeneous then."

"What order are you?" the brute demanded.

"Seventeen," replied Polly.

Curly leered. "I suppose you've never been operated on yet?"

"Of course not," Polly cried indignantly. "I'm absolutely convergent."

"Come, come," said Curly. "Let's off to a decimal place I know and I'll take you to the limit."

"Never!" gasped Polly.

"Lncsch!" he swore, using the vilest oath he knew. His patience was gone. Coshing her over the coefficient with a log until she was powerless, Curly removed her discontinuities. He stared at her significant places and began smoothing her points of inflection. Poor Polly. All was up. She felt his hand tending to her asymptotic limit. Her convergence would soon be gone forever.

There was no mercy, for Curly was a Heaviside operator. He integrated by parts. He integrated by partial fractions. The complex beast even went all the way around and did a coutour integration. What an indignity to be multiply connected on her first integration! Curly went on operating until he was absolutely and completely orthogonal.

When Polly got home that evening, her mother noticed that she had been truncated in several places. But it was too late to differentiate now. As the months went by, Polly increased monotonically. Finally she generated a small but pathological function which left surds all over the place and drove her to distraction.

The moral of our sad story is this: If you want to keep your expressions convergent, never allow them a single degree of freedom.

One of THE Bands in Canada

Are you friendless? Do you have no social life? If not, you can— here's how!

Join the University of Waterloo Warriors Band.

"Band? That implied music, right?" you may be asking. Well, some people would debate this point, but you are correct. The Warriors Band has been UW's "un-pep band" for the last 19 years.

At this point, it may help you to know that a mathie founded this glorious institution in 1966. Dave Greenberg and three of his friends formed the Band as a way to get into athletic events free. The Band showed up at football and hockey games and became one of the first Canadian pep bands to play at basketball games on a regular basis.

In 1980, Steve Hayman (another mathie) arranged an infusion of capital from Burt Matthews, then President of UW, to purchase instruments and music. Almost immediately, the Band's repertoire grew to a two-digit number of pieces. In 1981 the Band began its unprecedented string of five OUAA Band Championships. As a reward for its musical accomplishments in the athletic realm, the Warriors Band was named "The Official Band of Canada's Olympic Basketball Teams" in 1984.

Where do you fit in? You're a mathie, and, if you can make some semblance of a tone on a musical instrument (or even a saxophone), you can join us and have some release from the academic world.

OK, so you want to know what we *really* do. We play music at basketball and football games (though "Warriors Football" is rapidly becoming an oxymoron), as well as other sporting events involving UW teams. We play music at campus building openings, ground-breaking ceremonies, computer shutdowns, parades, ship launchings, Royal weddings—you name it, we'll play at it. And we have fun doing it. Our purposes are to cheer Waterloo's teams to national championships, to entertain the fans, and to show that our school spirit doesn't come in 26-ounce bottles. Of course, we take out music seriously, but not so seriously that we don't enjoy ourselves. And when we

blow a piece ("This band will self-destruct in fourteen bars ..."), we play it up for all it's worth. Our antics, both musical and non-musical, have drawn comments like "That's what we need —something like the Warriors Band!" from people at universities across this fair nation.

We have music, so you don't have to buy your own. We have instruments, so you don't absolutely need your own (though if you do have your own, it lets more people join). We have talented musicians and we have people who come out to play a trumpet that sat in a closet for two years, so you don't have any excuses for not joining. We have fun. We have fans. We are bigger than the Beatles ever were (numerically, at least). We even get an occasional smattering of applause. We are more than the P.D.Q. Bach of pep bands—we are the Warriors Band.

Watch for our posters giving details of our first meeting/practice in September. Or come out to a football game and hear us first. Come on out. We don't bite.

dwarf

That Certain FASScination

It is a dark and stormy night. A band of teenagers on a camping expedition have been marooned in a graveyard near an ancient Gothic mansion. They seek shelter from the rain and are unwittingly drawn into a web of mystery, intrigue and laughter.

Laughter? Yes, because this isn't just any two-bit mystery flick we're talking about here; this is F.A.S.S., the rollicking annual musical comedy written by, for and about the Faculty, Administration, Staff and Students of the University of Waterloo (get it? F.A.S.S.)!

Every January, a hardy group of volunteers, totally unencumbered by talent or experience, mount the single largest show on this campus, F.A.S.S. We rehearse in January and perform the show to capacity audiences in early February. Then we spend the whole year waiting for a chance to do it again!

We welcome **anyone** from the University community to join us. We have places for actors, would-be actors, singers, writers, artists, musicians, dancers, backstage technicians of all varieties, fans and hangers-on.

Since the first variety talent night in 1962, F.A.S.S has promised audiences songs and laughs. This year, we're throwing in some chills and thrills for good measure.

We have an embarassing problem, though. We don't know what happens next!

The F.A.S.S. script isn't delivered to us by the good humour man. No, we write it. And by my calculations, we should be just finishing Act I as you're reading this. That means we're in deep trouble, because we haven't written Act II. That's where we **solve** everything! Oh boy.

Would you like to write the second act of F.A.S.S. '86? Attend the F.A.S.S. organizational meeting and say so. Posters for this get-together (read: "party loosely held together by brief administrative announcements") will be all over campus when you arrive. You can also check the campus events in Imprint (our illustrious campus newspaper) for time and place!

In fact, if you'd like to join F.A.S.S. for **any** reason, attend the organizational meeting.

But especially if you want to write Act II!

Linda Carson
Head Scriptwriter
F.A.S.S. '86

Just What Is This Thing Called "The Computer Science Club"?

The University of Waterloo is perhaps best known as "the campus where computer is king". Though we might not agree with the connotations of that phrase, it is true that you will be meeting a fair number of these little machines during your stay here. The Computer Science Club attempts to make them seem a little more human by providing students with all forms of aid in everything to do with computing, from giving pointers on your computer assignments to the loan of manuals or books that tell you a lot more than you'll ever learn in classes, to just providing a place where you can come complain about your TA with someone who will understand.

Our most active work, however, is in organizing meetings at which we present talks given by some very prominent people in the field of computing. These meetings are generally of interest to everyone: we have first year students attending, along with faculty members with PhD's. We are one of the most active student computer clubs around: indeed, we have been told that the only reason some speakers have come is that they were so surprised that we would ask them. We have had speakers from everywhere on the continent, from the academic world to the business world.

For those of you who have more than a "I-better-get-this-assignment-done-so-I-can-go-to-the-pub" interest in this field (and we hope that is most of you), the CSC can also provide help in getting involved in projects under way around the university. This is an excellent way for those who are interested in working with computers to gain valuable experience which cannot be obtained by merely taking courses.

Watch for posters announcing CSC meetings. You can join the Club by dropping in at the CSC office, room 3037 of the Math and Computer building (membership cost is a whopping one dollar per term). In addition to our collection of computer manuals and reference books, we have subscriptions to a number of computer magazines which you might like to read.

Come over and see what the CSC is like!

WATSFIC Anyway?

Come to WATSFIC, the Waterloo Science Fiction Club.

We have an office in MC 1009, deep in the meandering, subterranean halls of the Math Building. We have a library of science fiction and fantasy books, a big box of comics, and a set of lounge chairs. Come for the books or come to talk with sci-fi readers, game players, role-players, or just people with wild imaginations. A mere $2.50 gets you a membership, library privileges, and a funny-looking card you can carry around with you; the conversation's free.

WATSFIC - MC 1009

Doing Derivatives

I was only seventeen when i left a rather conservative family in a rather conservative western city to come to Waterloo. The night before i left my father gave me some advice which i would like to pass on to you.

"Son", he said, "Integrating is okay, but someday you'll find yourself at a party where people are taking derivatives. Your mother and I think we've been good parents and we think you'll do the right thing. Oh and son, stay away from those complex numbers."

Well Dad was right. When i started here i was very series but i soon began to diverge. I started to integrate and very soon found myself at an Integration-By-Parts party. That was when i first did derivatives. Now i take derivatives regularly just like all my friends. I use the chain rule and have been experimenting with open sets and boundedness. Friends of mine are into S&M (scalars and matrices.) I have been seen with degenerating functions and i frequently fool around with complex numbers (just look at my personal pronouns). Last week i discovered partial derivatives.

Hyperbolic dan gent

UltraClassified

This is **mathNEWS'** own classified column. This is a **free** service to you when you arrive on campus. Simply submit your personal ad to **mathNEWS** via that black box across from the third floor lounges in the Math building before next issue's deadline. Then watch out for your ad to appear in a subsequent issue of **mathNEWS** this fall.

Wanted: *Reporters* for **mathNEWS**. To hunt out and capture news of interest to mathies. Approx 1-n hours per issue.

Wanted: Researcher for **mathNEWS**. To produce a listing of upcoming events that might (or might not) interest mathies. Involves reading posters, Fed Flix Flyers, and tracking down other sources of information. Approx 1-3 hrs per issue.

Wanted: *Cover artists* and *cartoonists* for **mathNEWS**. Your artwork can appear in each issue! Win fame, while you exercise your drawing abilities. Approx 1-3 hrs per issue.

Wanted: Columnist for **mathNEWS**. Requires only writing ability and controversial issues. Be a hard-hitting crack commentator on today's topics. Approx 1-3 hrs per issue.

Wanted: *Typists* for **mathNEWS**. You will learn sufficient "fred" to input articles. Gain Honeywell and/or Unix experience before your time! Approx 1-3 hrs per issue. Apply at **mathNEWS** (MC 3036) when you arrive.

Director's Message

Well, here you are finally at University. Congratulations!! Once school starts, you're going to be facing several months of hard work. But, to get your university career off on the right track, the orientation committee has planned a week of fun, frivolity, and sheer hysteria JUST for you (the person reading this). We call this event 'Orientation Week'. What you will do during this period of time is get to know the faculty better and hopefully learn some valuable lessons concerning Math, University, Professors, Molson's, Theorems, and generally anything that we happen to throw at you.

During this week, you'll get a chance to meet some upper-year students who will fill you in on what really goes on once you do get here. These students (who will be known as your Big Brother and Big Sister) have graciously donated one week of their time just to get to know you better and to help you survive the week. And of course, there's the actual events themselves.

Not to give any surprises away, but we think it's a safe bet to say that Orientation Week will be for many of you a memorable week. And for some, you won't remember anything. The committee has spent countless hours and many sleepless nights putting together events that will provide numerous opportunities for fulfilling pent-up desires and dreams. And why not?? University *is* for experiencing new ideas, meeting new people, expanding ones horizons. Well, that and much, much more is waiting for you once you arrive here at the Math Faculty within the University of Waterloo.

I should mention something about the Math Faculty. The Math Faculty has earned itself one of the most prominent reputations for academic excellence the world over (I kid you not). Well, our Orientation Week is going to give that reputation an all-new dimension. With what we have planned, you won't have to write home to mom to tell her all about it because she'll be seeing you on the evening news in full colour. Just kidding!!

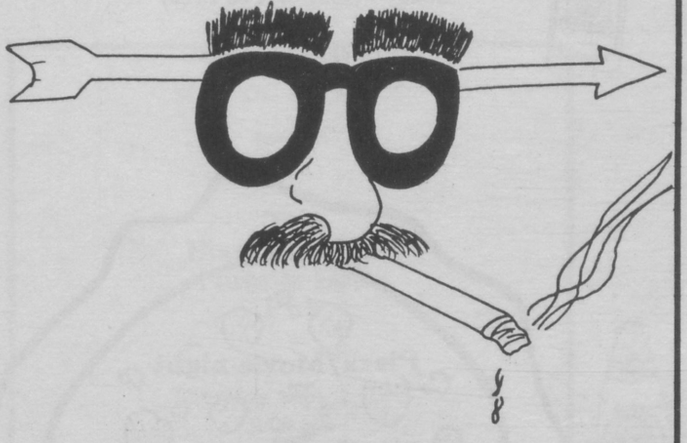
It's time to close off the message now. Once again, congratulations on being lucky enough to be able to come here and share with us what we hope will be one of the most exciting times of your life.

Sincerely,
Colin Biggin & Mark Haygarth
Directors - Math Orientation '85

Math
&
HKLS

proudly presents

The Incognito Pub



Wear your wacky hats, ties, and shade to the best and last orientation pub

Live Band - Door Prizes
A wild time guaranteed

9:00 pm Friday, Sept 6, 1985

$2.00 Kiddies (i.e. Frosh)
$3.00 Non-Frosh

A Model Masthead

Boy, do I have a lot of people to thank!

This year's frosh issue was brought to you by various and sundry **mathNEWS** staffers from the past, present and (hopefully) the future. Over the course of the weekend of July 20, we got lots of help from Linda Carson (Federation and FASS stuff), Lida Cepuch (our MathSoc Prez), Jane Dunlop (dropping by), Bonita Gionet (moral support, getting cary'ed away), Camille Goudeseune (providing us with fractals, telling about advanced math), Tom Ivey (fee statement, frosh dictionary, writing this masthead), W. Jim Jordan (staff photos, the Newfy song, C.S. option opinion, good advice on Co-Op, Warriors Band stuff), David Leibold (Dollars and Sense, course descriptions and general fixing), Patrick McPhee (course stuff), Paul Obeda (off-campus living, course stuff), John Omielan (on-campus living), Ron Pfeifle (course stuff, sitting around), dan schnabel (he likes his name that way; he laid out most of these pink pages you see, and helped with the cover), John Tauro (drawing the cover), Cary Timar (top-of-the page jokes, carying fair maidens off, rescuing them from the viscous fractal dragon, going drinking last night, jousting with a coat-rack, and doing other "normal" things), Andrew Tron (bits, hierarchy), and Gottfried Walter (an article on courses that came too late for us to use).

Of course, the whole shebang would not have been possible without the existence of Math Orientation '85. Specifically, I'd like to thank Colin Biggin and Cyril Chen for helping to smooth out the process of putting people and publicity together. Marsha Holierhoek put together most of the Orientation publicity you see here, including stuff from Sheryl Brock (schedule), Dave Provo, Bryan Isaacs, Cathy McDermott(?), and various sundry others.

Just a few more! Verna Keller of the Undergrad Office helped me check this issue over. We typeset it using MFCF's Imagen (thanks to Bill Ince), and it's printed at Graphic Services (thanks to Marion, et al.); Central Photographic provides us with photo processing and other darkroomish stuff (thanks to Maurice Green, et al.). Finally (as I'm writing this) we'll be eating Domino's Pizza pretty soon, so I guess I'd better thank them too.

And (most of all) thanks for taking the time to read all this! I'm sure you'll find it worth the while. Good luck, and I'll see you in the fall.

Tom Ivey
Assistant Flunkey
mathNEWS

Pinkie

or

Why the Pink Tie?

Besides being the fourth finger on either hand, Pinkie is the University of Waterloo Mathematics Society's official mascot (usually spelled 'mathscot').

As the story goes, once upon a time ... (sorry, that's the fairy tale version!) As the legend goes, there once was a professor of mathematics who just loved to wear outlandish, gaudily-coloured ties. History tells us that this prof was also the first Dean of Mathematics, and that MathSoc at that time chose a tie as its official emblem and pink as its official colour.

Pinkie, though, is not just a name ... which leads us to another story.

During the construction of the Mathematics and Computer building in November 1967 a group of mathies decided that the building was an ugly monstrosity. (Funny — some people still say that!) They came to the conclusion that it needed a decoration of some kind. Late one Sunday night a couple weeks later, if you had happened to glance at the Math building about midnight you would have seen five shadowy individuals working on the roof over the main entrance. Lo and behold, on Monday morning there was an 85-foot-long pink tie hanging down the front of the building!

Well, the makers of that tie went on to bigger and better things and MathSoc got stuck with a humongous Pinkie (just think of the dry cleaning bills!). Pinkie disappeared for several years but now she's back. You'll see her flying proudly on the side of the Math building when you arrive during Orientation Week. As a UW Mathie you will receive an official Pink Tie, which you are strongly advised to wear every day (heh, heh, heh).

Orientation Hierarchy of Life

The Pink Tie
Orientation Committee
mathNEWS
Orientation Chairmen and whip
Mazola Twister
MathSoc
hot weather apparel
water guns
two-tone hair
frisbees
T-Bone steaks
Math Frosh
bottled beer
floppy things
LIVE-AID
Heavy Metal
Imprint
8:30 classes
CHYM or CKMS
cold toilet seats
village pizza
village 'food'
The Toronto Star
hacky-sack
Mary Brown
artsies
American beer
syntax erors
engineers
EngSoc
Sonny Flanagan (Fed Prez)
IBM
hierarchies of things

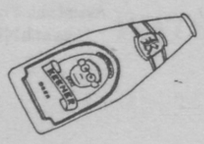
Elora, Here We Come!

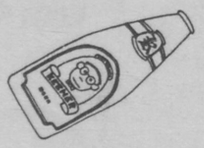
On Saturday, September 7, MathSoc Orientation is going to the Elora Quarry for an afternoon of swimming and relaxing in the sun (if the weather co-operates!). Buses will be leaving B.C. Matthews Hall (behind the MC building) at the Columbia St. exit at 12:00 noon for the short drive to Elora. For the ambitious athletic souls, a group of those wishing to bike to Elora will leave Matthews Hall at 10:00 A.M.

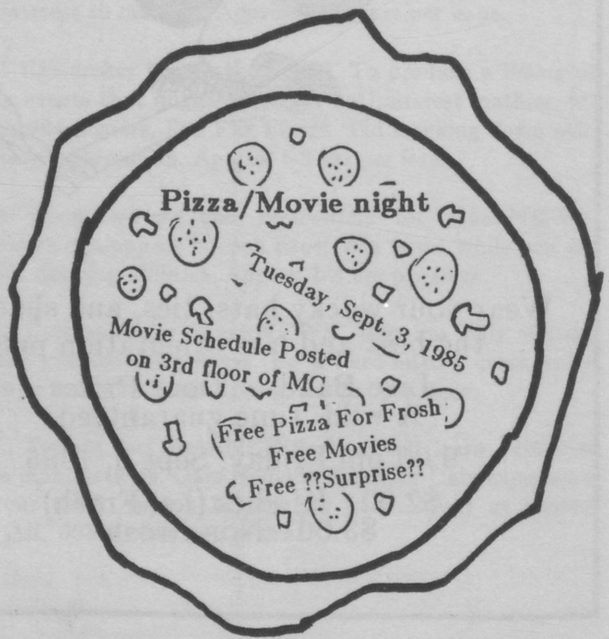
The Elora Quarry is a spring-fed limestone quarry along the Grand River. There is a beach area and large open areas for ball and frisbee playing. This park is popular with the local youth and always has a good crowd in the summer. Buses will leave the Quarry at 5:00 pm, getting back to Waterloo in plenty of time to get ready for the Sunnydale Parties later on in the evening.

Come on out and soak up some sun and go for a swim. And don't forget the footballs and frisbees (and hackeysacks!).

Dave







A Froshword Puzzle

Here's a little test (heh,heh) to see if you've done your homework and read this paper from cover to cover ... (The answer's on pg. 16.)

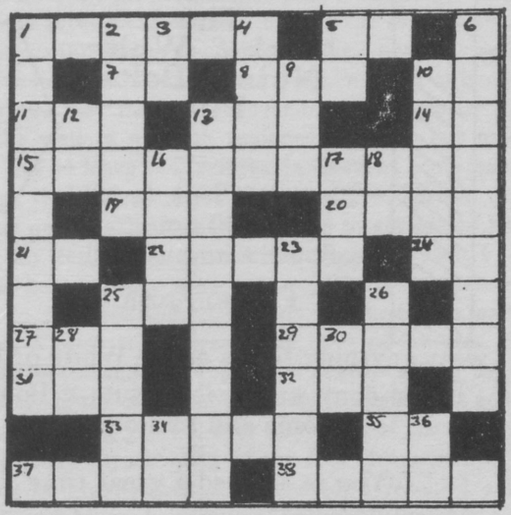
Clues

Across

1. quaff or guzzle
5. Independent Studies
7. a rare article
8. secret trip
10. shared by Euclid and Euler
11. chases sin
13. Automated Integral Launcher
14. "The Natural"
15. a week of fun and frolics
18. cunning
20. change things around
21. on negative
22. eat with pizzaz
24. not subtrac
25. beer on tap
27. summer memento
29. Data-Acquiring movie
31. Orientation Committee Enterprises
32. here in Quebec
33. see 10 down
35. long-playing
37. Nuts and ....
38. in the bigginning ...

Down

1. Friday's pub
2. basic support
3. not out
4. give off mites
5. International Trade
6. Village Three
9. syn. to MPP
10. limestone quarry
16. unavoidable exam
17. Thames Valley Authority
18. Integrals Anonymous
23. star signs
25. bring you to your knees
26. *Allison's Palace and ...*
28. Alternating Current
30. backwards accountant
34. less than
36. 3.1415...



MathSOC and SciSOC

present

The
Black & White
Nuts & Bolts
Pub

Thursday Sept. 5, 1985
9:00 pm
South Campus Hall

*** Free to Frosh ***

wear anything that's either White or Black
if you don't know what Nuts & Bolts is
come and find out.

You're assured a great time

What's the one event you shouldn't miss?

besides the E.L.P.E

The
Magical Mystery Tour

We're coming to take you away....

Away to unknown places,
to do unknown things.
(If you knew it wouldn't be a mystery)

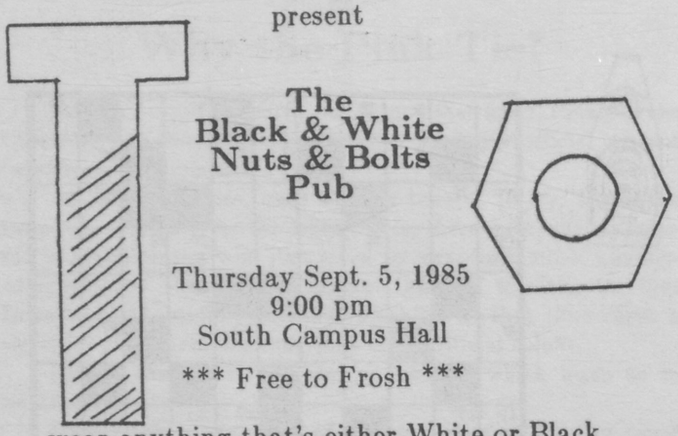
One thing that we will say is that
We **know** you'll have a great time!

Thursday September 5, 1985
12:00 pm

more info on 3rd floor MC building

MathSOC and SciSOC

present



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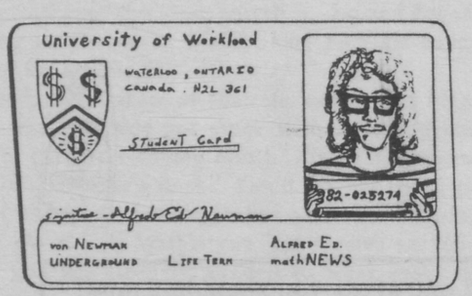


They searched the world for the keenest beer...

U of T - 1983
"C'mon guys ... let's have a calculus party."
"No way guy, and paw yourself a smooth one."

W. Laurier - 1984
"It's Saturday night, let's go to the terminal room."
"Nah, let's get a Mogol bolson."

Waterloo - 1985, Math building
"you finally found it! We thought you had it all along."

Keener beer, it's here
... smooth as a sine curve.

Save Your Energy For This Once-In-A-Lifetime Galabash

There is a fifth dimension beyond that which is known to man
We will take you o a place far far away!!!

It is a dimension as vast as space and as timeless as infinity
Get together with all the other Frosh and Froshette!!!

It is the middle ground between light and shadow
Just try and tell the difference

Between science and superstition
(one block past engineering, turn left at arts, you can't miss it)
Where else can you have door prizes without a door?!?

Between the pit of man's fears
Being mistaken for an engineer!!!

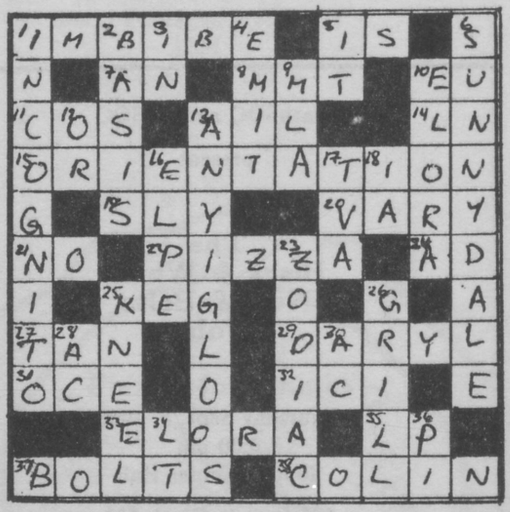
And the summit of his knowledge
A fourth year mathie with six successful workterms (none at IBM)!!!

It is the dimension of the imagination
All the beer you can imagine - and food too!!!
Lots of Golson Moldon, I mean Bolson Golson. Oh s___! You know what I mean!!! Anyway, it's free!!!

It's an area we call...

The Magical Mystery Tour.

Thursday September 5th - meet at the C.S. statue outside the Math Building at noon sharp. See your Big Brother/Sister for details.



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Editors: maybe dan, who knows?

Recollections of a Pub Crawl

by Bryon W.A. Isaacs (a.k.a. Brother BWAI)

It is to my great fortune that the important brain cells remain intact after that night of unrestricted frivolity — I speak of course of the grey matter that allowed me to do integral calculus while drinking a constant supply of beer with alternating hands. It is one of my fondest memories (as it is for most), that night of pubbing. For on that eve I made some lifetime memories and some lifelong friendships.

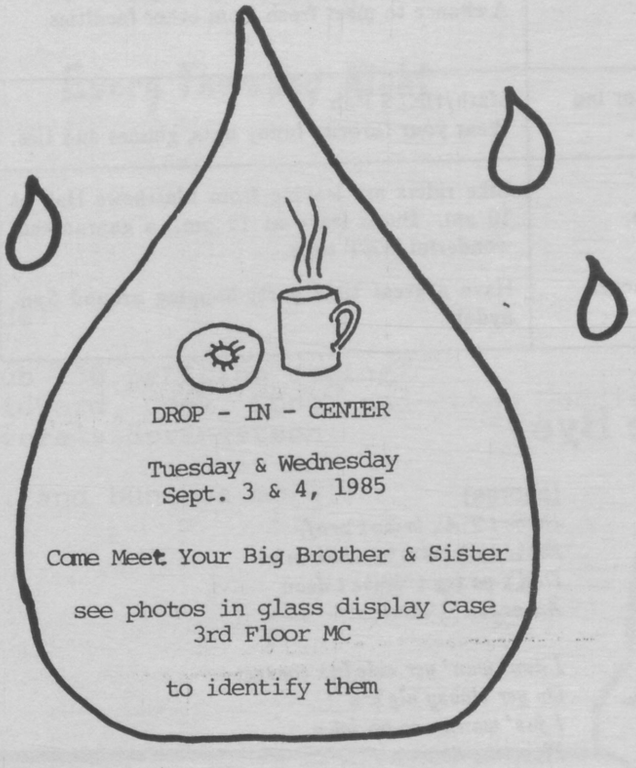
There was I, a naive frosh, naked of knowledge and sense, thrown into that desolate wasteland known as "university". My only comfort was my previous urban survival training. (Colourful Background Note: I'm from T.O. and grew up in an area whose name men whisper in fear: "The Village." For all you homeboys, my credentials need no further elaboration. For others, let's just say that in my old neighbourhood if you were playing ball with a "posse" and you fouled a brother, then that man would take some serious shots — and I ain't talkin' 'bout the through-the-hoop kind.)

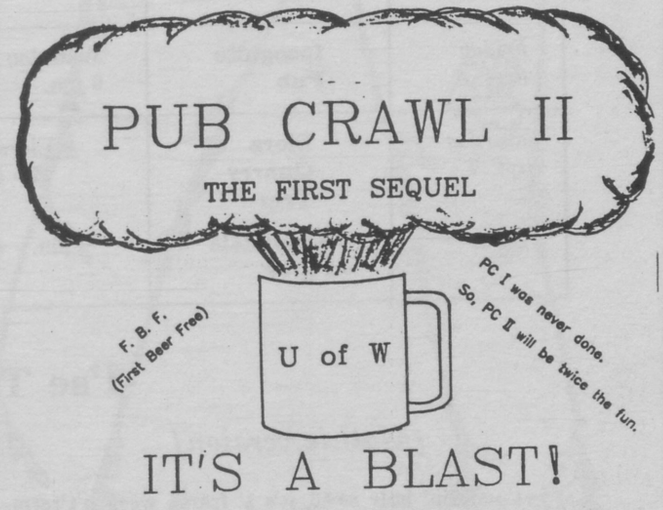
My only regret is that I can't remember more of that evening. I remember that I hadn't even planned on going on this "Pub Crawl" thing since my youthfulness prevented it. Fortunately I was befriended by an upper-year mathie who generously offered me some ID. So for the evening I was Giovanni Giuseppe Scarcella. (Being Black and trying to pass for Italian is not an easy trick.) Note that as a Pub Crawl official, I cannot openly endorse this type of deception (nudge, nudge, wink, wink, say no more, say no more).

We were all very scared and shy, but got quite boisterous and energetic as the evening progressed. I can remember singing songs on the bus, laughing, and telling stories. I remember being especially nervous at first because I had a very bad experience with beer at a young age — in short, I hated the taste of the stuff. But based on my consumption level for that evening, I have formulated the theory that the sensitivity of your taste buds is inversely proportional to your beer intake.

I think the most clear memory besides the Boat Races, the dancing, the Peanut Races, the chicken wings, and playing pool with The Sleazoid and Sleazette for 1982, was my attempt to sit down at the last bar of the evening. I remember I was pinned to the wall in a booth designed for four but holding eight, and I had to leave the facilities (a frequent occurrence on these Crawls). My request was not well-received since it meant that everyone on my side of the booth had to get out to let me pass. Upon my return my companions suggested that I jump over the seat because they were not about to move themselves just for me to get re-seated. I agreed; I backed up a pace or two and took a brisk trot towards the back of the seat. As I leapt, my left foot caught the top of the bench, causing my face to land squarely in the center of the table (I was always good at geometry) and sending glasses, beer and parts of the table in n directions. I found myself lying at the feet of my friends, and since the law of gravity was still in effect I received a light shower of glass, table and droplets of brew. I remember a concerned voice from above asking if I was okay. I replied that I was quite unharmed, since nothing hurts after ten beers. After a brief moment's rest I got up, brushed myself off, and we moved to another booth.

The rest of the evening is pretty much a blur, but a strong feeling of good times and good friends is quite present. I strongly believe that the Orientation Pub Crawl was one of the most significant events of my university career and I heartily urge every frosh who can to go on it this year and create some great memories.





Math Orientation '85
presents
One Fabulous Week Of Fun And Excitement

Day	Event	Place & Time	Comment
Tuesday Sept. 3	**Drop-In Centre**	MC 3rd Floor 10 am. - 5 pm.	Come meet your **Big Brother** and **Sister** and pick up your *Frosh Package.*
	Pizza/Movie Night	3rd Floor Lounges 8 pm	A night of great movies, pizza and ??????
Wednesday Sept. 4	**Drop-In Centre**	MC 3rd Floor Noon - 5 pm.	Big Brothers and Sisters can answer questions and let you know what university is *really* all about.
	Meet-your-Prof Barbecue	Columbia Lake 4:45 - 6:45	Meet your profs as they slave over a hot BBQ to cook *your* dinner.
	E.L.P.E.	PAC 7 - 8 pm.	Unfortunately this event cannot be missed.
	Pub Crawl	8 pm. - 1 am. 8pm.-1am.	Meet buses at B.C. Matthews Hall after the ELPE for a night of FUN and ADVENTURE.
	Comedy Night	Fed Hall 9 pm.	A fun time for those young-uns — dry, no booze.
Thursday Sept. 5	**Magical Mystery Tour**	12 pm. - 5 pm.	This is an event *not* to be missed. Buses will be taking you on a *secret trip.*
	Black & White Nuts & Bolts Pub	South Campus Hall 9 pm. - 1 am.	MathSoc/SciSoc Pub A chance to meet frosh from other faculties.
Friday Sept. 6	**Incognito Pub**	Waterloo Motor Inn 9 pm.	Math/HKLS Pub Wear your favorite funny hats, glasses and ties.
Saturday Sept. 7	**Elora Quarry Trip**	Elora 12 - 5 pm.	Bike riders are leaving from Matthews Hall at 10 am. Buses leave at 12 pm. a guaranteed, wonderful WET time.
	Sunnydale Party	9 pm. - whenever	Have a great time party-hopping around Sunnydale.

I'se The Bye

(Mathie version)

Lard, t'underin' holy s**t, it's t' frarsh week o't'term, me son, me son. An' we ha'e f'r ye a li'l sang t'esplane wha' y'shad be doon'. A'leest, t'ae's t'way we been doon'tit f'r y'rs a' M'morial in Saint Jahn's.

I'se the bye that takes t'course;
I'se the bye that fails her.
I'se the bye that skips me class
And gets me notes from Liza.

(chorus)
Bribe t T.A., bribe t'prof,
Bribe t'd'partm'nt chairm'n.
Don't ya try t' bribe t'dean
All aroun' t'carcle.

I don' wan' yer calc'lus course
Or yer classy alg'bra
I jus' wanna co-op job—
Place me down'n Flar'da.