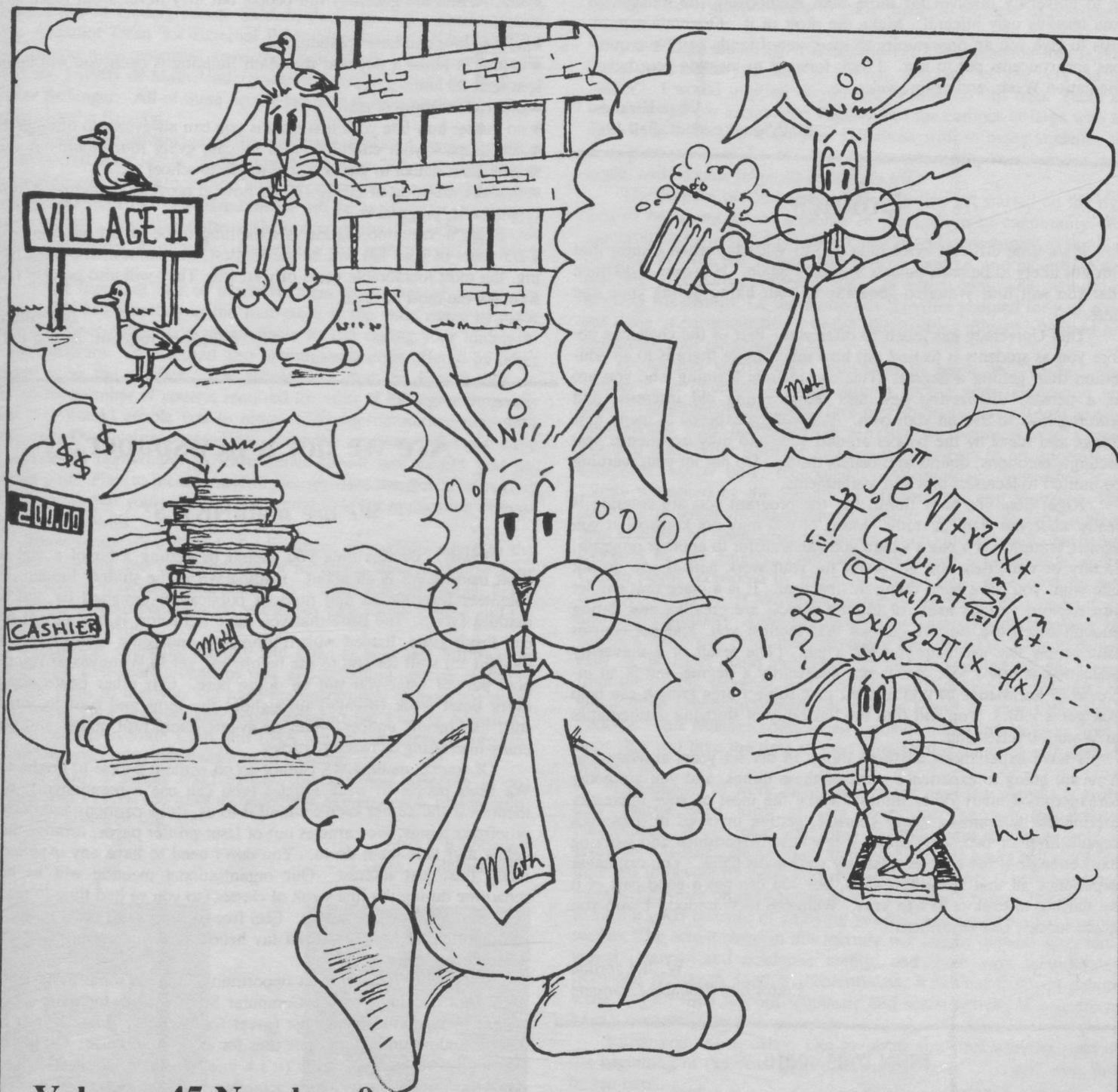


Your friend,

math **NEWS**



Volume 45 Number 0

frosh issue

1987

Prez Sez

Welcome to number one! The Faculty of Mathematics at UW is well recognised not only in Canada but also in the rest of the civilised world. When you arrive for Orientation Week a whole new set of opportunities will open up before you. It is the job of the Math Society (MathSoc) to make sure that your years here are enjoyable ones. Going to university involves far more than memorising the solution to some massive ugly integral. Make the most of it. Orientation week exists to give you an opportunity to meet new friends and have questions and concerns put to rest. I look forward to meeting you during Orientation Week, and again, welcome.

Dave Kirkness
MathSoc President, Fall 1987

Edlines

It's a little difficult welcoming you to Waterloo when I know that I'm not likely to be back here as a student again. However, I do hope that you will find Waterloo generally to your liking during your stay here.

This University has much to offer you. Part of the challenge before you as students is to find out how much more there is to an education than getting a degree. This can include learning who you are as a person, discovering new and rediscovering old interests, and learning how to live on your own. You will be exposed to many new things and ideas by the people around you, and may experience new feelings, emotions, doubts and beliefs inside. Do not let your learning be limited to lectures, labs and assignments.

Right now you may think that the program you are entering is really what you want to study. Many of you may not know what you want. Waterloo is a place where you can transfer to another program, faculty or university and get credit for your work here if you do not like what you have been doing in first year. It is a place that will let you explore various areas of interest if you are creative and daring enough to choose elective courses that interest you, and not courses that people say will help you get a job. (The result of a university education is not a job, and is not necessarily a degree, but is an increase in knowledge of and interest in a subject area (which can help you get a job).) You will find the flexibility of studying mathematics at Waterloo refreshing.

I have experienced all these things in my six years at Waterloo. You are going to experience some of these things, and you are going to experience many other things. Make the most of your university experience by learning about yourself, getting involved in a campus organisation or two, developing a few close friendships and working hard enough at the courses to satisfy your goals there. You can never experience all that Waterloo offers, but you can get a good part of it by starting to explore in first year. Welcome to Waterloo. I wish you much success and enjoyment.

W. Jim Jordan
Editor and Probable Graduate

ISSN 0705-0410

mathNEWS is normally a bi-weekly publication funded by and responsible to, but otherwise independent of, the Mathematics Society at the University of Waterloo. Content is the responsibility of the mathNEWS editor; however, any opinions expressed herein are those of the authors and not necessarily those of MathSoc or mathNEWS. Send your correspondence to: mathNEWS, MC 3036, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada. N2L 3G1 or to userid mathnews@watdcsu on USENET.

Editor: W. Jim Jordan

Welcome Frosh! In a few weeks you will be becoming a Waterloo Mathie. Here are some of the things you can look forward to learning at Waterloo:

- that wearing a Pink Tie (8) is a cool thing to do
- 101 ways to abuse an Engineer
- that Artsies are generally fun people but they never seem to do any work
- how to love and hate computers
- of the 24 hours a day that the Math Building is open you will be in it at least 25 hours a day
- the true meaning of IBM
- no matter how late your first class is you can always sleep through it
- how to pack your entire life in a suitcase every four months as you shuffle from school to job to school to job to school to...
- that the meaning of life is 42 and how to prove it, integrate it, differentiate it, program it, etc.

Being a Waterloo Mathie is something to be proud of. The next 4 2/3 years of your life will be the hardest, the funnest, the most trying, the most memorable years of your life. They will also go very fast so make the most of them.

Bill Tilford
MathSoc President, Spring 1987

Are we not a newspaper?

We are mathNEWS!

Howdy. By this time you should be getting a bit of a feel for what mathNEWS is all about. mathNEWS is the student-funded, all-volunteer information and humour publication designed by and for mathies (you). The issue that you have right now is our annual special Frosh Issue, loaded with information and some funny (well, we thought so) stuff for you to use before you get to Waterloo so you can plan part of what you will be doing here. Our other issues appear every other week (usually) throughout the term and contain similar stuff like faculty notices, MathSoc events, more prof quotes and generally interesting or twisted articles.

Of course, mathNEWS cannot go on without people to produce it. We need people to write articles (you can use a pseudonym), type them in if the author didn't e-mail it to us, draw cartoons and covers, proofread things, slice articles out of laser-printer paper, arrange them neatly and tape them down. You don't need to have any experience doing this, just interest. Our organisational meeting will be held sometime during the first week of classes (so you've had time to recover from dis-orientation week). Feel free to drop in to the meeting, or to our office in MC 3036, and say hello. Say you're frosh and we'll welcome you even more.

We provide you with an opportunity to learn some things about using (not hacking, see the Computer Science Club for that) a Unix system, a typesetting language (great for resumes), basic layout and design, and a hundred and one uses for an X-Acto knife. On production nights we feed you pizza (it's a line item in our budget). If you don't think we're funny, write something funnier and it will generally be printed. If your prof says something funny, write it down and submit it as a prof quote. There are lots of ways to do things for mathNEWS, and lots of room for new people on our staff. You can't stay sane when you work only on assignments and research, so give us a shot. We don't bite anything except the pizza.

W. Jim Jordan

From the Faculty

I am delighted once again to be welcoming you to your orientation activities in the Faculty of Mathematics. Last year's orientation events were a great success and I'm sure that you will also benefit from your introduction to the Faculty and your interaction with your fellow freshmen.

The fifth floor Dean's Office area includes the office of the Associate Dean of Undergraduate Studies, Professor Arnie Dyck; that of the Assistant Dean for External Programs, Professor Ron Dunkley, whom you may remember from the High School Visitation Program; and the Faculty of Math Undergraduate Office, directed by Professor Peter Brillinger. All of these people are here to help you become familiar with the Faculty.

Please take advantage of the assistance provided through OPERATION MATHSTART in MC 5158, until September 25th. In addition to providing you with information and the opportunity to meet professors and fellow students, free refreshments will be available at OPERATION MATHSTART. You might also wish to consult the *Math Circles* handbook for further information concerning the activities of the Math Faculty.

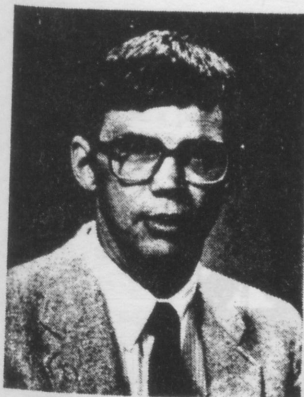
I am sure that one of the advantages that attracted you to the Faculty of Mathematics in the first place is the wide range of math and computer-related courses available to you during your undergraduate program. You should also investigate courses offered by other faculties on the campus. You should note that the Faculty has reduced the number of courses required for most of its degree programs and this should enable you to more readily accommodate non-math courses in your program planning. Over the next four years you have a wonderful opportunity to learn about almost any subject that interests you. Plan to include several courses from another area in your program, so that you will have a potential field for application of your mathematics skills.

There is always a period of adjustment as students adapt to the greater freedom and independence of university life. It is now your responsibility to develop and adhere to a study schedule which keeps you on top of your course work, yet leaves time for socialising and extracurricular activities.

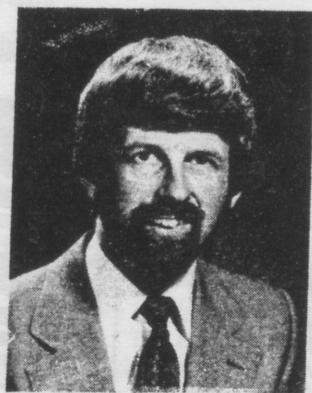
Again this year, the Faculty will offer at least two information sessions for first-year students as well as counselling interviews during the Fall Term so that you will have the opportunity to have any questions about your progress and expectations in the Faculty addressed. The instructors in Math 130A and 134A will provide more detailed information concerning these sessions in October.

For now, I simply want to say—you are most welcome to our Faculty and I know you have a challenging and enjoyable undergraduate career ahead of you.

Jim G. Kalbfleisch
Dean of Mathematics



Jim G. Kalbfleisch
Dean of Mathematics



Peter Brillinger
Director, Undergraduate Affairs

As Director of Undergraduate Affairs in the Faculty of Mathematics, I would like to extend a warm welcome as you embark on your freshman year at the University of Waterloo. We are all fully aware that your first few weeks on campus can be rather hectic ones as you adjust to a totally new environment. I hope that you will take advantage of every opportunity to make things as pleasant as possible for yourself.

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 assist you. However, with so many students, the onus is on you to make new friends, contact faculty members for assistance, and become involved in campus life.

The purpose of Orientation is to help you get started on the right foot in becoming a new member of the University community. The numerous activities and events provide ample opportunity to familiarise yourself with the various facilities on campus and to initiate new contacts with fellow students, some of which may well evolve into life-long friendships. Of the numerous activities planned for you, there are three in particular that I would like to draw to your attention and encourage your participation.

OPERATION MATHSTART, scheduled to begin on Tuesday, September 8, is intended to assist you in coping with registration and scheduling problems that often face new students. Even if you haven't encountered such problems, the MATHSTART centre is also a good place to meet other students and faculty members in an informal atmosphere. MATH DAY, scheduled on Wednesday, September 9, is jointly sponsored by the Faculty of Mathematics and MathSoc. This day-long program includes general-interest sessions, specific subject-area sessions, an orientation session for co-op students and a barbecue, followed by the English Language Proficiency Examination and a Casino Night sponsored by MathSoc. FROSH DAY, scheduled for Friday, September 11, is jointly sponsored by the Federation of Students and the University Administration. This campus-wide program includes a Welcome from the University President Dr. Wright, a pep rally, a Warriors Band performance, an introduction of the Deans from the various faculties, and a barbecue dinner. Further information about these Orientation activities can be found in your Orientation Package. This package contains all kinds of useful information, and I hope that you take the time to read through this material with considerable care.

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 pursuits. 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!

Peter Brillinger
Director, Undergraduate Affairs
Faculty of Mathematics

The Frosh Dictionary

A list of terms you may wonder about

Arts Library (Dana Porter): The main campus library, the big sugar cube at the centre of campus. According to legend, it's slowly sinking due to the weight of its books.

Bombshelter: The original campus pub and party place, a great alternative to Club 750 (q.v.), serves pizza for lunch.

C and D: The MathSoc Coffee and Donut shop, a food bonanza full of ice cream, caffeine and pastries at good prices. Located in the C+D lounge (cleverly enough) in the south end of the third floor of MC.

Campus Centre (CC): Student building between MC and the PAC. Houses SCOOPS and the turnkeys, the Bombshelter and the Wild Duck Cafe.

CIBC: Canadian Imperial Bank of Commerce, campus branch (in the CC). See service charge.

Cinema Gratis: A variety of eclectic and popular celluloid is shown for free (hence Gratis) on Wednesday nights in the CC. Good fun, and you can't beat the price.

Club 750: Alias Fed Hall, the biggest student pub in Canada. Serves lunch during the day, and parties at night.

Co-op Student: A gypsy with books.

Davis Centre: Eaton Centre with computers, see service charge.

Endless Loop: See Loop, Endless.

Guelph: The sound a dog makes as it tosses its cookies.

Flaccid Tool: Mathie name for EngSoc accessory (batteries not included). Some disassembly required.

Feds: The Federation of Students, a campus-wide "organisation" that aims (and often misses) to represent the student body.

Imprint: Preprinted birdcage liner, shipped in bulk on Fridays.

Loop, Endless: See Endless Loop.

Math: -----??----- help!

mathNEWS: What you're reading now. Math's student newspaper, a bastion of humour, bad puns, a little math, and even less news. Run by student volunteers.

MC: Home. The Mathematics and Computer building, located at the north centre part of campus. It's big, grey and cubic. A block of ice in the summer, toasty warm in the winter.

MC 3038: MathSoc's office, the place to go for social information, photocopies, and copies of old midterm exams.

Natural Log: The official MathSoc MathScot, the symbol of our society, essentially a laminated log but we love it anyway.

Needless Hell: (also Needles Hall) a place (and a thing) all co-ops pass through.

Oxymoron: Any set of words with a self-contradictory meaning. Classics include Postal Service, Good Morning, Civil Engineer, and Village Food.

Pink Tie ξ : The other MathSoc MathScot, a symbol also used by the Faculty. Our visible symbol of pride (would you rather wear a twig?).

Recursion: See Recursion.

Rhursday: Day between Wednesday and Friday at UW. See *Usaday*.

Service Charge: Zero account balance.

Sun 3 Workstation: Rank hath its privileges.

Usnday: Day between Saturday and Monday at UW, if you believe the legend on the back of your schedule.

Village Food: Illustrates the difference between well cooked and cooked well. Food fit for a king (Here, King! Here, boy!).

Village One: The closer on-campus residence, laid out like a medium security pen, mostly single rooms.

Village Zoo: The other on-campus residence, deserving of its name, mostly double rooms.

Village Three: (*archaic*) Sunnydale, a quaint student ghetto north of campus. (*current*) The new University-owned townhouses on the north part of the campus.

Wild Duck Cafe: a.k.a. Upchuck Cafe. The CC dining emporium. See Guelph.

WLU: The high school down the road (Wilfrid Laurier University).



Math Faculty Programs

Math Business Option

The Business Option combines courses from both UW and Wilfrid Laurier University. It provides the student with an excellent knowledge of business practices and policies to complement his or her BMath degree. Normally one business course per term is taken at WLU, with the remaining courses at UW. Be advised that if you are at all considering this option, your first year course selection *should* include BUS 121/122, ACC 121/122 and ECON 101/102.

C&O: The Math of the Future

So you're asking yourself, "What is C&O?". Let's start with an easier question: "What is C&O not". C&O is not CS, AM, PM, Stats, ActSci or Acct. So what is C&O? Well, it's the theory behind CS, AM, PM, Stats, ActSci and Accounting... Well, actually, it's a sinkhole for mathematical concepts that just don't fit into any other category... Okay so C&O really stands for... Confusatorics and... er... Obfuscation... Alright! So we don't know *what* it is but it's our major, okay!?

For further guidance, let us reference the trusty C&O handbook, and we quote:

"Combinatorics is the mathematics of discretely structured problems."

"Optimization (mathematical programming) is the study of maximizing and minimizing functions subject to specific boundary conditions or constraints."

Oh no... we can see the confusion in your eyes. Let's start again. C&O is **not** CS, AM,...

Well, never mind what C&O is. That's not important. What *is* important is... well... um... it's *fun*! Yeah! You get to draw pretty pictures and colour them with pretty colours! And it's useful too! You and your friends (or just you, or just your friends, or any combination thereof... and as a C&O major you can learn to count them all!) can (with optimisation theory) calculate the shortest distance to the closest liquor store from anywhere in the city.

But seriously, the most exciting thing about C&O is that it's *all new*! Mathematicians have only begun to scratch the surface in the area of C&O. Most concepts have been discovered or proved in the last 100 years and most by the professors in our department. (Notice how all the C&O books are written by our faculty!)

Things still aren't too clear? Well if you really want to know what C&O is all about, take C&O 230. You'll probably have to take it at some point anyway, since it is a prerequisite for a *lot* of areas of study. Yes, C&O 230 is an infamous course, but hey, if you think the course is tough, try explaining what C&O is!

Pure Math

"A Pure Mathematician is someone who has his feet planted firmly in the air."

This is a popular view of what pure mathematics is, and it is not so far from the truth. As opposed to the engineer, whose interest in mathematics is limited to what is useful to him to build bridges or airplanes, the pure mathematician enjoys mathematics for its own sake; applications are somebody else's concern. Nevertheless, this puttering about with theorems and conjectures is rarely useless. A famous example is G.H. Hardy's claim that the number theory he was developing was totally impractical for anything other than itself; yet today this provides the foundation for unbreakable ciphers. The engineer evaluates integrals with gay abandon, but it is pure mathematics that proves his methods work (in fact even that the concept of 'integral' makes sense!).

Consider these questions: Given a hairy billiard ball, is it possible to comb all the hair so it lies flat everywhere? How can the concept of prime numbers be generalised from the integers to polynomials, and what analogies can be made between the two? Can every even number be expressed as the sum of two primes? If these questions pique your curiosity, Pure Math is where you'll find the answers. (Well, nobody knows for sure about the last one (yet)). The sheer elegance of mathematics shines at its best here, unencumbered (although often inspired) by the "real world." And while you may consider a theorem to be ephemeral compared to the Brooklyn Bridge, remember that the theorem's truth will far outlast the bridge's lifespan.

Applied Math

Applied mathematics is the study of mathematical methods for solving physical problems. While this may sound a lot like engineering, there is a crucial difference. Engineering concerns itself with the actual physical problems and seeks to find quantitative answers to those problems: applied mathematics is concerned with the mathematics involved in finding those solutions and seeks to further knowledge about the mathematics, or to discover new methods of solution. An applied mathematician must be able to 'stand back' from his solution and see where it fits in the universe of mathematics. Applied mathematics is thus a bridge between the mathematical world and the physical world. Despite the difference, there are strong ties between applied mathematics and the world of engineering and the natural sciences, and much overlap. Many graduates of the applied math program go on to work in engineering or the natural sciences, especially in the theoretical aspects.

Applied math is full of differential equations: one may even say that applied mathematicians are partial to differential equations (though perhaps not all, Bev). If you don't know what a differential equation is, don't worry. You will see more than enough differential equations in your applied math courses to learn what they're all about, and see how useful they are in describing physical phenomena.

If you find the physical world to be an interesting place, and like to look at it from a mathematical perspective, then applied mathematics may be the course for you.

Coarse Selections

We've decided that since most of you don't really know what your courses are going to be like, we'd tell you what they were like as various mathNEWS staff members have experienced them. Core first year courses and oft-chosen electives are covered here. For information on other courses, talk to an upper-year student. Besides, it's an excuse to make another friend at Waterloo.

ACC 101: Accounting for accountants; this course can be pretty hard. If you haven't high school accounting, find someone who has to help you. If you have, you'll still have to work for this one.

ACC 121/122: Accounting for non-accountants. Easy if you have taken accounting in high school. There are some new principles in managerial accounting. These are the non-specialist counterparts to ACC 101.

BUS 111/121: Taught at WLU, these courses teach you the basics about the business world (and the stock market!) Business courses are WLU's specialty, and these two are always well taught.

CHEM 123: Introductory Chemistry. Follows from Grade 13 concepts. Might get nasty towards the end of the term, but it can't hurt. You can take an optional quarter-credit lab with this course.

continued on page 6

continued from page 5

CHEM 124: This is an introductory course in organic chemistry. It is demanding and requires a lot of memorisation, but is quite interesting. There is also an optional quarter-credit lab for this course.

CS 131: The "new and improved" version of CS 180. Last fall, one class of guinea pigs was introduced to the basics of computer science in its prototype covering topics such as correctness and efficiency of algorithms, structured programming, recursion, and data bases. The labs involve mostly programming in Pascal, some (ack) COBOL, and introductions to word-processing, spreadsheets, and data bases. The lectures are interesting and the labs are not difficult.

CS 132: The "new and improved" version of CS 140 follows CS 131 and will usually be taken in your 1B term. Topics include language syntax, machine language, compilers (you get to write one—sort of), linked list data structures, storage allocation schemes, and a bunch of numerical stuff (root finding, etc.). The languages Pascal and FORTRAN are used in the labs.

ECON 101/102: Slightly dry unless Larry Smith teaches, but beneficial. Easy to pass. Hard to ace. Lots of graphs, lots of reading (typically artsie course). Provides all the economics a non-major will ever need.

ENGL 109: English. For those of you that fail your ELPE's, it's practice for the next time. Little take home work, but lots of in-class essay writing.

FR 192 A/B: These courses are taught entirely in French and build upon Grade 13 oral, reading, and writing skills. They consist of three hours of lectures, a one hour conversation class and a one hour listening lab per week. If you are taking these courses, you must write the French Placement Test in September.

MATH 130 A/B: Better known as calculus. You'll learn about derivatives, evaluation of integrals, differential equations and sequences of real numbers. If you can find one, a set of course notes by Professor Wainwright can be extremely useful (they may even be one of the recommended texts). Author's note: I liked them so much I took both of them twice.

MATH 134 A/B: These are the first year algebra courses. In MATH 134 A you will learn classical algebra, a topic that began in ancient Greece. MATH 134 B follows from the Grade 13 material on matrix algebra.

MTHEL 100: An ornithological monstrosity (i.e. bird course) as the instructor will tell you in the first class. The course deals mostly with contract law but also gives some instruction in the laws of tort and the structure of courts. A great deal of memorising is required to obtain a good mark in the course.

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.

PHIL 140: Introduction to Formal Logic. It's not so much Philosophy as Introductory Boolean Algebra. Generally easy for Mathies.

PHIL 145: Critical Thinking. This course teaches you how to analyze simple arguments for logical fallacies. It is interesting and not too difficult.

PHY 121/122: First part of course lulls you to complacency and the rest of the course totally blows you away. Don't take unless you have to or are a masochist.

PSYCH 101: Introduction to Psychology. Register early to get in. Lots of memorisation. Easy to pass.

SCI 205: The infamous 'Hi-Fi-Sci' course that teaches concepts about stereo systems. Multiple guess midterms and exams. Should boost your average, so save it for a later, difficult term.

SCI 238: Star Gazing, alias Introductory Astronomy. Learn more about the heavenly bodies. Basic math and formula plugging. Fairly easy.

Prof Quotes

A few terms ago a regular feature started in *mathNEWS* and quickly became perhaps *the* most delightful thing about Friday mornings, namely, Prof Quotes. Throughout the term, students like yourself provide us with wonderfully worded, incredibly insightful, easily misinterpreted, or hopelessly muddled sayings from the mouths of professors during their lectures. We take the best of them (or at least filter out the duplicates) and print them in the next issue, which sometimes annoys the profs. Oh well, "C'est la vie, c'est la guerre, c'est la pomme de terre." Here are some of last term's quotes, then.

"Why is what I've written there true? Well what is written there isn't really true, so I don't have to answer that question. However, having said that, there must be some reason I wrote it."

Dave Taylor, CS 350

"Now this is a totally brain damaged algorithm. Gag me with a smurfette."

P. Buhr, CS 354

"Something's wrong here . . . TILT! . . ."

John Baker, PMATH 351A

"You have a large number of assignments due now? Six? Six is finite."

B.I. Henry, PHYS 263

"The algorithm to do that is extremely nasty. You might want to mug someone with it."

Michel Devine, CS 340

"Actually, it's 0.29, not 0.3, but who's counting? That'll get quoted *again* in *mathNEWS*, won't it?"

John Vanderkooy, PHYS 122

"I'm too highly paid to do 2×2 matrix multiplication."

Peter Hoffman, MATH 234b

"Was that intuitive? Did you feel heat on the right side of your brain?"

R. Brown, ACTSC 331

"You can bring any calculator you want to the midterm, as long as it doesn't dim the lights when you turn it on."

Prof. Hepler, SD 182

"You have to regard everything I say with suspicion—I may be trying to bullshit you, or I may just be bullshitting you inadvertently."

J. Wainwright, MATH 140b

"I have problems getting quoted in *mathNEWS*."

Peter Hoffman, MATH 234b

CS or Not CS II

"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

Well, we're all in Math, so that's great, right? Only some of us want to go into Computer Science, so that's not so great, right? How are we supposed to feel?

Both ways, actually, but it depends on your interests. Allow me to explain.

Of the roughly 800 math Frosh (this means you) about to enter the University of Waterloo's Faculty of Mathematics, fully half intend to enter Computer Science in their second year. Of these, space permits about 300 to be admitted, of whom some 200 graduate with a Bachelor of Mathematics degree. Why is Computer Science so popular that more people want into the program than there is space? What about the other departments?

For many people, computers were fun and programming came easily in high school. Others feel that in an increasingly technological society, it is necessary—even vital—to become part of the "computer revolution." Still others look to CS because of the apparent glamour and the lucrative job field.

Mathematics, on the other hand, is a labour of love. There is no glamour for a mathematician. People study mathematics because they enjoy studying it, working with it, thinking about it. They don't study mathematics because someone else tells them to. Many entering Math without the intention of entering CS are steered here by advice from older friends or enlightened teachers.

What does it mean, both for Computer Science majors and for other mathies, to have the Computer Science department in the Mathematics Faculty?

Since the theory of computing is mathematical in nature, CS students take mathematics courses. If they're good at math, they'll be good at the analysis and problem solving needed for higher level computer science jobs, like Systems Analyst. CS majors at UW are not taught specifically to program, but how to solve problems, and what tools to apply.

Courses in the other faculty programs are available to students in Computer Science. Access to CS courses is also provided to students in other mathematics programs. In the first two years of study, most honours programs have a basic similarity. By the end of second year, all mathies know everything that they need to know about programming. The CS majors have enriched versions of the common CS classes in second year, but the topics are similar. CS students will be exposed to calculus, algebra, statistics and subjects of that ilk by the end of second year, and have a basic grasp of the tools and methods of each. Not only does this provide a future analyst with a solid background, but give CS majors who decide to leave the program exposure to the wide range of mathematical fields available.

By third year, most programs have split radically. CS majors take a third year that is mostly theoretical, and a fourth year that allows specialisation and interest-oriented study. Other programs pursue their own specialties. A certain amount of cross-over is possible for those who have a secondary interest.

The Math Faculty benefits from the presence of Computer Science through the breadth of tools it makes available for study and research. With a basic computer knowledge common to their classes, professors can use the computer as a tool to let students use the theories they have been studying without using only a few contrived examples where every step has an integer result.

The Computer Science program benefits by producing analysts, not programmers. People who want only to learn to program should not be in a CS major degree at UW, but at a community college. These institutions provide solid programming skills, but few of the

tools needed to progress beyond mere coding. A more in-depth education aimed at a DP management job or a senior programmer level can be obtained at places like UWO. Beyond that, it is often the Waterloo trained analysts and problem solvers who progress, for whom coding is a tool used to accomplish a task.

Professionally, Waterloo Mathies (and even engineers) work well together. Thanks to the interrelated programs, CS grads can work with actuaries and statisticians and applied mathematicians with ease, due to their common base. This ability is denied many others in the CS field.

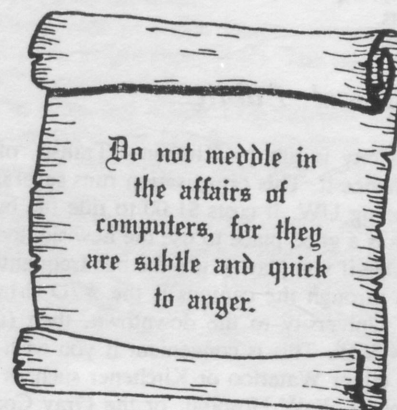
That's why CS and Math are so closely tied, and why CS majors must take the common Math core courses. UW wants to produce thinkers, not merely doers. Waterloo CS grads do not stay coders for long, but move into the thought-work areas of business as computer science applies to them.

Let's consider that—what does the future hold for Computer Science majors, and for math graduates generally? Where will CS be in 20 years, or even 10? Superusers and their support will be in the forefront—code generators and packages like Lotus 1-2-3™—and so most of the current programming jobs will not exist. While our friends from other institutions will be dismayed, Waterloo students can shift with the industry, moving to Statistics, Business, Applied or Pure Math, Operations Research... the list goes on.

After all, mathematics has been around for millenia. The classic outsider view of mathematics as boring has been around as long, but is far from accurate. The knowledge that there is always more to discover makes it exciting for both the dedicated researchers and the professionals for whom mathematics is a toolkit. Mathematics is pervasive: mathematical models can be made of almost anything known to man. Now and in the foreseeable future mathematicians will be developing the ideas that lead to discoveries in science, engineering and humanities—for mathematics is not just a science or technology, but a philosophy as well.

At Waterloo you will be exposed to all the options of mathematics. Computer Science is an exciting part, but not the only area of interest. CS is certainly an excellent program here, but the others are valuable and fun as well. Bear this in mind as you travel through your years here, and be open to new ideas. The Waterloo BMath is a document which signifies the bearer's ability to reason, to think as well as to do, and to program, whether it says Computer Science on it or not.

Stuart L. Hodgins
W. Jim Jordan



Getting Around

Local, Private, Two Wheels

A bicycle is a very useful device at Waterloo. It is better than Kitchener transit insofar as you don't need to wait for the bus. (This is noticeable at 2 AM after you finish a CS assignment and want to go home.) It is aesthetically nicer than a car in that you don't spout fumes into the air or have to drag two thousand pounds of metal wherever you go. (Mind you, luggage capacity is minimal, but we're talking commuting here, not moving from home.)

Mountain bikes have become very popular in recent years, and may be more comfortable than a standard touring bike, but their fat tires do not fit into UW's bike racks. A 10-speed is fine; Waterloo's hills warrant a fair selection of gears. Rain and puddles make fenders almost a necessity; they may seem uncool, but so is a muddy stripe up your back when you get to class. Bring a good bike lock as well. (Humour content for this article: the combination of bicycle and lock must weigh at least 50 pounds. A 15-pound bike needs a 35-pound lock, whereas a 50-pound bike doesn't need a lock!) A light is required by law at night, and we recommend getting a helmet—we don't want your valuable brain to become road lubricant.

There are several local bike stores where you can buy accessories (like fenders), get your brakes fixed, et cetera. Look in the yellow pages and skip the one beginning with M.

There are plenty of paths on campus, all of them wide enough for bikes and pedestrians. Be careful when riding among pedestrians, for they are notoriously unpredictable. Other hazards include ducks, geese, squirrels and security chains. Apart from these, cycling at Waterloo is a pleasant experience.

Local, Private, Four Wheels

Are you one of the fortunate few who have a car at UW? If this is true, prepare yourself to have one more worry than carless students.

First of all, you will need to be concerned about parking it. For those driving to school from off-campus, go to security the *first day* you arrive if you hope to get a parking space. If you decide to not pay the fee to have a spot, get used to paying for one. At UW, parking lots charge mainly 75¢ for daily parking, so remember to have some quarters in the car at all times. If you try to park illegally in loading docks or on the road, you generally have a half hour grace before you get the ten dollar fine, then another hour before your car is towed.

Outside the university, the story is about the same except its even harder to find a parking space, legal or not.

Make sure you always carry a current map of K-W and know the name of an honest mechanic. Ask K-W natives, like cabbies, for this, or phone the CAA for help.

If you follow these simple rules, your car will be worth its weight in gold to you in university, especially for becoming popular with bicycling friends who need lifts.

Local, Public

Public transit in this city is run by Kitchener Transit, often referred to as Kitchener Chance-it. This organisation runs several routes in and about K-W, including UW. It costs \$1.00 to ride the bus (bills are frowned upon, so this is a good place to use the new singloon), but monthly passes are available if you plan to use the bus frequently.

The route that goes through the campus is the #7D (Mainline). This bus runs from the University to the downtown, then (usually) further south to Fairview Mall. This is convenient if you wish to visit places along King St. in either Waterloo or Kitchener such as Waterloo Town Square (shopping), K-W Hospital, or the Gray Coach bus terminal (more on that later).

A few words of warning about #7's. There are 7C buses which go out to Conestoga Mall in north Waterloo instead of going to the University. Normally, you should board a 7D instead of a 7C if you want to go to UW. However, if you are trying to get back to UW at night, the #7D buses can come at an excruciating rate of 45 minutes apart. In that case, hop on the first #7 that comes along; if it's a 7C, get off at University and King and walk west to campus.

The #8 (Loop) bus runs along University Ave. in either direction providing service from UW to the downtown terminal, then south to Fairview Mall. Unlike the #7, this route is shaped like an "8" and goes along Weber or Westmount, depending on which side of the road you get on. It's a faster way to the downtown Kitchener Transit terminal than the #7, and it's useful for getting to the Centre in the Square theatre.

Other buses include the #12 (hop on at University Ave in front of UW) which goes to Fairview Mall and south Kitchener faster than #7 or #8. Then there's the #9 that serves some areas north of UW like Sunnydale, but it tends to be absent when you need it (on week-ends).

The transit information number is 885-7373. Schedules may be obtained from that number, or from a display at the north end of the Campus Centre at UW. You can use the "Telerider" service, too. Just call the number listed on the desired bus stop to find out when the next bus leaves from there.

Incidentally, the Federation of Students at UW have been running something called The Safety Van, which runs through most of the student residential areas. However, this service is designed to encourage women to stay off dark streets and pathways during the evenings; hence, the van is primarily for female students. This is a free service.

Of course, you could call a cab...

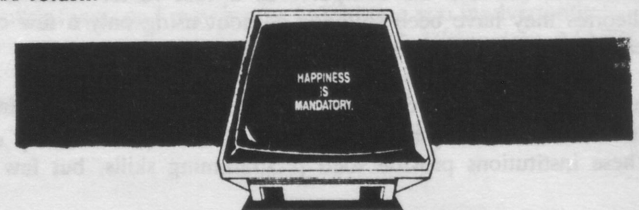
Inter-City

Buses in and out of Kitchener go through the Gray Coach terminal. Major buses go to Toronto, Guelph, Hamilton and London. The bus terminal is at the corner of Gaukel and Charles Streets. Take the #7 from campus, get off at Gaukel St. (first street south of the King Centre mall). Call 742-4469 for details. Some Grey Coach buses run through the UW campus, stopping at South Campus Hall and Burt Matthews Hall. Check the Gray Coach schedule for details.

VIA Rail has trains to Toronto, London and points in-between. Call (800) 268-9520 toll-free for information. There are connections to Montreal, Ottawa and Sarnia among other places; the aforementioned number can be used for reservations, too. The Kitchener terminal is located on Weber, just north of Victoria; the best bet via Kitchener Transit is to take a #7 and get off at Victoria (just past the railway tracks; the Tin Roof donut shop is on that corner) and walk a few blocks east. Watch for the tracks!

In general, train and bus are often equally fast to Toronto. However, buses leave Kitchener more frequently than trains do. Then again, a bus rolling through Cambridge or Guelph takes longer. Unless your train has mechanical problems, that is. *Sigh*. Get schedules for all the services you are interested in and compare.

The Federation of Students also runs a cheap express bus to Toronto on Fridays and from Toronto on Sundays. The new prices haven't been announced, but last year it cost \$5.50 one way and \$10.00 return.



Extra-Curricular Organisations

Computer Science Club

The CSC is UW's student chapter of the Association for Computing Machinery. (This means that we get neat publications like CACM, SIGPLAN periodicals, et al. If you don't know what they are, you can find out here.) The purpose of the CSC is to make life bearable, even fun, with computers on campus. This is done by running a free consulting and referral service, for anyone. We have enough strange people that we can answer most questions about computers—where to find cheap terminals and modems, how to use Unix, SCuMS (Student CMS), Pascal, FORTRAN, hacking on your home computer, and so on. We also have a small but information-packed library.

Throughout the term, we offer tutorials on Maple and other things. (Maple is to first-year math what a calculator is to grade six math. It's worth learning to use.) We also organise meetings and talks by people from the Real World about their fields of interest, SIGGRAPH video nights, and other fun things. Watch for posters describing these events.

You can find the CSC office at MC 3037, just across from the MathSoc office. You can become a member by exchanging a singloon (or its green paper equivalent) for a CSC membership card. Besides being yet another Official Piece of Paper in your wallet, this gets you discounts at several computer stores in the area, if you want to buy floppies, books, or computers. Drop in, have a free cup of tea. Non-CS members and females are more than welcome; this term half of the executive (ok, 2 people) were non-CS ladies, and we'd like to continue the tradition!

FASS

We've been entertaining people for 25 years;
We must be doing *something* right!

Guys! Have you heard horror stories about the male-to-female ratio at Waterloo? Girls! Afraid that there will be so many men on campus that you will never find that special someone? Well, maybe the answer is an on-campus computer dating service... or maybe it isn't! This year, FASS has taken it upon itself to look at what would happen if CUPID came to the University of Waterloo.

Now you're thinking, "What on earth does CUPID stand for? Well, I'm afraid that I cannot divulge that information, but I *can* tell you what FASS stands for. Basically, FASS is a group of people comprised of Faculty, Administration, Staff, and Students who get together once a year (in January) to have a great time and consequently put on one of the freshest, most locally-oriented musical comedies you've ever seen. (When was the last time you heard Second City make a joke about co-op fees or sing a song about Killer Midterm Tests?)

Do you like to sing, dance, act, write, or tech? Do you pretend you can sing, dance, act, write, or tech? Or do you just like to meet new and interesting people? Well then FASS is for you! FASS is not just a theatre company,, it's a way of life! To quote from last year's show, "My friends are here, my home is here, FASS is here!"

So you say you're not going to be here in January. Well, you can still be a part of FASS because by the time you read this we will have just finished writing the first half of this year's show and quite frankly we'll need lots of creative people to help us resolve the mess we've made of it!

If you are interested in getting involved with FASS then stay tuned! There will be an organisational meeting (read: party interspersed with some administrative business) in mid-September. Watch the FASS bulletin board in the CC, and the *Imprint* for the exact date. But wait! There's more! There will be writers meetings all term on Sunday and Wednesday evenings somewhere in the math building (again check posters and the *Imprint*.) Chances are CUPID will never come to Waterloo, but speaking as one who knows, when it comes to meeting people, FASS has the ultimate algorithm!

Warriors Band

OK, I'm supposed to fill a quarter page here trying to tell you all about the Warriors Band. So I'll give it a try.

The Warriors Band (yes, that is spelled correctly, plural, and no apostrophe) is the fun-loving University pep band. We're a unique musical dis-organisation dedicated to having fun while livening up various events here in the Kitchener-Waterloo area. We play at all the home basketball and football games, as well as parades, building openings and some computer shutdowns.

Don't get me wrong though. We do leave the city for some events. The past three times the basketball Warriors have gone to the National Championships in Halifax, the Band has been there as well. In addition to these games, we also go to a fair number of Warrior football and basketball road games (Toronto, Hamilton, London, Windsor...).

Musical ability is encouraged but not essential. (Take it from me. The last time I played the saxophone before first year was in Grade 8.) We also maintain a collection of "experienced" instruments, each with its own distinct character, for those members without one. The band has only three requirements for membership: enthusiasm, a desire to have fun and to be able to correctly spell "Warriors Band."

We shouldn't be confused with other university bands from the United States (e.g., Michigan). They practise many long hours. We don't. Our "practices" last for about an hour a week. Our main focus is to have fun while playing musical instruments.

If you would like to join this unique musical ensemble just show up to play at any Warrior football or basketball game, or Band practice at 5:30 Thursdays at our office (PAC 1081). Our fearful leader's name and number are always on the door of the office if you want to call for more information.

The Warriors Band. One of *the* bands in Canada. Come out and find out why. Then you too may proudly claim, "It's OK... I'm with the Band!"

TheatreSports: Like life, only funnier!

Are you tired of doing the same old thing every Friday and Saturday night? Are you bored of the familiar routine of drink, get drunk, fall down? (Well, you will be after frosh week!) Have you seen all the latest movies and do you find yourself wondering "What is there left to live for other than Math?" Well my friend, it sounds like you are suffering from a classic case of acute *Partium Borditis*.

One sure-fire cure for this disease is a healthy dose of TheatreSports. Now I know you're thinking, "Gosh! That sounds worse than the disease, Partiu... what is!" *Au contraire!* Let me tell you a bit about TheatreSports.

TheatreSports, invented by Keith Johnstone, is basically competitive improvisation. Two teams compete against each other to make you, the audience, laugh.

Each team performs various scenes which are scored by three mean, nasty judges (boo, hiss!) The team with the most points at the end of the evening is the winner!

The thing that makes TheatreSports different from other forms of entertainment is the fact that everything is improvised. There are no scripts! The only limit to what happens on stage is the audience's and players' imagination!

Does this sound like your kind of entertainment? Well come and check us out! TheatreSports is performed every week (either Friday or Saturday night) at eight o'clock somewhere on campus. Check the *Imprint* or bulletin boards for details. (Look for the Penguin!) We are always looking for new recruits... er... audience members!

continued from page 9

Campus Recreation

At UW there are a number of programs to keep your body in shape as well as your mind.

For those of you with the skill, UW has several varsity teams; an outstanding basketball team, a not quite so outstanding football team, and many more. These teams can be interesting to watch for the rest of us.

If you're just looking to have some fun, there are non-competitive leagues in sports such as volleyball, broomball, and inner-tube water polo. There are no referees, scores are seldom kept, and there are no playoffs. Playing on one of these teams is a really great way to ignore your work for a couple hours each week, to meet people, and to be really bad at something without anybody caring. (Warning: it would be a bad idea to take these games seriously.)

Joining a team is easy. If you are staying in the villages, chances are your house will have one that you can sign up for. Otherwise, you can join one of the MathSoc teams, or if you're really ambitious and can find ten friends you could form your own.

Campus Rec also has a few competitive leagues, and a number of clubs that you can join, including badminton, skiing, and an outdoors club. Check the Campus Rec flyer for more information. If you're interested in any of the clubs you should probably look into them early in the term.

Even if you don't join a team or club you still have access to most of the facilities. The PAC has a weight room, a pool, and almost a dozen squash courts. At the north end of the campus, UW has a nine hole golf course, an ice rink that's open year round, and trails for running. UW students also have access to some really nice tennis courts by Seagram stadium.

Do something to stay in shape while you're at Waterloo. According to Prof. Wainwright, you should get eight hours sleep each night and at least three hours of exercise each week. Even if you don't take advanced calculus, some form of regular exercise is a good idea.

Music Ensembles

The Music Department at Conrad Grebel College has several music ensembles for interested people. The University Choir does music from Baroque masses to excerpts from Gershwin musicals and is open to anyone from the University community. The Chamber Choir performs music of a more varied and challenging nature and is limited to about 30 people chosen by audition. These two choirs perform a concert at the end of each term. Conrad Grebel's Chapel Choir does a variety of worship music geared to the chapel program at Grebel.

Instrumentalists may join the University Concert Band, a large group of musicians that do a variety of music. The Stage Band is a small group that plays jazz, fusion, and other technically challenging music. Membership in the Stage Band is also by audition. Other instrumentalists may join a chamber ensemble under the guidance of a director.

Students can choose to register their music ensemble as a course for a quarter credit, up to a maximum of six quarter-credits for a degree.

Pure Math Club

The Pure Math Club answers questions like "Surely there's more to math than 134A?", without scaring you like a prof might. "...you just diffeomorphically perform a contour integration around the homotopy equivalence classes of simply connected non-Riemannian splitting fields while maintaining the Weierstrass invariant polynomial..." is *not* our style. We give talks at which you can find neat mathematical ideas aimed at undergrads of all ages, other people who like math just for the sake of math, and (most importantly) toroidal baked goods (i.e., doughnuts) and interesting liquid refreshments. Watch for posters at the start of term for our first talk and/or meeting!

Applied Math Club

The Applied Math Club was founded in 1985, making it one of the newest clubs on campus. You can obtain a membership by paying a one time charge of \$1.00—one of the best bargains on campus! For this nominal fee, you receive both a membership card and an 'Applied Magic' button (as well as free coffee, tea and doughnuts at seminars.)

The club has an office which is located on the fifth floor. There you can obtain information on Applied Math jobs in industry, and graduate programs in AM. You can also take the opportunity to read some of the current mathematical periodicals which are kept there. The AM Club also sponsors undergraduate seminars (past topics have included Magnetic Resonance Imaging, Fluid Dynamics, and Compact Discs), and information sessions to answer your questions about post-graduate studies, and the AM related job market.

By the way, everyone is welcome (you don't have to be in AM to join). So, if you want to be a part of one of the most interesting and dynamic groups on campus, come up to MC 5168 and visit.

Campus Media

The University of Waterloo, as one of Ontario's largest universities, has its share of on-campus media. The campus radio station is CKMS-FM 94.5, an alternative radio station which thrives on volunteer DJ's. If you thought CFNY was unpredictable, you've never heard CKMS.

The University also has a large selection of news-type papers for your perusal. They're all free (once you take into account that some of them come from the fees that you pay), so unless you've refunded your MathSoc and Imprint fee or withdrawn from the University, feel free to pick up a copy of any of these.

Imprint is the official student newspaper on campus. It is loaded with opinions, advertising, record reviews and some campus-type news. It appears late Friday morning at various places on campus.

The *Gazette* is the University administration's newspaper. This contains articles of interest to the University community, and takes a generally conservative or sceptical view of things, except when dealing with things that the administration is gung-ho about. It also has a column on music written by the promoter of the Kitchener-Waterloo Chamber Music Society, generally about concerts presented by the KWCMS. The best part about the paper is the exam schedule it prints at the end of the term and the Notebook section with one-paragraph tidbits of things (watch for *mathNEWS* excerpts).

mathNEWS (what you're reading now) is funded by MathSoc and presents an interesting mix of information and humour in a magazine format. Unfortunately, resources prevent us from being a real magazine. *mathNEWS* comes out on alternate Fridays, usually before 8:30 classes, so you can pick it up and read it in calculus. People have called us the best paper on campus. Find out why.

Waterloo also has a radical left-wing paper brought on campus by a club which has been removed from the campus. *the chevron* (that's the way they spell it) was Waterloo's official student paper until the Anti-Imperialist Alliance took over all of the editorial positions. Now it is an infrequent four-page tabloid containing more news about protests at Guelph and tour of Albania than trying to defend "the basic interests of students at the University of Waterloo." Read it and laugh.

The Engineering Society (boo, hiss, keep it up, you'll need it for Engineering Week) produces a monthly newspaper called the *Iron Warrior*. This is a generally serious paper containing articles of interest to engineering students and math students taking engineering electives. It's worthwhile for some people, but not for others. They deliver a bundle to the math building whenever they come out.

The Science Society publishes the *Carbon Copy*. Their name says it all.

Enjoy the reading. It's a great break from classes.

Fees (and other four-letter words)

When you first looked at your fee statement, you probably noticed several things. You noticed that it was white and off-green. You noticed that it had your name printed on it. Then you noticed the line that said "Before Sep 08 Please Pay This Amount" and the number beside it: \$1023.96 (less if you're in regular study). When you recovered, you probably saw the many smaller fees that make up this whopping total, and wondered what they all were, and more importantly if you really had to pay them all. Well, you don't actually have to pay them all ...

Fees You Have To Pay

Tuition: This is the basic tuition Fee, which covers the basic costs of the courses you'll take for the next four months. Individual courses may have other costs associated (such as lab breakage cards for chemistry labs), which will be assessed later, but most course costs are covered by this fee.

Co-op Fee: All Co-op students pay this fee to cover the costs the university incurs in handling the co-op program. The salaries of co-ordinators (who are supposed to find jobs for students, although it often seems to be the other way around), bookkeeping costs and other items are paid for by this fee. This fee will climb to \$325.00 on May 1st, 1988 (just before summer term) and to \$425.00 on May 1, 1989. This fee must be paid by everyone in co-op, regardless of whether or not you use co-op's services.

Health Insurance: This insures both you and the university. The health insurance you buy helps cover insurance costs for the university, and you get a discount when buying prescription drugs (even on work terms) and other things. For more details, go over to Health Services and pick up their brochure.

Athletic Fee: This fee funds our intercollegiate teams (football, basketball, volleyball, swimming, etc.) in their support and operation, as well as tournaments and meets.

Recreation Facil: This fee helps to pay off the arena that was built awhile back on the north campus, up across Columbia Street.

Federation Hall: This fee goes toward paying off the very new student pub located on campus near Village One.

Fees That You Can Get Back Later

All of these remaining fees can be refunded by applying to the appropriate organisations within three weeks of the start of lectures. Most of these fees support interesting and worthwhile organisations, who are run by and for students and would love to have you join them and help them out.

Waterloo P.I.R.G.: The Waterloo Public Interest Research Group, WPIRG, is a student funded public affairs group which has studied such things as nuclear waste and acid rain, and brought in speakers such as Ralph Nader.

Radio Waterloo: CKMS (in stereo) is the student run radio station here on campus, providing a wide variety of programming over a range of musical styles and subject matter.

Fed. of Students: All undergraduates at UW can belong to our Federation of Students, the "Feds." They provide lots of services, like Scoops, two pubs, legal services, a word processing service, weekend films (Fed Flicks) and more.

Student Society: This is your Math Society fee. MathSoc funds various services and events for mathies. See the article elsewhere in this issue for details.

Imprint: "Imprint" is a campus "newspaper" published every Friday. The quality of the paper is directly attributable to those working on it, and the quality goes up and down, but it often contains information of immediate relevance to the student population.

Fees for Fall 1987		
Fee	Amount	Notes
Must Pay these ...		
Tuition	\$675.00	everyone pays
Co-op Fee	250.00	co-ops only pay
Health Insurance	13.18	regular students
	24.71	co-op students
Athletic Fee	24.00	school teams
Recreation Facil	10.00	
Federation Hall	7.50	
Refundable fees		
Waterloo P.I.R.G.	\$3.00	
Radio Waterloo	4.00	
Fed. of students	17.75	
Math Society	5.00	a good deal
Imprint	3.00	

Getting Money

University is a very expensive habit to get into (\$1024 for most just to come here). Even in the co-op program, some students find it hard to make ends meet. But do not fear, since there are some sources of income most students can tap into to help them out.

The Ontario Student Assistance Program, better known as OSAP (that's PASO for those of you with dyslexia) is the greatest of these sources. All it takes is for you to get the proper forms from the Registrar's Office, fill them out, and send them in by September 30. That's it. It doesn't cost a cent (okay, maybe 36¢ postage) and may bring in a grant or an interest free loan of untold magnitude. At worst, you may receive nothing but the joy of knowing you tried. Just remember, you can only apply for the first eight terms at school, so don't plan to use it going after your Master's degree.

OSAP isn't the only way to get money, though. There are numerous scholarships and bursaries listed in your Undergraduate Calendar that are often forgotten about. Take a look and see if you can qualify for any. Again, all it takes is a little effort and some luck.

If OSAP and the other prizes don't bring in enough for your lifestyle, there is always the opportunity to get a job. This one is particularly nasty since it will take time out of your study and leisure opportunities, but it is sometimes necessary. Jobs on campus include cashiers at the societies' Coffee and Donuts shop, designing and/or posting posters for the Feds, working in the arcade in the Campus Centre, selling ice cream at SCOOPS, or typing for WORDS.

Off-campus, there are numerous jobs in stores and restaurants that are customarily filled by students.

Again, a warning! Don't let any job interfere with your school work. That's why you are here, remember. Hopefully, mommy and daddy can come through with some dough before you have to fail out to earn your way through.

John Herbert

On-Campus Housing

Student Villages

It's very likely that you already have a place to live staked out in Waterloo, so why is this article here? You may want to live somewhere else before your days here are through, and there are quite a few choices.

UW has a housing office that can be reached through the switchboard (885-1211, if you haven't memorised it yet). They have information about nearly anything related to housing, both in Waterloo and in other cities where co-ops are common (Toronto, Ottawa, Calgary, etc.).

The largest on-campus residences are Village 1 and Village 2. Most frosh go into Village 2, which is essentially all double rooms. It is rather noisy—with about 50 people to a floor, parties and stereo wars are not easily contained. Village 1 is arranged in smaller cubical 'houses' with 15 people to a floor, so it's a little more civilised. V1 has almost all single and interconnecting (two rooms separated by a door) rooms. Residence fees for the next two terms will be about \$1675 for a double room, \$1750 for interconnecting rooms, and \$1800 for a single room. This is for one term, and includes 27 meals a week.

"Village 3" is the new student townhouse development north of campus. No frosh will be in it, so its current importance to you is that there's more room in the other residences.

Church Colleges

Waterloo has four affiliated or federated church colleges which run residences as well. St. Jerome's is the oldest of the four and has two separate residences, St. Jerome's for men and Notre Dame for women. It is sponsored by the Roman Catholic church. Renison College is the Anglican college on campus, and, like St. Jerome's, has separate residence buildings for men and women. St. Paul's College, sponsored by the United Church, has a large residence and associate program, and Conrad Grebel College, operated by the Mennonite church, has a smaller residence and associate program. Residence fees for each of these run around \$1700 per term, with varying numbers of meals depending on the college. Some colleges may have single rooms available.

Waterloo Co-op Residences

The Waterloo Co-operative Residence Inc. is a student-owned residence complex located near the UW campus. They are in two divisions, one on Phillip Street (called the Phillip Street division), and the second on University Avenue (called Dag Hammarskjold House or The Hammar for short). The co-op residence single rooms are smaller than Village singles, but they are also cheaper. The double rooms are about the same size as the Village 2 doubles. The large single rooms are just double rooms with one occupant. With a room, you are automatically part of the residence meal plan. However (here is where the 'co-operative' part comes in) you have to do about three hours of work a week, called the "fag" (mopping floors, washing pans, Sunday cooking, anything that needs to be done, the students do it). This is part of the reason that co-op living is cheaper than Village living.

You can't usually get a single room in the co-op residences unless you have lived there for a couple of terms, or you are applying for the summer term. WCRI also has a few apartments available in the Phillip Street division for those with enough seniority to get one.

For more information on the co-op residences call 884-3670 during regular working hours.

Off-Campus Living

While it can be an advantage to live in the Villages for at least one's first year, living off-campus also has its advantages. It's usually cheaper, and you generally have more room and freedom. You also have more responsibility, and cooking and cleaning can add a few hours a week to your schedule.

There are many possibilities for off-campus living. You might find a room in a family's home, or have an apartment or townhouse or some such flat. In any case, the first person you will be dealing with is *the landlord*. Some are very understanding and can be very obliging. Others can be downright difficult to please. Just remember, if something goes wrong, consult the legal resources office in the campus center *immediately*. If you're polite to the landlord, pay the rent on time, and obey the rules, you should have no problems.

If you are getting the lease, you may find it necessary to sign for a minimum of one year. Even if you are in the co-op program, you can usually find reasonable students to sublet to while you're working out of town. Even if you're the ones subletting, you can often make arrangements to return to the same place when you return to campus from your work terms.

Few students can afford or find a place to live alone, so most places come with roommates. Roommates are very useful as homework consultants, or just someone to chat with when you need someone.

Having roommates means having to show some consideration, and of course, pulling your own weight around the house. You may find some practical way of deciding who does the dishes, and who vacuums, but laundry is usually a do-it-yourself chore.

Now, the very presence of dirty dishes implies some cooking. Bring some of your favourite recipes from Mom, and be prepared to spend between \$20 and \$30 a week on groceries. You might arrange for everyone to cook for themselves, or have everyone take turns cooking a real meal for the house.

Don't forget, also, to bring your supply of sheets, blankets, pillows, and possibly furniture, cooking utensils, and an initial supply of food.

If you haven't found a place yet, keep checking with the Off-Campus Housing Office on the top of Village One. They have housing lists for Kitchener-Waterloo as well as for other large cities in Ontario (for when you go off to work for a few months). Additional rental listings can be found in the *Kitchener-Waterloo Record* and in a flyer called "Read it'n'Rent." Housing boards are located throughout the campus, notably at the Campus Centre, outside the MathSoc office, and in Carl Pollock Hall. Ads for housing both available and wanted are posted on all of these boards. The reasonable price range fluctuates, but you can expect to pay between \$175 and \$250 a month for a livable (but not luxurious) place, depending also on furnishings and location. Shop around before you take a place, but remember that good deals can be snapped up fast!



The Prof Control Panel

Mark II

The University of Waterloo will be installing the *new* Prof Control Panel in various desks throughout the university on a trial basis in order to try to improve class attendances. Here is a brief excerpt from the operator's manual accompanying each panel.

Prof Eject Button: For that boring part of the lecture when you just want to send the prof through the roof.

Prof Nuke Button: Similar to the Eject Button but with a more dramatic mushroom cloud effect (usually takes out the first two rows of keeners as well). Radiation suit not included.

Prof Zapper: A quick charge of 500 000 volts can easily tell a prof to get on with the lecture.

Prof Volume: Allows you to sit in the front without shattering your eardrums, or in the back and still hear the prof.

Prof Rewind: Time warp back to an earlier point in the lecture.

Prof Fast Forward: Comes in handy when the class is only halfway through and you're late for dinner.

Prof Brightness Control: To reduce the effect of those fluorescent Friday ties.

Prof Record: Lets you (re)view the lecture in the comfort of your own home. The Panel automatically selects a premium or cheapo tape, based on the quality of the lecture.

Prof Stereo/Mono Switch: Changes professor's voice from a monotonic drone to a high-pitched whine with spurious glitches. If the prof is female, this switch has no effect.

Prof Noise Reduction: Eliminates extraneous proofs, redundant lemmas and useless anecdotes.

Prof Balance Control: Allows the student to adjust the lecture's theory vs. practise ratio.

Prof Language Select: Choose one of Chinese, Czech, Yugoslavian, Swahili, Esperanto or Pidgin English.

Prof Font Select: Choose from a gallery of blackboard fonts: Greek, Hebrew, Chinese, Bodoni, Old English or Cyrillic.

Prof Gear Selector: Choose 'D' for normal lecturing, 'L' for low-gear grinding through DE's, 'R' for "if and only if" proofs, or 'N' for catching your breath after an exhausting example.

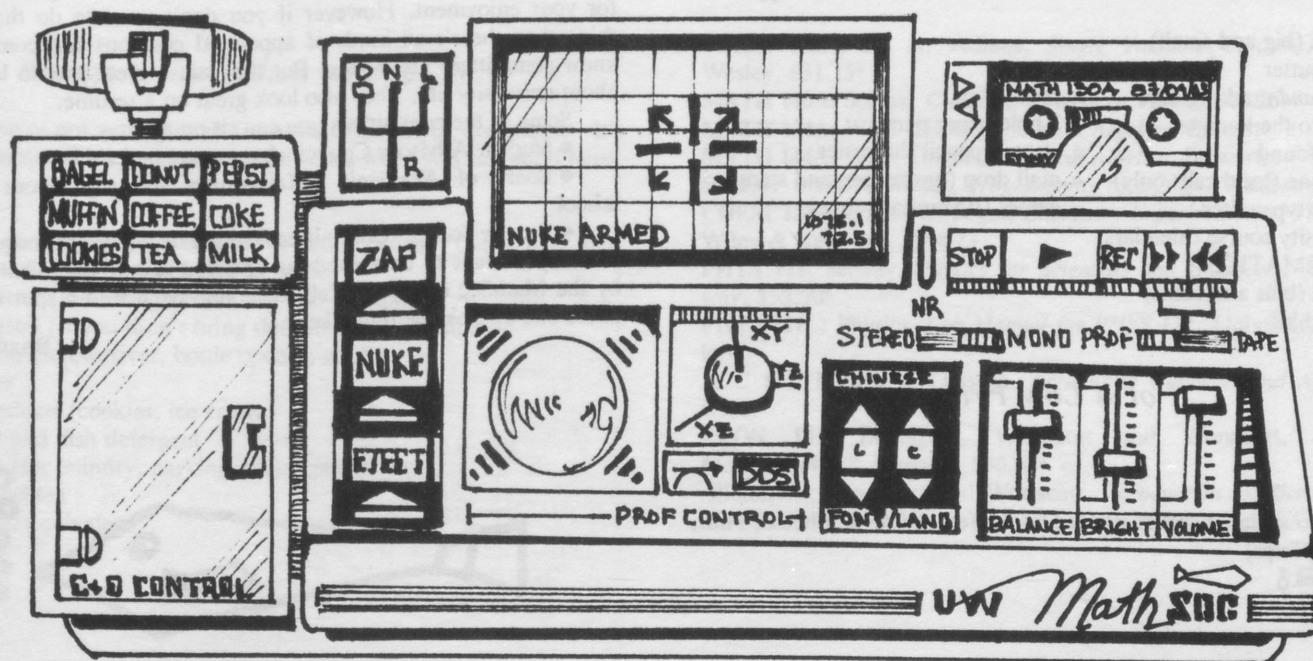
Prof Cruise Control: Set the most comfortable cruising speed for the lecture. (We advise setting the speed below the legal limit of 50 (boards per lecture, that is). Failure to do so will void the warranty.)

Prof Motion Trackball with Plane Control™: Move your prof around in 3-space with an ergonomically designed Trackball and continuously variable oblique Plane Control™. During rougher lectures, drive your prof up the wall; during better ones, help him reach that top blackboard in MC 2065.

Directional Derivative Switch: Used in conjunction with Trackball and Plane Control™ to send the prof off on a tangent.

C+D Control: Signal the C+D to beam in the beverage and snack of your choice.

Georg, Vainamoinen and Jordankovic



MathSoc Services

Coffee & Doughnut Shop

Located in the third floor lounge in the math building, MathSoc runs the C+D at close to non-profit for your budgetary convenience. You can get inexpensive coffee, doughnuts, bagels, subs, kaisers, frozen snacks, pop, and more.

Study Lounges

MC 3001 & MC 3002 provide a meeting place to eat, study, or just take a break. MC 3001 has vending machines; MC3002 has the C+D.

Mathletics

An intramural sports program organised each term for any mathie to join in on the fun. Many teams are co-rec. Sports are waterpolo, flag football, hockey, volleyball, etc.

Photocopiers

The MathSoc Office (MC 3038) provides (count 'em) two Xerox photocopiers for faithful reproductions. You can make letter or legal size copies, and you can even photoreduce. A substantial portion of your society fees goes toward keeping the per-copy cost at a nickel.

Old Midterms & Exams

You can't take them out of the MathSoc office, but any mathie with a student card can get these to photocopy and study with.

Lockers

Early each term about 500 lockers on the third floor are distributed to students on a first come-first served basis.

Available for Your Use in the MathSoc Office

- o staplers (big and small)
- o paper cutter
- o scotch and masking tape
- o music to the lounges
- o lost & found
- o telephone (local calls only)
- o electric typewriter
- o University course calendars
- o INFORMATION!!
- o change (bills and coins)
- o first aid kit
- o paper clips
- o 3 hole paper punch
- o electric pencil sharpener
- o mail drop (on-campus and stamped)
- o games (if you have time)

For a Low Price

- o buttons
- o rulers
- o tickets to social events (such as Oktoberfest, Wine + Cheese, Pubs, and Road Trips)
- o Pink Ties ♂
- o T-shirts

MathSoc

You've been reading a lot recently about all that you'll be doing once you arrive at University. You've been wondering, no doubt, just how it all fits together.

One of the major purposes of MathSoc is to try to put it all together. MathSoc executives meet with the faculty on issues such as changes to courses and programs, or how to improve the general state-of-affairs of the ordinary mathie.

MathSoc executives also arrange many services that mathies take advantage of often—services such as photocopiers, an exam bank, and social events.

The executive consists of the elected executive of President, Vice President, and Treasurer as well as the appointed executive of Social, Internal Affairs, External Affairs, Publicity, Office Manager, Office Secretary, Orientation, Math Grad Committee, and Mathletics directors.

There are also positions for class representatives on MathSoc Council. As a rep, you'd be involved in organising and running events, helping out in the office, and keeping the affairs of MathSoc running smoothly.

There is room (and a need) for everyone to help make MathSoc work for you. Whether it is helping out at an event for an hour, helping in the office for an hour a week, or helping plan and organise events, it is the people involved who make MathSoc function. And it is the people who come out for events and make use of the services for whom MathSoc works best.

With any success, MathSoc makes your terms on campus among the best times of your life.

MathSoc: The Adventure Continues

Ask not what MathSoc can do for you but what you can do for MathSoc. And boy can you do something for MathSoc. When you pay your fees you will automatically become a member of MathSoc. This is your opportunity to impress your family, make new friends, meet cute members of the opposite sex and fail a few courses. MathSoc is a student's council not unlike your high school's (well, except for the potable organic chemical compounds).

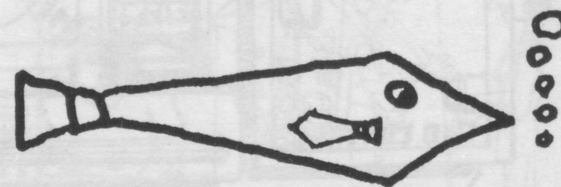
We have elected executive (Prez, Vice Prez, Trez) and class reps for your enjoyment. However if you don't want to do that election thing then there's all kinds of appointed positions and committees. I know committees are *boring!* But they are a great way to learn more about university life. They also look great on a resume.

Some of the committees you can sit on are:

- Student Advisory Council—have a say on how co-op works
- Board of Academic Affairs—rules and regs about going to school
- Faculty-Student Committees—hire a dean, design a course, etc.

If you want to do something and you're not sure what just drop by the MathSoc office and tell someone. We'll find a spot for you or make one up or something like that.

Brian Capstick



Survival Kit

As you prepare to venture into unknown territory, you need to know what the essentials of life at UW are. Besides the obvious (a stereo system of some sort—preferably small but powerful) here is a list of items you may find helpful. This list is *not* meant to be comprehensive, only to suggest ideas. Remember, for most of us, it's a long way home!

Things you should bring from home

Well, anything you can fit in your gear that the folks won't miss for at least a week. Among these items:

Official Papers

- Registration and fee statement (*vital*)
- Bank books and cards, chequebooks, etc.
- Parking stickers, PAC card, Health Insurance cards
- ID, e.g., driver's licence, SIN card
- mathNEWS Frosh Issue (but of course)

Clothing

- Clothing for hot weather, cold weather, rainy weather (heh, heh), snow gear if you won't be home 'til Christmas or later
- Hangers for the clothing
- Umbrella and K-way (heh, heh)
- Interview clothes (business best) for co-ops
- Sewing kit for quick minor repairs

Other Stuff

- Money (lots, see articles on money elsewhere)
- Towels, sheets, blankets and pillows
- Small kettle, cups, dishes, cutlery (more for those not getting room and board)
- Alarm clock (unbreakable, with snooze bar for 8:30 classes)
- Toiletry items (enough to last until you buy some here)
- Your bike (UW has excellent bike access)
- Bicycle lock (UW has excellent bike thieves, too)
- Favourite water pistol (if you have one)
- Posters, if your landlord allows
- Favourite stuffed animals (but beware of hostage takings, etc.)
- Calculator (scientific) and mechanical pencils

Things to buy when you get here

No, we're not getting a cut from the Chamber of Commerce. It's just not worth the hassle of hauling this crud when you can get it here.

Stuff

- Paper, pens, binders, erasers, rulers, pencils (why not start fresh—leave that high school gear at home)
- Alka-Seltzer (see Village Food, see also Guelph)
- Water pistol (if you didn't bring one—they are essential)
- Basic tools (screwdriver, bottle opener, etc.)
- Munchies
- Oreo products (cookies, ice cream)
- Laundry and dish detergent
- Quarters (for laundry, parking, video games, etc)
- Coffee and tea
- Aspirin or equivalent

The Acquisition of Textbooks

There are basically three ways one can purchase textbooks: from the UW Book Store, from the Used Textbook Store, and through private arrangements. The UW Book Store is located in South Campus Hall, which overlooks the southern entrance of the campus. All textbooks for your courses should be available there. As well, a list of required and recommended textbooks is maintained there. However, you can get a better price by buying used textbooks, and there is a high probability that you will wait an extremely long time in the line-up to get in. The Book Store is a small place for the volume it has to handle in the opening weeks of the term. Here are some tips for shopping at the Book Store.

First of all, try to shop as early as possible, to be sure you get your textbooks. The Book Store tries to keep sufficient supplies, but it sometimes runs out of textbooks. Keep all of your receipts so that you can get a full refund if you drop a course or if you discover that you've bought the wrong book. There are two types of cashiers: those who handle cash only and those who handle cheque and credit card transactions. The line-ups for the cash cashiers tends to move more quickly than the other line-ups. (more line-ups, sigh!) Finally, the Book Store is partitioned into two areas during the first couple of weeks. Textbooks for math, science and engineering type courses are available on the lower floor of the Book Store. The entrance to this section is located at the back of the Book Store and can be easily identified by the line-up in front of it. The upper floor contains textbooks for the other (i.e. arts) courses, as well as stationery supplies, with access via the main entrance.

Should you wish to save some money on textbooks, there are two options you might consider. One is to watch the bulletin boards for people advertising used textbooks. The other is to check out the Used Book Store, located in the basement of the Campus Centre. However, you should not expect to get all of your required textbooks from these sources. And before you buy, make sure you have the right textbook and the right edition—all sales are final at these places. It's not a bad idea to go to the UW Book Store before checking out these places, so that you know what to get.

Below is a list of some of the textbooks you may need for your 1A term. This list was compiled from textbook orders in the UW Book Store. A dagger at the end of an entry indicates that the book may be found in the Used Book Store. Unfortunately, not all prices were available at compilation time.

MATH 130A: R. A. Adams, *Single Variable Calculus*, Addison-Wesley, \$31.15†

MATH 140A: Spivak, *Calculus*, Publish or Perish, \$40.25†

MATH 134A: W. J. Gilbert, *Classical Algebra*, Descartes †

MATH 144A: W. J. Gilbert, *Classical Algebra*, Descartes †

CS 131: Miller & Miller, *Programming by Design*, Wadsworth, \$32.05

CHEM 123: Bernice G. Segal, *Chemistry Experiment and Theory*, John Wiley & Sons, Inc., \$54.25

PHYS 121: Serway, *Physics for Scientists and Engineers*, Vol. 1, Serway, \$55.90†

PHYS 121L: Physics, *Lab Manual for PHYS 121*, University of Waterloo

ACC 121: Berney & Gerstka, *Accounting Concepts and Applications*, Irwin

ECON 101: Blomqvist, Wonacott and Wonacott, *Economics*, McGraw-Hill & Ryerson, \$36.65† or

Blomqvist, Wonacott and Wonacott, *Introduction to Microeconomics*, McGraw-Hill & Ryerson, \$20.20† (if you're not taking ECON 102)

Keener Bingo

You will soon learn that on occasions lectures become, well, less than interesting. For those times when counting ceiling tiles seems more appealing than the diophantine equation on the board, we present: Keener Bingo.

To begin, we must clarify the definition of a keener. They can easily be spotted in the front rows of any class, where they are noted for their remarkable ability to ask an unusually large number of confusing questions during a lecture. They often bear an uncanny resemblance to characters in "Revenge of the Nerds." Standard keener equipment includes: a bulky briefcase, checkered trousers, undershirts and a powerful calculator. Optionally this can be a very powerful calculator such as an HP 41CV with card reader, printer, and optical wand. Other optional keener accessories include: a plastic pocket protector for the front shirt pocket (containing six different coloured pens, several mechanical pencils, a screwdriver and a pencil sharpener), a slide rule, a complete geometry set, and a well-used flowcharting template. Should all this not give them away, keeners tend towards extra long right arms (for better visibility), tape on their glasses, wearing T-shirts or buttons displaying the first 200 digits of π (which they know by heart), and having twice as much stuff in the briefcase as can possibly fit.

The act of being keen: you will come to be painfully familiar with this procedure. When the prof asks a question, makes a good point, omits something, or even for no reason at all, the keener will thrust his or her hand skyward and attract the prof's attention. This is almost always followed by a vapid and irrelevant question which serves only to confuse the class and often the prof.

The Rules: Pick out three keeners and write their names (class nicknames will do) on a piece of paper. As the keeners are keen, cross off their names. The first person to cross off every keener on their list yells "BINGO" and is awarded one bingo point. Play the game over several classes or several weeks and the winner is the person with the most points at the end of that time. For a more challenging game, arrange the names of nine keeners in a 3 by 3 grid. The winner is the person who first crosses off the names of three keeners in a horizontal, vertical or diagonal row. In both versions, the following rules apply:

- You may not use your own name, nor may you repeat names on the same card.
- An extra point is awarded if you preselected the keeners in the order that they were keen.
- Double score if you can guess their first words, such as "Sir...Sir...", "Professor...", "But...", "Excuuuuse me...", or the always popular "You forgot..."
- Triple points if the prof spots the keener but refuses to acknowledge his or her presence.
- Quadruple points if the prof threatens the keener.
- You are not allowed to physically abuse a keener in order to affect the placement of his or her hand.
- Bribes are illegal.

Before you begin, you may want to have a look at a keener at close range. Pay a visit to the EngSoc Orifice at Carl Pollock Hall. Happy hunting!



Prof Football

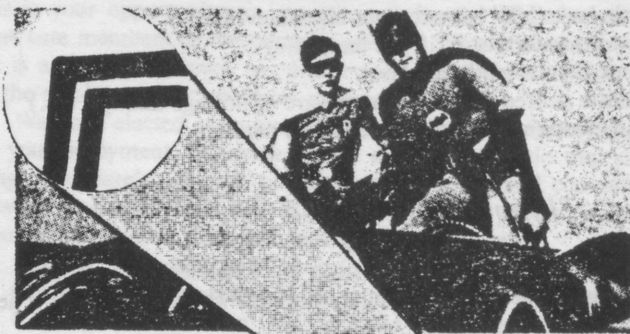
This classroom distraction comes to you from Wilfrid Laurier University where there is a rich football tradition. Perhaps we should modify the rules somewhat and call it Prof Rugby or Prof Basketball to honour our best teams, but then maybe this year will be the big year for our Warriors Football Team...and maybe it will snow next July!

The only requirement for this game is that it be played in a lecture with a prof who paces. Before the lecture begins, divide the class into two teams. For example, use the aisle in the middle of the room as a dividing line. You must also mark two goal lines at the front of the class. Do this by placing a piece of tape or other marking on the blackboard or front wall about one or two metres in from either side wall. When the prof arrives and the lecture begins, you can start playing Prof Football.

The object is to score a touchdown, which occurs when the prof crosses the goal line in front of your half of the class. The opposing team can try and prevent a touchdown from being scored by attempting to attract the prof to their half of the classroom, and then possibly score a touchdown themselves! The best way to attract the professor's attention is to raise your hand and ask a question. This requires some imagination because the question should be relevant and so must be thought up on the spur of the moment. Watch out though, because asking a lot of confusing questions could make you part of a keener bingo game (see the article elsewhere in this issue.)

It is best to play two twenty minute halves with a ten minute break at half time. This makes for a full fifty minutes of lecture entertainment. So, go out there and win one for the gipper!

WATMAN...



One of our more successful graduates!!

ONTARIO MATHIE TRAINING CENTRE

CALL: 885-1211

SERVING:

Metropolitan Toronto,
Bramptissauga, Red Lake
& Watham City (of course)



Why Advanced Honours?

During my Orientation Week back in the fall of '84, I attended a talk given by one of the professors. During his talk, he touched on the subject of the advanced honours math courses. He warned that only super-geniuses should consider taking the courses, but qualified that warning by saying that he hoped that it wouldn't cause too many people to take the "Canadian option" and switch to a less challenging course. I had pre-registered for the advanced honours courses, and this made me worry a bit, for though I had done extremely well in high school and considered myself to be very intelligent, I never considered myself to be a super-genius. However, I decided to go ahead and see if I was up to the challenge.

I am now in my 3A term. Of the nine possible advanced honours courses available to me, I have completed eight, and have done extremely well in them. I am glad that I did not act as a typical Canadian. And I still do not think I am a super-genius.

So if I am not a super-genius (assuming that you trust my judgement of myself) why did I do so well in this course, despite that professor's dire warning? The answer, to me, is simple. I love math. Now it is true that I don't love all of mathematics equally, and there are some branches which I wouldn't mind never seeing again, but in general, I just love math. I like to solve problems, prove theorems, consider implications. And that is the key to my success. For success is most often a matter of attitude. One must be very intelligent to succeed in the advanced honours program, but I feel that this aspect is overstressed. In any case, I believe that intelligence and enthusiasm are strongly correlated: a person who is mathematically proficient is more than likely to be mathematically inclined. As well, attitude more than anything else determines whether a person will enjoy the course, which, in the final analysis, is the really important thing.

Mind you, life has not always been a bed of roses in these courses. There have been some courses where the prof would spend weeks on material that seemed insignificant. It might have been significant, but its significance was never clearly presented. In some cases, the prof presented material so quickly that it just went over our heads. This is a real problem that must be addressed. Furthermore, the courses are a bit biased towards pure math. While the bias towards pure math is probably inevitable, it would have been nice to have a taste of some of the deeper issues in applied math (I am currently working towards an Applied Math/CS degree). Finally, there are some things in the regular honours courses that are not covered in the advanced honours course. Though the potential for serious problems is great, I find that in practice I can pick up the material that was skipped over; good course notes for the regular honours courses are readily available, and the material that was missed is often reviewed in later courses to a class that has forgotten much of the previous term's material.

I found the work to be challenging, but not particularly long; most of the work involves proving various theorems and propositions. I found that if I could not immediately prove a proposition, the best strategy would be to leave it alone for a while. Sometimes it would come to you after a while. I also was able to think of problems while doing other things (like walking, eating, etc.). If I couldn't solve the problem, then there were the tutorials and helpful hints from friends to fall back upon. The end result was that it didn't take too much time to do the assignments. It certainly didn't take me 12 to 15 hours, as one person complained in the '84 frosh issue of *mathNEWS*.

For me, there were two main benefits of the advanced honours experience. The classes are smaller than in the regular sections. With the smaller classes, the professor can teach more effectively. More importantly, a sense of camaraderie develops among the students in the advanced section which can linger on well into the upper years. My best friends in the university are the ones with whom I took the ad-

vanced honours courses. Finally, the advanced honours courses provide you with exposure to much more of the mathematical universe than the regular honours courses. University should be a broadening experience, for breadth of experience enriches our lives. And in the final analysis, that is the important thing.

Andrew Tron

Studying Magic

Well, here you are, Jane/Joe Frosh entering first year in the Faculty of Mathematics at the University of Waterloo. You have just finished secondary school with good marks, especially in mathematics. You have a partial idea of what you'd like to take at university but likely just don't know what to expect. Many of you expect to make Computer Science a part of your education, but hopefully you'd like to include mathematics in there somewhere. In this article, I would like to address the mathematical side of your education.

As you are well aware, mathematics is a classical study that goes back millennia. That, however, is far from saying that it is a dead subject today. Group theory, the theory of relativity, combinatorics and optimisation are just some examples of theories that have largely been developed within the last century. The advent of computers has also furthered the cause of mathematics—both in theory used in developing computers and in the use of computers to solve problems that would have been impossible in the past. However, it is the widespread use of mathematics in our society today that brings about the need for advances in mathematics.

Now let's bring this down to your personal study of mathematics at Waterloo. Altogether in first and second year, you will be taking four calculus, four algebra (one in each term) and two statistics (one in each term of second year) courses. The calculus courses consist of deeper looks into differentiation, integration, and sequences and series than you had in high school. This is basic material that will appear frequently in many of your other courses (for "basic" *do not* read easy). The algebra classes consist of classical algebra (number theory), linear algebra (two terms—very important material) and abstract algebra (group theory). Most of classical and abstract algebra you may not have seen before, but linear algebra will generalise your concepts of vectors and matrices. The statistics courses are comprised of probability theory, probabilistic testing of theories, and data fitting.

When you are in your 1B term, you will be asked to decide which major program you would like to enter. The possible departments to enter are Applied Mathematics, Pure Mathematics, Combinatorics & Optimization, Computer Science, Actuarial Science & Statistics, and the Department of Mathematics for Industry and Commerce. Joint programs between two disciplines exist. Each department has leaflets which describe their programs. As well, a special Information Night is given in your 1B term to help you decide, so be sure to attend!

Specialisation of your courses mostly starts in third year, so if you think you made the wrong choice in 1B, it is possible to change. The notable exception is CS which is difficult to get into and has special major CS courses in second year.

If you would like more information on specific programs, look elsewhere in this issue, go to the Mathematics Undergraduate Office on the fifth floor of the MC building, or ask questions of anyone you can find. It is a good idea to check things out before 1B to help make the choice easier.

Well, there you have it, mathematics at Waterloo in a nutshell. For whatever reason you've come here, good luck on any mathematical choices you make.

fletniowski

The Meaning of Life

The University of Waterloo is such a self-contained community that sometimes students (and not just frosh) start classes in September and wake up two months later to find that they haven't strayed off campus once. We at mathNEWS want to remedy that in advance, because whether you hail from a small town or from Hogtown, the "Twin Cities" have something to offer. (What's that? The Chamber of Commerce phoned to say my cheque's in the mail?)

Listening: The easiest radio station to get is CKMS 94.5, the campus radio station. Its programming caters to various minority groups ('West Indian Hour', 'Gay News and Views', 'Leaping Lesbians', etc.) and includes programs for more specific tastes (jazz, rock, classical, reggae, etc.). Watch for the monthly CKMS program guide, sometimes found on the information table in the Campus Centre. Other FM radio stations include CKGL 96.7 (country & western), CFCA 105.3 (easy listening) and CKLA 106. On the AM dial you have the ever popular 570 CHYM, CFTJ 960 (top 40), and CKKW 1090 (top 40 & older rock).

Reading: K-W has two newspapers, the *Waterloo Chronicle* and the *K-W Record*. The weekly *Chronicle* is much like any other small-town newspaper, reporting local news and views, while the daily *Record* has more national and provincial as well as local news. Both papers afford us a glimpse of what the outside community thinks of the students at UW and Wilfrid Laurier ("the high school down the street"). Read the *Record's* Thursday entertainment section for reviews, movie and TV listings, and news of upcoming concerts at Kitchener's excellent hall, the Centre in the Square.

Eating: Tired of residence food (or your own cooking) already? Realising that man cannot live on C+D alone? The nearest off-campus eateries are McGinnis Landing, Fluffy's, Cafee Bon Choix, Reuben & Wong, and the Wah-Ming in the University Plaza. McGinnis serves good standard grub (e.g. wings, pasta, potato skins, good salads), while the Wah-Ming serves mild Szechuan fare downed with oodles of steamed rice and Chinese tea. Downtown in Waterloo we have Angie's Kitchen on Erb Street (cheap food at reasonable prices), the Duke of Wellington in the Atrium on Erb (good food at expensive prices), the Ali Baba Steak House, and Shin Shin, arguably the best Oriental restaurant around. For alternative menus and ulterior prices go to Marbles (on William off King) or Aphorisms (north on King); for pub grub and chocolate cheesecake go to the Olde English Parlour at King and Bridgeport. Also for the sweet of tooth are Smitty's at Westmount (pancake breakfasts) and Cafe Mozart across from Waterloo Square (coffee and exquisite German pastry).

Watching: If you tire of Fed Flicks every weekend in AL 116, or can't find a seat on Wednesday nights at Cinema Gratis in the Campus Centre, don't despair. Waterloo has one large theatre (the Town Cinema) and Kitchener boasts three big ones (the Odeon, Lyric and Capitol) and Cineplex, all on King Street. (I forgot to mention the Hyland on Ontario St., where I saw such memorables as *Amadeus*, *1984* and *Brazil*, in Dolby stereo yet.) Chances are there is something playing you haven't seen.

The best thing to happen movie-wise in the past two years has been the Princess Cinema. This small repertory cinema, tucked in behind the Heuther Hotel in Waterloo, has something for everyone: horror classics, comedy, art films, cult films, avant-garde films, and the kind of films that you heard a lot about when they came out a few years ago but which you never got a chance to see. Admission is \$4.00 or \$2.75 for members (student memberships cost \$4.00 for 12 months); watch for their flyers, often available at the CC.

Doing: While you're at that information table in the CC, turn around and look at the map of Waterloo and the surrounding countryside. You'll find cycling and hiking routes taking you to nearby "picturesque" places like St. Jacobs, Petersburg, Elora, Elora Gorge (its gorgeous), Heidelberg, Wellesley, St. Agatha, and many more. The UW Outer's Club usually organises cycling tours, hikes, camping and ski trips, and for those of you with more insurance than I there is also a Skydiving Club.

While you're up early Saturday morning to go cycling, why not stop at the Market? If you follow Weber Street north out of the city you can buy fresh produce from rustic people (or is it rustic produce from fresh people?) at the Waterloo Farmer's Market. The Kitchener Farmer's Market, downtown at King & Scott St., is more of a tourist trap, but still has lots of meat, cheese, bread and crafts for your delectation. Either way, get there early to avoid the crowds.

If you're downtown on a sunny day you can get a flavour of old Kitchener (i.e. Berlin) by walking north on Queen St. and seeing the beautiful old houses on such side streets as Ahrens and Margaret Avenue. A word on directions, however: Kitchenerites think King St. runs west toward Waterloo, while Waterloovians think it runs south toward Kitchener; the two main streets, King and Weber, are parallel but meet three times; the shortest distance between two points is usually a curve.

If you're a classical music lover, be sure to pick up brochures for the KW Symphony Orchestra, the KW Chamber Music Society, and watch for concerts at the Centre in the Square, on campus at the Theatre of the Arts, at Conrad Grebel College (the music school), at Laurier (the better music school) and at the Seagram Museum on Erb. If polka music is more your style, I needn't tell you about Oktoberfest, a stein-toting beer-guzzling bird-dancing bus-riding song-singing ein-prositing beauty-pageant-parading Bavarian-in-origin successfully-transplanted-into-Canada week-long festival early in (you guessed it) October. Be sure to get your tickets at MathSoc early to avoid disappointment.

The above is only a smattering of things to see and do around K-W. Since most of you will be around here for four or five years (modulo work terms) the place is well worth exploring!

St. Jerome's and Mathematics

I'm sure that some of you out there have chosen to study mathematics at St. Jerome's College. Here are a few pointers on what you can expect over the next few years.

St. Jerome's is a church college affiliated with the University. Students registering in any co-op or regular math programme can enrol at St. Jerome's. Those of you who have chosen the regular system of study will probably attend all of your first and second year core courses (Math 130 A/B, 134 A/B, 230 A/B, 234 A/B) at St. Jerome's. If you are a Stream 8 co-op, you will take all of your first year and 2A core courses at the college. If you are in Math/CA, your 1A and 2A core math courses will be offered at St. Jerome's. However, those of you who are in 4 Stream will only spend your first term at St. Jerome's. Thereafter, the core courses which you require will not be offered at St. Jerome's during the terms that you are on campus.

Being at St. Jerome's, you will probably find that your classes are smaller in size (approximately 75 students in 1A) than those on the main campus (especially after 1A, when about 25-35% of the class goes on its first work term.) There are no lecture halls at St. Jerome's, and so your classes will be taught in classrooms (unlike the main campus where lecture halls hold about 200 students per class.) This may make it easier for you to adjust to university as the atmosphere won't be too much different than that of high school. It may also be easier to meet and get to know your classmates.

When you are enrolled at St. Jerome's, do make a point of going over to the math building occasionally to visit the C+D, use the library facilities or just to drop by MathSoc and use the stapler. Of course, don't forget to pick up a copy of mathNEWS on the occasional Friday morning (get there early to be assured of your copy). Also, most of the math clubs (eg. AM, CSC) have offices in the Math and Computer building, so drop by and see what's going on.

MED

(with cameo appearance by Sweeney Todd)

Oh Yeah... That Co-op Junk

Welcome to Waterloo, home of one of the best co-operative education programs in North America. This system will be affecting you for the next five years so get used to it.

The first big question is just what is Stream 4 and Stream 8? No matter which stream you choose you will have to do eight months of school straight. The question is whether you want to do it during first year or fourth year.

Some people prefer Stream 4, which goes eight months straight in fourth year. The advantage of this is that you start earning your co-op money sooner and you can waste all of your high school earnings in the first four months.

Some people prefer Stream 8, which goes eight months straight in first year. The advantage to this is that you get it out of the way and when you graduate you have a better chance of getting a job with your last co-op employer. However, the choice is yours and when it comes down to it, it really doesn't matter.

This next sentence will teach you everything you need to know about co-op. Attend your co-op orientation (MATH 000) sessions. These sessions are timetabled for each student and are run by the Department of Co-operative Education.

The process for getting a job is really quite simple. But for those of you in Stream 4, it is also a little rushed. Those of you in Stream 8 don't have to worry about anything until January, but continue reading so you can prepare yourself.

On September 21 you will have to give the Department of Co-operative Education 20 to 30 copies of your resume. No late resumes will be accepted. Some students like to have these professionally typeset. You may attach letters of reference, but if it's more than one page then it must be stapled together. No fancy covers or duo-tangs!

The *Want Ads* are probably the biggest classified section you'll ever read. You'll get your copy on September 25 and you'll have to tell the department what you're applying for on September 28. You may only apply to 15 *Want Ad* jobs. The department will then send your resume and your high school marks to the employer. For those of you in Stream 8 that are still reading, your high school marks will also be sent out in January even though you will have a set of University marks.

Late postings are the job descriptions from companies that didn't make it into the *Want Ads*. These will start on September 29 and are posted on bulletin boards in Needles Hall and the Math building. You may apply for as many of these as you like.

Don't go crazy applying for jobs. A half-decent resume will net you interviews from half the jobs you apply for. At the time you'll be going through interviews (October 19-November 6) you will be attending classes and writing mid-terms. If you have 10 or 12 interviews then you could very well end up living in Needles Hall for two weeks.

The interviews usually last from 20 to 30 minutes, but since they're usually running late you better budget on missing between 1½ to 2 hours of classes per interview. The interviews themselves can be fun. Some students have been known to be quizzed on their proficiency using a particular computer language. So restrict the amount of lying you do on your resume.

If you run into any problems at all *don't ignore them*. See a co-ordinator and get it all straightened out even if you feel stupid doing it. If you can't find your co-ordinator go to the MathSoc office and ask to see a Student Advisory Council rep. He or she should be able to solve your problem or tell you who to go and see.

Co-op is a wonderful experience. Jobs are available in places as far away as Seattle, Washington and Atlanta, Georgia. Students have even gone to Australia. So you can look forward to all the good times and good people you'll meet on your work terms.

Brian Capstick

The Student Advisory Council

Co-op is part of your degree and as such shouldn't be taken lightly. If you have a problem or don't think that something is working correctly, then get it fixed. The Student Advisory Council (SAC) is your problem solver.

SAC meets every two weeks and tries to do the impossible. It tries to solve all the problems in co-op. Students are the sole users of the co-op system and as such should have a say in how things operate. SAC recommends policy changes and passes on information and clarifications to the students.

Each faculty has a number of student representatives to SAC. These reps should be able to handle all types of questions or problems or know who to ask. The SAC exists and should be used for your benefit.

If you really want to learn the co-op system then become one of the Math student reps. It's the best way to learn the system and help your fellow students at the same time.

Brian Capstick

Problem Solvers

University is going to be a new world to you and with it comes new problems to be solved. And I'm not talking about math problems either. Here's an article to show the way of solving these different problems.

The first problem solver you will encounter will be your big brother or big sister. They have had the same questions once upon a time answered for them, probably by their big brothers and sisters, so use them during orientation week and after to help you. Hey, that's why they volunteered to be there. MathSoc is another place to go for help throughout the term. Although the friendly office worker may not know the answer, he/she will probably know where you can find it.

Questions dealing with your courses or future in math are best directed to your faculty advisor. OPERATION MATHSTART is set up in room MC 5158 to be your registration and scheduling problem solvers in the first days at school. Starting Tuesday, September 8, MATHSTART should be a necessary stop for all students with problems that should be tackled right away. (If there is a lineup, go stop by the Drop-In Centre for a while, then return to MC 5158.) These professors will be able to guide you through course selections and academic problems a student in the prof's particular field may encounter.

General questions about math and the university procedures are best directed to the Math Undergraduate Office on the fifth floor of the MC building, room MC 5118. They may direct you to the Registrar's Office on the second floor of Needles Hall room (NH 2001) though, if it is a question dealing strictly with the University.

Across the hall from the Registrar's Office is Counselling Services, room NH 2002. Here, professional counsellors will be able to help students with their concerns about school, life, or their futures. The Chaplain's Office in room NH 2050 offers the same type of help in a spiritual manner if you prefer it.

The Ombudsman is a counsellor of the pseudo-legal variety. He/she is on campus in the Campus Centre, room CC 235, and is approachable free of charge by appointment for any student wishing legal help.

Hopefully, any question or concern you have can be answered by using one of the services mentioned here, but only you can search them out. May these helpful hints of where to go when you have a problem be sufficient in helping you.

John Herbert

The Pink Tie §

Waterloo has lead the world (or at least Canada) in many things. Now we can boast about leading the fashion world, too. Many people have taken to wearing pink ties as part of their everyday attire. Many people don't know that Waterloo started this fashion trend. You see, the Pink Tie is the official mascot of the University of Waterloo Mathematics Society.

How did Waterloo manage to start this trend? Well, as the story goes (passed down from grads to frosh over the decades), there once was a particular professor of mathematics who loved to wear outlandish gaudily-coloured ties. One of these ties was mostly pink with strange lines on it. This particular professor also happened to be the founding dean of the fledgling Faculty of Mathematics, lending some importance to his attire.

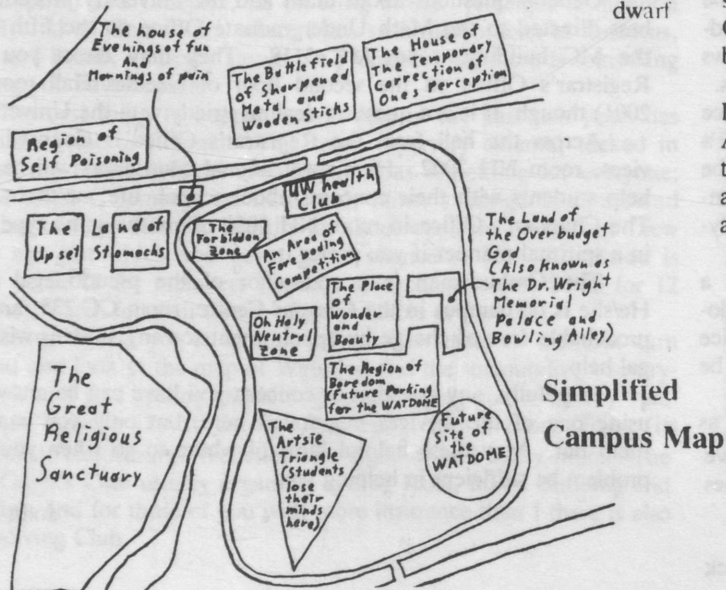
Mathematics students, being the unconventional bunch they usually are (and I hope you are no different), seized the wonderful opportunity for being completely irreverent but non-destructive and chose a tie as their official symbol, and pink as its official colour.

The original Pink Tie is on display on the fifth floor of the Math and Computer building in a display case outside the Math Undergraduate Office.

During the construction of the Mathematics and Computer building in November 1967, some of the aforementioned math students decided that the new building was a monstrosity and could use some decoration. (Some people still say that. Then they go and design the William G. Davis Centre—it's even worse!) Late one Sunday night a few weeks later, a handful of brave mathies found their way on to the roof of the brand new building. On Monday morning the campus awoke to see an 85-foot Pink Tie hanging from the spot where the students were the night before.

MathSoc adopted the tie, and inherited the dry-cleaning bills, until the tie was stolen for a final time and irreversibly desecrated by heathen engineering students. A second Pink Tie was commissioned and served faithfully until last September, when it was paint-bombed. (Some people have no sense of decorum.) This year you will see another Pink Tie hanging from the Math building when you arrive for Orientation Week.

Now the Pink Tie is a symbol of the Faculty of Mathematics and the Math Orientation Committee. mathNEWS has adopted the Pink Tie as the symbol of all things good and mathematic. (Some dolt in MathSoc decided that a Pink Tie was not good enough for the Mathematics Society and named the Natural Log as the official mascot. However, it is not socially acceptable to wear a twig as a symbol of your faculty.) As the legend of the Pink Tie lives on, it is commemorated in the fashionable item of clothing you wear as a Waterloo Math frosh. Wear the Pink Tie with pride.



How (not!?) to Write an ELPE

"Say what! I've got to write an exam during my first week here! You've got to be kidding me. How can they expect me to write an exam after all those parties? They must be out of their @!#?&%!ing minds!"

Friend, have these very words been running through your troubled mind? And friend, do you dread the day when you must face all those English classes you skipped in high school. Well let me tell you friend, the way to a passing grade may be long and hard. And at times your faith will falter and you will look to the PAC ceiling in despair. But do not give up hope friend, for there is a path that leads beyond the ELPE to the paradise of perpetual power-partying. And lift your chin, friend, for I have come to show you how to arrive at this paradise for yourself. Praise friend, for the mysteries of the ELPE are as simple to solve as

$$\int_0^{\infty} e^{-x^2} \text{ and far more useful.}$$

First, friend, you must learn The Law Of The ELPE as given to us by the all-wise, all-knowing Master-Of-Gurus, the Yogi David Castell:

"Heed not the evil Proctors, minions of the diabolic and dastardly Administrators, but instead know thou that quantity of ink and not quality of script shall be thy salvation."

Next, friend, there are three major concepts which you must keep in mind at all times during your ordeal: you must remember that English is (probably) your mother tongue; you must remember that even if you should fail in your quest for a passing grade, you will be forgiven and allowed to try again; and you must remember that the ELPE is a small pitfall in the long and winding road of frosh-week frolicking.

Now, friend, I will reveal to you, from my great well of knowledge, some of the inner workings of the cursed ELPE. When you first arrive in that infamous chamber of torture known as the PAC gym your mind will be awed by the immensity of the hall. Almost aimlessly, you will make your way to a chair and desk. But be warned! These objects are the playthings of the evil Proctors, especially designed to look stable but to wobble perpetually and then collapse the moment you get a real inspiration. When the evil Proctors have finished with their hypnotic and mind-dulling instructions, you will finally be face to face with your fate: The ELPE Essay Subject! These subjects, seemingly picked at random, have been hand-picked by the diabolic and dastardly Administrators to be as uninteresting and totally fact-deficient as possible.

But praise be to Castell, there is a way out of this hell. For in his wisdom, the Master-Of-Gurus did give to us the holy B.S.! Can you say Hallelujah, friend? Can you feel the power of the mighty B.S.? I say praise and glory, friend. I say thank Castell for this great gift. Get down on your knees and pray, friend, for the boon of B.S. shall be your salvation.

And now friend, I must go and spread this knowledge to others. But as I leave you I will impart to you this one last piece of wisdom. Although you may strive for a good mark and you may toil hard in the PAC, yes and even if sweat should form on your brow, you must always know, in the back of your mind, that there is life after ELPE and it's a party.



John-Thomas

THE CONTINUOUS ADVENTURES OF

WATMAN



This is the city. Watham City. The vast, sprawling metropolis that is a microcosm of the world, home to triumph and fear, hope and despair, good and evil, beauty and the William G. Davis Centre. Standing by, ever ready to charge to the defense of Watham City and its inhabitants are the dynamic duo, Watman and Duck.

Watman and Duck are, in their secret identities, undergraduate mathies. In time of need (or to air them out) they don their superhero costumes and become Watham's foremost fighting force—even outdoing Campus Security.

As we look in on them, it is near the end of Frosh Week, and the Dean has summoned the dynamic duo to his sixth floor chambers.

"I'm worried, Watman. Something strange is going on. By my count, exactly seventy-five Frosh are missing! And," he added pointedly, "they all came back from the MMT."

Watman looked pensive. "It's not that strange. Maybe they were scared away. Remember the first time that you saw a Stat-er-Combinatorics textbook?" The Dean frowned. "No, that's not it, Watman, we still have their tuition money." He read the question in Duck's eyes. "Yes, we want them back anyway. They represent the future of the faculty: future graduates, future researchers, future award winners, future revenues..." The Dean's eyes began to gleam. The dynamic duo snuck out the door as the Dean's voice continued "...future stats text purchasers, future..."

Watman and Duck retreated to the third floor and relaxed in the comfortable student lounges at the south end of the building. "Now, Duck," said Watman, "where might a math Frosh go that he or she could disappear without the others noticing?" Duck thought of the intensity of the players in the Campus Centre games room, where he had recently been feeding quarters to the Robotron machine. "Why, Holy Revolving Rasters, Watman, the electronic nerve centre of campus!"

"That's right, Duck, the terminal rooms here in MC. Probably on the second floor, since the Frosh will be using those machines. Let's go." Duck followed Watman as Watman raced out into the corridor, regretfully putting a quarter back into his Watutility belt.

"We'll check MC2018C first" said Watman "as it's the best choice for nefarious plots. There's an excellent printer there, and it's the most secluded room on the entire floor! I'll check out the room with my Watsensor, while you question any suspects."

Inside the terminal room was a lone Froshette. Duck moved instantly to talk with her while Watman calibrated his instrument. After a few minutes, Watman called to Duck. "I've found something." "Holy Heartthrob, Watman!" exclaimed Duck. "I got her name, Village room number, and phone number!" Watman looked at Duck quizzically. "In case we need to question her some more. She says she was to meet two friends here half an hour ago, but she couldn't find them."

"Suspicious," murmured Watman. "Especially so, since I'm getting peculiar readings from the floor right..." He pointed directly beneath them "...here."

Suddenly, the massive red tiles tilted, and the dynamic duo were sucked into an opening beneath the floor. From inside the tunnel came ominous echoes "...and by applying the generating function here as in example 4.3.1, we..."

The dynamic duo landed with a jolt. Watman drank it, and shook his head. "Hah, it'll take more than that to subdue us! We've already taken that course. Right, Duck? Duck?" Watman shook Duck awake. "...sorry, sir, what was the question? The answer is Ronald Reagan," said Duck lamely.

"Wow, Watman, we're in a tube of some sort. But where?"

"Look around, Duck. A picture of happy students eagerly paying their fees. A Michelin map showing the Village One cafeteria with three stars. This place couldn't possibly exist in the real world. That opening propelled us into a mental plane."

"Cartesian, Watman!"

"No, Duck, I'm serious. And from the campus maps strewn about, I'd say the Frosh came this way. But look closer! Hundreds of tiny purple rayon threads, and some pipe tobacco. Profs have been this way. Last, but not least, it leads south."

"Holy cerebral conduits, Watman, it's a—"

"Brain Drain, Duck, exactly. This must be the work of the base villain Stan Ford and his monied cronies in the Excited States of Hysteria. They have our professors, and now they want our Frosh."

Suddenly, a vast wind came up, louder and more powerful than the forces in the New York sewer system at Superbowl halftime. Watman and Duck were drawn inexorably southward.

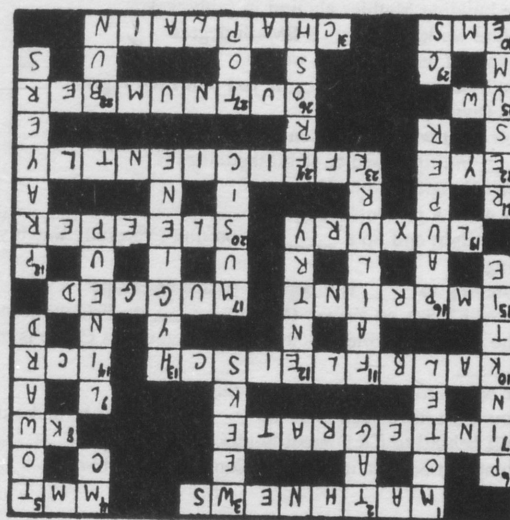
Will Watman save the exactly seventy-seven missing Frosh? Will Duck phone the attractive Froshette for some deeper investigation? Will the dynamic duo take research posts at MIT? Stay tuned in September for the continuous adventures of...

na-na-na-na na-na-na-na na-na-na-na na-na-na-na...WATMAN!

The Chuckler

GridWord Solution

Do the GridWord First, Please





Frosh GridComments

Welcome to the illustrious world of the GridWord. GridWord is the mathNEWS crossword that normally comes in two parts—a cryptic puzzle and a conventional puzzle—that allow you to win fame and fortune, but you'll learn more about that in the fall. The Frosh GridWord is not quite the same as what you'll see in mathNEWS in the fall, but hopefully it will provide you with some entertainment (and yes, it did take up some space as well). I tried to incorporate Frosh ideas into the puzzle, so you might want to read the clues with the answers if you don't want to try to figure it out yourself.

In the fall, GridWord will be more participative, with solvers submitting solutions and possibly winning prizes. I look forward to hearing from you then.

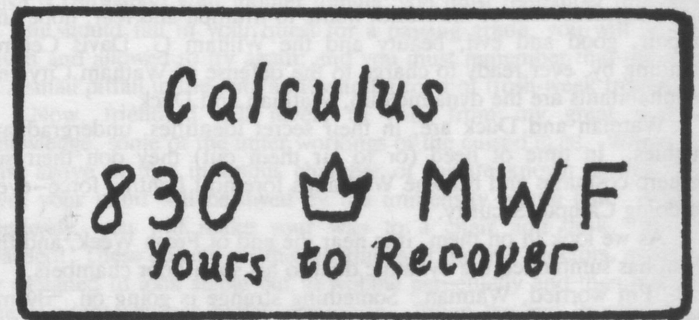
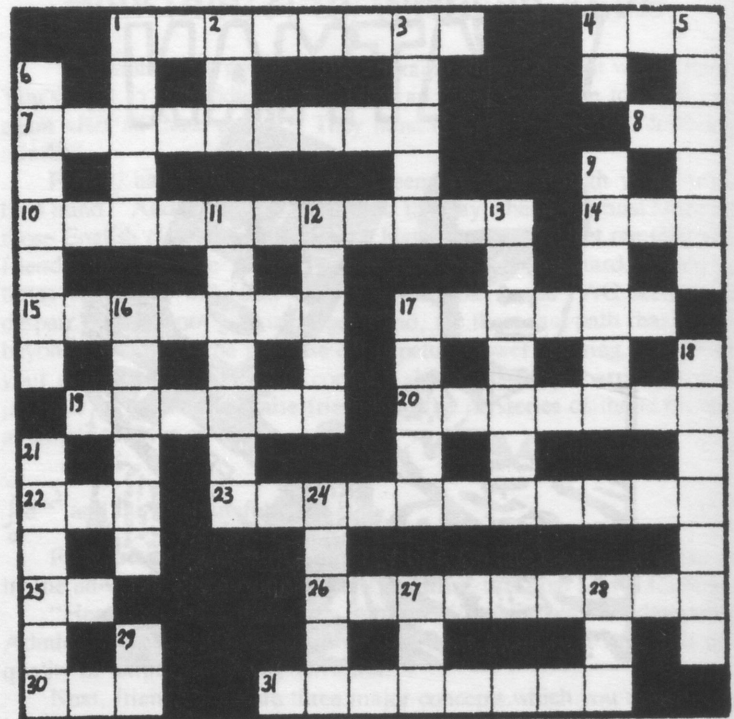
fletniowski

Across

1. What this be, man!
4. Coded afternoon orientation event (abbrev.)
7. Dreaded calculus operation
8. You be coming to dis here city (abbrev.)
10. The Dean (bow three times now)
14. The William G. Davis Centre (Bill-ding) houses the long-winded Institute for Computer Research (abbrev.)
15. Student newspaper
17. Robbed or had your picture taken by police
19. You can only possibly live in the lap of _____ on a work term
20. Hitchcock movie or calculus class
22. You must always keep one of these open when doing an assignment
23. One must _____ schedule one's time, whether or not the schedule is followed
25. Is this a small campus? (abbrev.)
26. The number of students here will vastly _____ those at your high school
30. It be the library (abbrev.)
31. Church college permanent resident

Down

1. A place to stay if you get sick of your roommates
2. A game to play if you like to try to touch people
3. It's only a matter of _____ until you start university
4. The building Mathies abound in (abbrev.)
5. You're working _____ a BMath degree
6. Symbol of orientation (2 wds.)
9. You'll be in a long _____ if you don't pre-register by mail (hyph.)
11. You must work if you don't want to get one of these
12. _____ into the Faculty of Mathematics is difficult—Congratulations!
13. It's quite a personal thing
16. You might end up a _____ if you don't carefully watch your spending
17. Listening to _____ is a popular means of escape
18. mathNEWS is an answer to your _____ on Friday mornings
21. One of the first things you must do if you're a Co-op is make up your _____
24. Ye who doth read this doth be this
27. You must have been near the _____ of your class to make it here
28. Half behind or C&D meat holder
29. Computer Science is much too long to say! (abbrev.)



Masthead

Congratulations, you've made it this far already! This is what we at mathNEWS call the masthead, a place where the editor (me) gets to ramble on about things that went wrong during the production of the issue and thank those that worked on the issue. If you come out and work on mathNEWS you will see your name in a similar space in other issues.

The contributors of articles and person-power (smile, Kerry) to this issue (complete with their high schools and home towns—check for yours!) were Brian Capstick (Westminster S.S., London, Ont.), Kerry Garnier (Saunders S.S., London, Ont.), Camille Goudeseune (St. Michael's Choir School, Toronto, Ont., home town Mississauga), Rob Hamden (Eastdale C.I., Oshawa, Ont.), John Herbert (Medway H.S., Arva, Ont., home town Granton), Stuart L. Hodgins (South Huron District H.S., Exeter, Ont.), Edwin Hoogerbeets (Southwood S.S., Cambridge, Ont.), Dave Kirkness (we're not sure, Owen Sound, Ont.), David Leibold (Central Huron S.S., Clinton, Ont., home town Blyth), Frank Letniowski (Huron Park S.S., Woodstock, Ont.), Rick McTavish (Huron Park S.S., Woodstock, Ont.), Stephan Mueller (Dunbar-ton H.S., Pickering, Ont.), Paul Obeda (Banting S.S., London, Ont.), Stephen Smith (Longstaff S.S., Richmond Hill, Ont., home town Thornhill), Bill Tilford (Parkside C.I., St. Thomas, Ont.), Paul Totten (Kennedy C.I., Windsor, Ont.), Andrew Tron (Humberside C.I., Toronto, Ont.), Tom Vandelloo (Central S.S., London, Ont.) and yours truly, Jim Jordan (Red Lake District H.S., Red Lake, Ont., home town Cochenour, transplanted to Sparwood, B.C.). Other articles were provided by Jim Kalbfleish and Peter Brillinger on behalf of the faculty, and from previous issues of mathNEWS. The Orientation Committee produced most of the pink pages at the end of the issue. You'll meet them when you get here. Thanks to two-thirds of the Orientation Directors for stretching our patience, trying to play hardball, and generally introducing the frosh to the world of committee politics. Thanks also to Gelco Express for losing one of Orientation's ads, forcing us to improvise.

Moral support came from Festus and the MathSoc office bear. Thanks to Graphic Services for their continued good work in printing mathNEWS, and to the Department of Computing Services for not letting the Imagen laser printer go down this weekend. A special thank you goes to the Computer Science Club for lending us a key so we could use their terminal in addition to ours in MathSoc. Shoe appears courtesy Mr. MacNelly and Tribune Media Services. The Far Side appears courtesy Gary Larson and Universal Press Syndicate. Various graphics and computer screens were from several Paranoia modules published by West End Games.

We've had four days of heat and humidity in a building where they turn off the air conditioning on the weekends. The mountain of empty Coke Classic cans to my right has grown to a 10-level monstrosity. (It looks impressive, though.) The winner in this year's Coca-Cola Classic Consumption derby is Stuart L. Hodgins with 15 over the weekend. The runner-up is defending (now former) champion W. Jim Jordan, who could only consume 12. Third place goes to Andrew W. Tron, with 8 in two days.

Sleep will come easily this week. We've spent 40 hours putting this issue together for your perusal and approval. Enjoy it. I know that my amazing support staff and I have, apart from the lack of sleep, enjoyed working on it.

I have one more regular issue to edit, then I'm graduating. Best wishes to you all.

ALL FROSH *STOP* HERE

Why? *In order to ATTEND ANY EVENTS you must REGISTER*

Where? **MATH LOUNGE** *(3rd floor Math & Computer Building)*

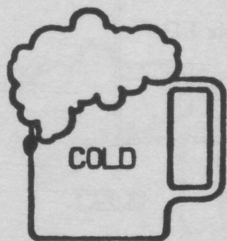
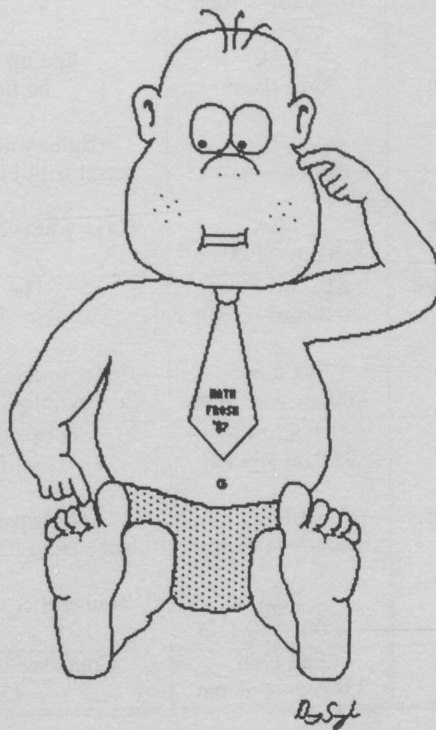
(pay \$25.00 for Frosh Package)

When? *Tuesday September 8th, 9am - 12:30 pm*

Here you will meet your **Big Brother and Big Sister** (Look for them on the Picture Board.) They will look after you and the two dozen other Frosh in your family, starting with the Panama Pub after Registration.

Your Pink Tie ♂ (Frosh Package) is your ticket to ALL EVENTS. (Yes, there is another reason, besides pride, to wear it.)

Bring your lock. Lockers are available for the week in the Math and Computer Building (MC), on the third floor.



Orientation '87 would like to thank all of these wonderful people and organisations who are providing prizes or other good stuff to us this year :

UW Record Store
20th Century Fox
British Airways
C.F.T.R. 680
Q 107
Proctor & Gamble
CFNY
Domino's
Labatt's
Fluffy's Restaurant
UW Book Store
The BombShelter
and many more!

Orientation '87 is brought to you by : The 1987 Orientation Committee
Your three Directors:
Bruce Boulding
Sean Licata
Kathy MacDougall

Math Orientation '87

The Big Week at a Glance

Day	Event	Place & Time	Comment
Tuesday Sept. 8	Drop-In Centre	MC 3rd Floor 9:00am→4:30pm	Come and meet your Big Brother and Sister and Pick up your Frosh Package.
	Campus Tours	All Day	A chance to learn about the campus
	Family Dinner	5pm→??	Get to know your "family" in a relaxed atmosphere
	Panama Pub	8:00pm→1:00am	Can you Hula??
Wednesday Sept. 9	Drop-In Centre	MC 3rd Floor 9:00am 4:30pm	Big Brothers and Sisters can answer questions and let you know what university is <i>really</i> all about.
	Faculty Lectures	All Day	Can you say Fun, Fun, Fun? (No.)
	Meet-Your-Prof BBQ	Columbia Lake	Meet your profs as they slave over hot coals to cook <i>your</i> dinner.
	ELPE	PAC 7:00pm→8:00pm	Unfortunately this one can't be missed.
Thursday Sept. 10	Drop-In Centre	MC 3rd Floor 10:00am→Noon	The Continuing Saga ...
	University Registration	PAC 9am→Noon	line up early—be sure and be finished by NOON
	Magical Mystery Tour	? Noon→6pm	Buses will be taking you on a secret trip! First buses leave at noon.
	Barn Dance	TBA 8:30pm→1:00am	Have you ever <i>seen</i> a Dancing Barn?
Friday Sept. 11	Drop-In Centre	MC 3rd Floor 10:00am→Noon	The Final Episode!
	Fed Day	We'll See 1:00pm→10:30pm	Meet under the Big Pink Tie & the "mathies" will stampede together.
Saturday Sept. 12	Shinerama	About town 9:00am→Noon	All faculties washing cars for charity.
	Elora Gorge	Elora Noon→4:00pm	Buses leave at noon, bike riders leave from CS sculpture at 10:00am.
	(n+1) Pub	TBA 8:00pm→??	Remember to bring your <i>fake</i> I.D.
Sunday Sept. 13	Movies	Fed Hall 2:00pm→6:00pm	Come see your favourite movie! (Yeah, sure.)

Orientation Points

By now, you smart frosh (mathNEWS, at least, knows the real truth) will have noticed that there was a long list of Sponsors, but hardly any mention of where the donated prizes go. Clever Frosh, already on the lookout for Freebies. Well, points are assigned to each family (Big Bro & Sis & associated little geese) on the basis of participation in events. Accumulated points could obtain great wonders for you and your family. (Soundtrack Up.) Look at all these fabulous prizes! (Cue Vanna White ...)

ALL FROSH *STOP* HERE

Why? *In order to ATTEND ANY EVENTS you must REGISTER*

Where? **MATH LOUNGE** *(3rd floor Math & Computer Building)*

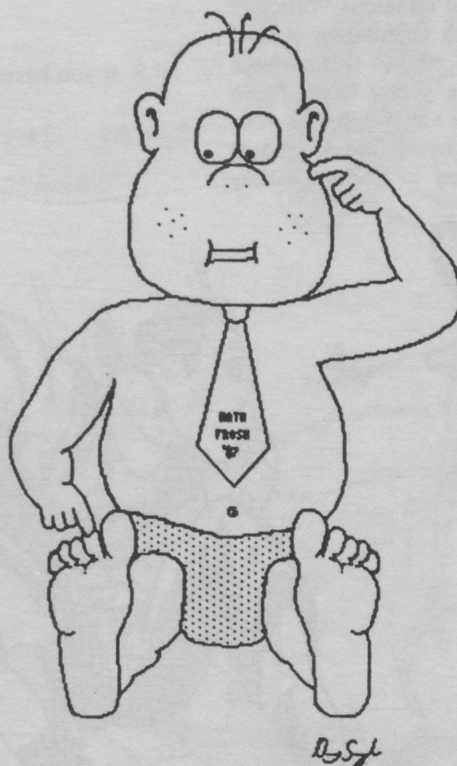
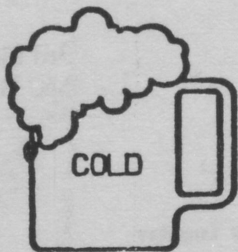
(pay \$25.00 for Frosh Package)

When? *Tuesday September 8th, 9am - 12:30 pm*

Here you will meet your **Big Brother** and **Big Sister** (Look for them on the Picture Board.) They will look after you and the two dozen other Frosh in your family, starting with the Panama Pub after Registration.

Your Pink Tie ♂ (Frosh Package) is your ticket to ALL EVENTS. (Yes, there is another reason, besides pride, to wear it.)

Bring your lock. Lockers are available for the week in the Math and Computer Building (MC), on the third floor.



Orientation '87 is brought to you by : The 1987 Orientation Committee
Your three Directors:
Bruce Boulding
Sean Licata
Kathy MacDougall

Orientation '87 would like to thank all of these wonderful people and organisations who are providing prizes or other good stuff to us this year :

UW Record Store
20th Century Fox
British Airways
C.F.T.R. 680
Q 107
Proctor & Gamble
CFNY
Domino's
Labatt's
Fluffy's Restaurant
UW Book Store
The BombShelter
and many more!

This year's Frosh information comes in a rather unique format. Two thirds is mathNEWS, a sourcebook of handy data to keep with you through first year, and beyond. The other third is this, the *Orientation Flyer '87*, your pink-eyed guide to the non-stop fun of Frosh week. A co-operative effort between mathNEWS and Orientation '87; all that you need to know about Orientation '87 is herein contained. Well, almost all of it ...

Orientation Directors' Message

This is it! The beginning of your University life! It could very well be the most important week of your life because **Math Orientation** gives you a chance to relax, have fun, and party... with the people you will be going to school with for the next few (million) years.

What are you doing all week? Well, your **Math Orientation Committee** has over seventeen different events planned for you to attend starting Tuesday September 8th and continuing through to Sunday September 13th.

Will I be swallowed up? Will I be just one of the crowd? Well, **NO!** You have been disorganised into small groups of 25. Each group has two or three upper year students (older and wiser(?)) whose sole purpose in life is to make sure you (younger and not so wise) have a good time and meet lots of people. Who are these upper year students? They are your **Big Brother** and **Big Sister** (of course!) and these groups are your "families." That makes 31 families (800 *frosh*, a lot of people to meet).

In this issue of **mathNEWS** you will find advertisements for all of the events throughout **Orientation week**. Here is a quick rundown for you: you will hula-ing at the **PANAMA PUB**, gambling at the **CASINO NIGHT**, doing *something* at the **MAGICAL MYSTERY TOUR**, doing the hoe-down at the **BARN DANCE**, swimming and relaxing at **ELORA GORGE**, having a fantastic time at the **(n + 1) PUB**, and finishing off a great week at the **MOVIE AFTERNOON!** Throughout this week, we will be giving out many great *prizes*, so come out and enjoy!

When do I meet all these people? Tuesday, September 8th, of course! We have set up a **DROP-IN CENTRE** on the third floor of the Math and Computer building (MC). On Tuesday when you arrive, come up to the third floor and pick up your *Frosh Kits* for a (minimal?) fee. Contained in this package is the infamous "official" **Math Pink Tie**, which is your ticket to all **Math Orientation** events. You *must* wear your glorious **Pink Tie** all week. Also in this package is the first ever (well, at least for the last five years) **Math Frosh T-shirt**, and a variety of other stuff. When you are picking up your **Pink Tie** you can meet your **Big Siblings** while enjoying free doughnuts and refreshments. Your **Big Siblings** will be easy to find since they

will be wearing, you guessed it, pink! T-shirts tastefully monogrammed with their names—and will be wearing those same shirts *all* week! If that isn't enough for you dumb *Frosh* we have a picture board on the third floor—what could be easier? If your one of your **Big Siblings** is not available just ask any committee member (remember, pink shirts) to help you find them.

Your **Big Siblings** are ready to answer *all* of your questions about the **Orientation week**, course selections, good/bad profs (profs = teacher, but in university), you name it, we will try to answer it. The only question we will not answer is "What is the **MAGICAL MYSTERY TOUR?**" It wouldn't be a mystery if they told you, would it?

We realise that most of you do not know where the different events are being held, or how to get there. To solve this minor problem, your **Big Brother** and/or **Sister** will be conducting campus tours—and if you forget where you are supposed to be, they will escort you there. One last note: there are **NO AGE RESTRICTIONS** (not to worry, though, alcohol will be served to those who have reached the age of drink-ability, 19 years) at any of the seventeen great awesome astounding amazing events. Remember to bring **ID** and your **Pink Tie** to the events.

It's time to close off the message now. 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.

See you in September.

Sean Licata & Kathy MacDougall

Math Orientation Directors 1987

P.S. If you haven't guessed it already a Mathie's colour is pink.

D
R
O
P IN C
E
N
T
R
E



Get Your
Pink &

3rd Floor
MC Building

All Day Tuesday

Meet **Kathy**, **Bruce** and **Sean**, your **Orientation Directors**.
Meet your **Big Siblings** and the rest of your family.
Come be a part of the fun.

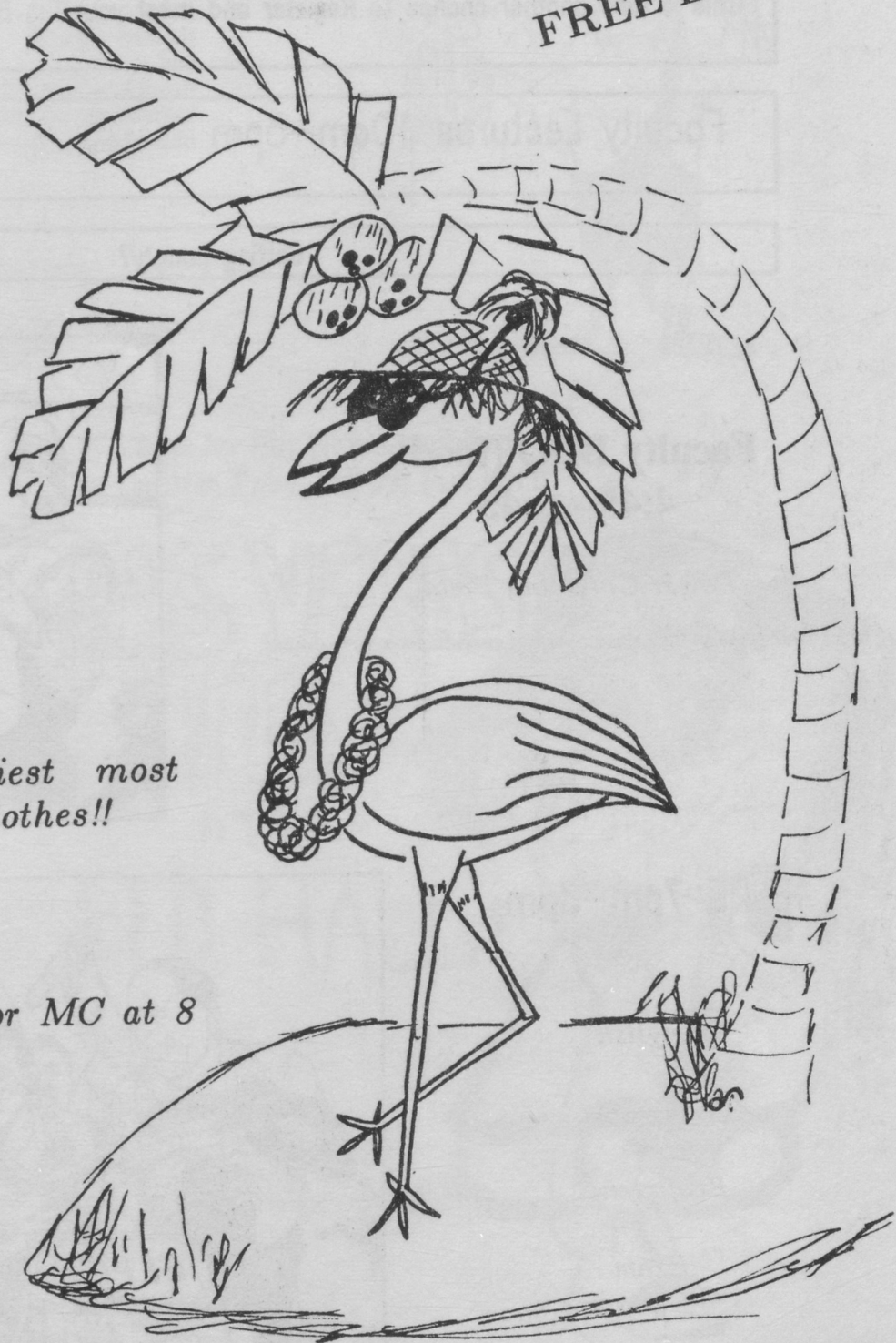
MIDNIGHT LIMBO CONTEST

RUM
FREE LEI!

Pineapples

Tuesday, September 8, 1987
8:00 PM
South Campus Hall
Math Orientation '87 Presents

PANAMA PUB



*Wear your wildest, tackiest most
colourful, flower-printed clothes!!*

*Everyone meets at 3rd floor MC at 8
PM.*

-No age restriction-

Calypso

PEE-WEE HERMAN DANCE CONTEST!

Caribbean

Drop-In-Centre from 9am-4:30

And take the ET CETERA TOUR for interesting and useful information.
This is also another chance to Register and meet your Big Brother & Sister (family).

Faculty Lectures 10am-3pm

Getting hungry?

Faculty BBQ (food) 4:45 - 6:45

Lower Columbia Field

Meet your profs as they slave over hot coals to cook your dinner.



ELPE 7pm-8pm

English

Language

Proficiency

Exam

Ask your
Big Bro/Sis
for pointers.



Pressure? No pressure!

Math Frosh

Meet Grunk—our Orientation Mascot. He doesn't speak so well, being raised in Elora Gorge, but he's great fun at parties. With his influence, you too can learn to be a party animal, so look for him throughout the week. He promises to be at the Drop-In Centre awaiting to exchange SLOKAs with you. You will surely become attached to him throughout the orientation week since he will always be near you.



The Origin of the Species

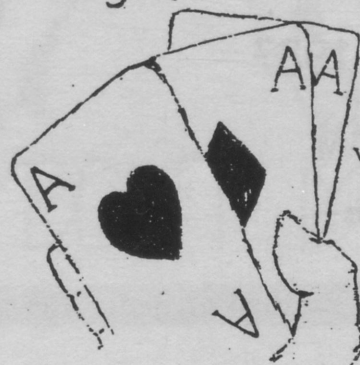
Hierarchy of Life

- Descartes
- Mathies
- The Natural Log/The Pink Tie δ
- C+D
- mathNEWS
- Coke Classic
- Vanna White/Tom Cruise
- MathSoc
- Club 750
- Bombshelter
- The Far Side
- Jolt Cola (not available in Ontario)
- SCOOPS
- HP Calculators
- Cinema Gratis
- π
- Math Frosh
- Other Frosh
- 8:30 classes
- Artsies
- "
- $u(t)$
- Jim Bakker
- TA's
- Campus Sculptures
- The William G. Davis Centre
- High school down the road (WLU)
- New Coke
- ϵ
- Dept. of Co-operative Education and Career Services
- Village Food
- Amie Dyck
- IBM
- Doug Wright
- Keeners
- Imprint
- UWO (Western)
- Engineers
- P-word
- EngSoc
- The Ridgid Tool
- Hierarchies of things

It's time for Big Time Gambling!
The Cash is Fake, but the Fun Isn't!

LAS VEGAS NITE !! AT FED HALL!

Wed., Sept. 9/87
8pm.-1am.
Fantastic Prizes,
Dancing, Poker, Roulette,
Blackjack



Free Admission
with your Frosh
ticket!!!

*NO AGE
LIMIT*



Drop-In-Centre

10am to 12 noon

University Registration

- Pay tuition fees, (bring cheque book and ID)
- Ask your Big Bro/Sis how to avoid line ups.



COME TO A BARN DANCE



SQUARE DANCING

CONTESTS

PRIZES

THURSDAY SEPT. 10 1987

8:30 PM TO 1:00 AM

—No age restriction—

Talk to your Big Brother or Sister for more information

Ladies and Gentlemen,

THE MAIN EVENT!!

Math Orientation '87 proudly presents,

-MMT-

THE MAGICAL MYSTERY TOUR

"WE MAKE YOU DISAPPEAR FOR THE DAY"



free food,
free drink,
and drink, and
more drink...

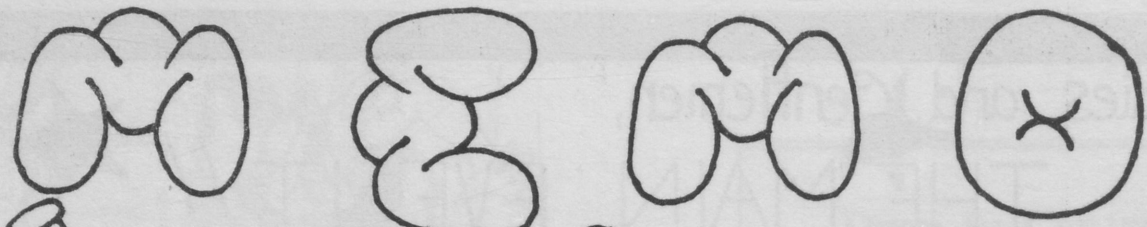
DATE: Thurs. Sept. 10, '87

TIME: first bus leaves at
12:00 noon, last at
12:45 P.M.

WHERE: loading docks of
math building
(NW corner)

No Age Restriction

DON'T MISS IT!!



Friday
FED'S FROSH DAY

All faculties washing cars for Charity.
 Help us outdo those Engineers.

SHINERAMA 9am-12pm
 Drop-In-Centre
 10am to 12 noon

September 7	Monday
September 8	Tuesday
September 8	Tuesday
September 11	Friday
September 11	Friday
September 14	Monday
September 14	Monday
September 21	Monday
September 22	Tuesday
September 25	Friday

1988

University Holiday*
Final Examination Results
Registration - Undergraduate
Winter Term
Meeting - Senate Executive Comm
Lectures Begin - Engineering and
Lectures Begin - Other Courses
Start of Late Fees - Winter Term
Course-Drop or Withdrawal Deadl
Meeting - Board of Governors
Meeting - University Senate
Examinations - Correspondence
Meeting - Board of Govern
End of Course-Change P

Labour Day - University Holiday*
 Registration Begins - Undergraduate
 Meeting - Senate Executive Comm
 Registration - Graduate Studies - Fal
 Registration Ends - Undergraduate Pr
 Lectures Begin - Fall Term
 of Late Fees - Fall Term
 - University Senate, 7:30 p.m.
 Board of Governors Executive
 Deadline - Correspond
 Change Period - Fall

Meeting - Senate Exec
 Preregistration Begins
 Preregistration Ends
 Meeting - Univer

Just when you thought it was the end of frosh week...come out to

ELORA GORGE
12-4 pm

Buses leave behind the MC Building, but for those who wish to bike it there (those of you who can still stand that is); Greg Lemonde, Barry Matsui and Steve Bauer will be leaving from the CS sculpture (the funny looking blue thing beside the MC).

Saturday

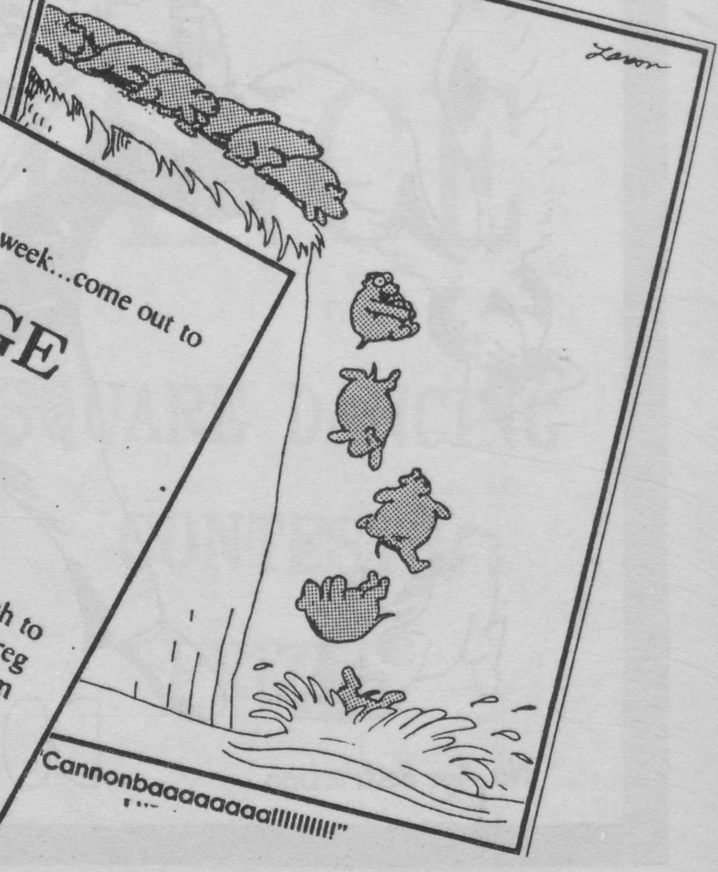
NO AGE LIMIT



Meeting - Senate Ex
Application Deadlin
Meeting - Univer
Study Week Beg
Examination R
Meeting -
Preregistr
Fall
Prereg
Me
Me
Lect
Course-Ch

Good Friday - Univer
Examinations Begin - Winter
Meeting - Senate Executive Comm
Meeting - Board of Governors, 4:30 p.m.
Meeting - University Senate, 7:30 p.m.
Course - Drop or Withdrawal Deadline - Correspondence
Winter Term
Examinations End - Winter Term
Final Examinations Results Due - Winter Term

December 4	Monday
December 7	Thursday
December 7	Friday



SATURDAY SEPT 12th-8:00

(n+1) Pub

(townhouse party)



$\lim_{n \rightarrow \infty} (\text{party})^n$ is not

QUITE ENOUGH!

~~$\frac{d}{dx} (x)$~~

~~$\frac{\infty}{n}$~~

~~$\int_n^\infty (\text{wild})$~~

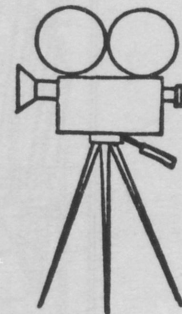
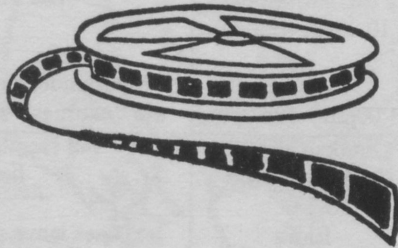


--No age restriction--

Sunday is a day of (semi) rest:

FED HALL MOVIES

We're starting late so you can nurse your hangover.



RECORD STORE
 CAMPUS CENTRE
 LOWER LEVEL
 UNIVERSITY OF WATERLOO

Special orders
 No Extra Charge

Special
 Sponsor of
 Orientation
 1987

- BLANK TAPES (BASF and MAXELL)
- TAPE ACCESSORIES
- DISCWASHER KITS and REFILLS
- MUSICIAN MAGAZINE
- MINI STERO HEADPHONES
- BLANK VIDEOTAPES
- SPECIAL BINS — HUNDRED OF RECORDS UNDER \$4.
- CARBON FIBRE RECORD CLEANER

The Sponsors listed on the front page have donated various prizes to Orientation '87. These will be awarded to Families who have accumulated points through their participation in Frosh Week events. The more events you attend, the better your chances.

Graphics and Illustrations Courtesy of West End Games, makers of Paranoia.

WEST END GAMES
 251 West 30th Street
 New York, NY 10001

PARANOIA

Math Orientation '87

The Big Week at a Glance

Day	Event	Place & Time	Comment
Tuesday Sept. 8	Drop-In Centre	MC 3rd Floor 9:00am→4:30pm	Come and meet your Big Brother and Sister and Pick up your Frosh Package.
	Campus Tours	All Day	A chance to learn about the campus
	Family Dinner	5pm→??	Get to know your "family" in a relaxed atmosphere
	Panama Pub	8:00pm→1:00am	Can you Hula??
Wednesday Sept. 9	Drop-In Centre	MC 3rd Floor 9:00am 4:30pm	Big Brothers and Sisters can answer questions and let you know what university is <i>really</i> all about.
	Faculty Lectures	All Day	Can you say Fun, Fun, Fun?
	Meet-Your-Prof BBQ	Columbia Lake	Meet your profs as they slave over hot coals to cook <i>your</i> dinner.
	ELPE	PAC 7:00pm→8:00pm	Unfortunately this one can't be missed.
Rhursday Sept. 10	Drop-In Centre	MC 3rd Floor 10:00am→Noon	The Continuing Saga ...
	University Registration	PAC 9am→Noon	line up early—be sure and be finished by NOON
	Magical Mystery Tour	? Noon→6pm	Buses will be taking you on a secret trip! First buses leave at noon.
	Barn Dance	TBA 8:30pm→1:00am	Have you ever <i>seen</i> a Dancing Barn?
Friday Sept. 11	Drop-In Centre	MC 3rd Floor 10:00am→Noon	The Final Episode!
	Fed Day	We'll See 1:00pm→10:30pm	Meet under the Big Pink Tie δ and the "mathies" will stampede together.
Saturday Sept. 12	Shinerama	About town 9:00am→Noon	All faculties washing cars for charity.
	Elora Gorge	Elora Noon→4:00pm	Buses leave at noon, bike riders leave from CS sculpture at 10:00am.
	(n+1) Pub	TBA 8:00pm→??	Remember to bring your <i>fake</i> I.D.
Usnday Sept. 13	Movies	Fed Hall 2:00pm→6:00pm	Come see your favourite movie! (Yeah, sure.)

Orientation Flyer 87 is an abnormal emergency response to a thoroughly untenable situation. Prepared by the Orientation '87 staff with technical assistance from mathNEWS, it is a publication funded by and responsible to the Mathematics Society at the University of Waterloo. Content is the responsibility of the Orientation Directors and Orientation Publications Co-ordinator, however any opinions expressed herein are those of the authors and not necessarily those of MathSoc or Orientation Flyer 87. Send your correspondence to: Orientation Flyer 87, MC 3038, University of Waterloo, 200 University Ave. W., Waterloo, Ontario, Canada, N2L 3G1