mathSoc at work:

Last Friday, Hallowe'en, Mathsoc was visited by a number of sub-humans who had dressed up as n-jineers, complete with 10 pounds of scrap metal, train-driver hats, capes and vacant stares. When the office irregulars refused to hand out the goodies which were to be saved for the Hallowe'en Pub that night, they became incensed and attempted to force their entry, to the point where they had to be physically restrained, doing superficial damage to the wall of the computer science club. At this point it was realized that it had all been a clever plot by the n-jineers to gain entry to the office and grab the pink tie. Effective countermeasures were necessary: it would have to be chemical warfare!

n'jineers BOMBED

Half a sentillion elementary entities of the oxide of hydrogen were collected and transported to The Building's ramparts. Thus it was that the Mathsoc Office Irregulars turned what had been a glorious, triumphal march into a hasty, inglorious, and frankly soaking wet retreat. Up the mathies!!

A mere dampening of spirits, however, is not enough to deter a genuine sub-human. You have to do that twice just to get its attention! Which is why, at this desperate time in our society's history, your Mathsoc needs you. Yes, you! YOU are the one person who can help avenge this violation of mathie territory. So come to Mathsoc (MC 3038) today, and tell them you want to teach the troglodytes a lesson!

FRIDAY, NOVEMBER 14, 1975
ISSUE 9.8

mathNEWS

FLASH: SCOOP

An Open Letter to
John M. Shortall
President, Federation of Students

Dear Mr. Shortall

I feel that my job as Treasurer of the Federation has been a detriment to my school work. Also I have not accomplished as much as I hoped I could as Treasurer and I am better able to devote my energies to the Math Society and accomplish more there. As you know I entered your executive with what I thought was a basis of agreement with you on major issues. This has not proven to be the case, especially in areas of financial policy as has been shown recently. Because of the inability of us to reach agreement on basic fundamental issues, I believe that it is in my best interest and in the best interest of you and the Federation of Students that I resign from the position of Treasurer of the Federation of Students effective immediately. I have considered this action for quite a while and felt that now was the time to act. Though I was chosen last spring for a lack of otherwise qualified personnel, I have nonetheless tried to fulfill the duties of my position in the best way, as I see the position.

I plan to continue as an active voice for the Math students from my position as a representative on the Federation Students' Council. I will attend Executive, Board of Entertainment, Education, and External Affairs meetings as an interested observer. I wish you, Mr. Shortall, the best of luck as President especially in OFS and in dealing with the administration. I hope you will find a qualified person for Treasurer with whom you can reach a basis of agreement. I learned a great deal from sitting on your executive and thank you for the pleasure. You have been a hard-working President and a decent and fair-minded individual.

J.J.LONG

NEW COUNCIL RATIFIED

Mathsoc council met tonight (Tuesday) as scheduled. At first it appeared that there would not be quorum, but 8 voting members were found and their number jumped to 15 as those ~~ELECTIONS~~ acclamations last month were ratified.

J.J. Long announced his resignation as federation treasurer. All motions were carried practically unanimously, except one: Greg Andrews moved to ask the appropriate committee of the Faculty or University to do something about the building's pigeons. This was defeated by 4 votes to 1, with 10 abstentions.

for brunch: E & K Math Contests

Two math contests were written Monday night: the "Special-K" for freshmen and the "Big-E(uler)" for upperclassmen. One contestant said, "It was interesting, challenging, and frankly hard, but it was also fun. Questions like these gave some people a hard time, but it was interesting to discover just how much one knew. We are lucky to have someone like Prof. Klamkin who is willing to put in the time these contests require." Sample questions:

(K) Prove that every tetrahedron has at least one vertex whose incident edges are congruent to the sides of some triangle.

(E) Determine the minimum length convex curve circumscribing a given triangle such that the area of the four regions formed are all equal.

LET THE CHIPS FALL WHERE THEY

BURLOAF

Every night without fail (usually) Security takes time out from their busy work of getting cars towed away to go around campus and block off various roads with chains. Cyclists are usually aware of these things and realize they should be avoided. However, there is the odd time when someone isn't watching, and finds himself sailing over his handlebars on an unscheduled flight path. Now, sometimes the chains are pretty slack, and the centres may hang only a couple of inches above the ground. You might think that if you were to cycle into them you would ride over them. This is not the case. The chains have most cunningly been designed. Because they are anchored to posts at the height they are, when a bike wheel rolls forward, forces cause the chain to be drawn up the front of the wheel so that eventually the front fork is hit, guaranteeing a mangled fender if you have fenders. The height of the posts assures that even though the chain is almost laying on the ground, it will still act this way.

* * *

We present, this week, a list of Hack buzzwords. Learn these words, use them, and you can sound just like a hack. People tend to form buzzwords for things that they talk about a lot, things which are important to them and always on their minds. Here are a few of the Hack words.

LUNCH - Lunch is a meal hacks eat, usually around 2 or 3 P.M. Hacks eat lunch at the Campus Centre or at South Campus Hall, usually. As with the Honeywell machine, hacks tend to abbreviate things to four letters, hence "lunc" instead of "lunch"

JOOS - JOOs (pronounced "juice", note spelling with O's (zeros) rather than O's) is what hacks go for when not hungry enough for a big meal. The third floor math lounge machines are where hacks have jOOses. A jOOs can include solid items like chips and "tar bars" as well as liquid stuff (frOOt jOOs). During the course of a day (or night) hacks may go for three, four, five, ... jOOses.

CONE - this is what you can get from the ice cream stand in the Campus Centre. Hacks have been known to go for two (maybe three) cOnes a day. The hacks are regulars, familiar to the scoopers who work there.

FOOD - This word can mean anything edible that you have to pay for, although it is generally used in conversations about dinner. Hacks are the ones who rush in to South Campus Hall five minutes before it closes so they can get the last scrapings before the place closes.

Hacks have several off campus places to which they like to retire, popular ones include Mother's, "John's", "Harvey's" Dairy Queen and Sonny's (last one not overly popular). The problem with hacks is that they are always running at least two hours late, and therefore usually decide to go somewhere just as a place is about to close.

The roving Action Burloaf was touring the third floor of the Math building when from the Mathsoc office came Kathy X pulling your Mathsoc president on a swivel chair out into the halls. Upon dragging our president as far as a painter, X begged the painter to paint the president. He began to paint him, but quickly our president came to his own rescue by pulling out some form that revealed he was to be painted pink. Well the painter had no pink paint and our president was saved. Now he just had to stop X from towing him to somewhere or other. He was protesting, using the excuse he had an assignment to do. X realized this was a weak excuse from our president, so she continued on her way. X with our Mathsoc president in tow were last seen by the Burloaf disappearing though a door to the down staircase.

* * *

The Computer Science Club president just told me that things are moving and that Honeywell user ids that were to be given out by the club are now just around the corner. He told me though that there's a little red tape. He asks all people who were promised a user id to come to the CSC office, opposite Math Soc (M&C 3037) so that the CSC can get your name as you are known by the University (i.e., they want to see a student card, class schedule, fee statement, required-to-withdraw notice, anything on which the University has printed your name). Only people who requested IDs way long ago at the first meeting are to get IDs.

* * *

This week's INTEGER_OF_THE_WEEK is:

-1

-1 has a few interesting properties as well as several uninteresting ones. For instance, -1 is one of the two only units or invertible elements of the ring of integers. -1 is the largest negative integer. It is perfect odd powers. (I.e., -1 is a perfect cube, perfect fifth power, etc., but not a perfect square or fourth power.) Although they usually only talk of 2, 3, 5, ... as being prime numbers, -2, -3, -5, ... are also considered prime. However this might lead you to say that 2 * 2 = 4 = -2 * -2 and therefore the unique factorization theorem appears to fail. However, we are bailed out by saying that two factorizations are the same if we can factor out units such that their product is 1, i.e., -2 * -2 = (-1 * 2) * (-1 * 2) = (-1 * -1) * 2 * 2 = 1 * 2 * 2 = 2 * 2. -1 is I squared where i is the complex number, defined as the square root of -1 (naturally). -1 also represents a first (as far as I know) in that we have never had a negative INTEGER_OF_THE_WEEK. I put it in after much complaining by someone who felt I was biased in my selection of Integersm, and decided he would stick up for negative numbers. Because powers of -1 generate an alternating sequence of units, 1, -1, 1, -1, 1, -1, ..., it is used a lot in formulas that need to generatre elements with alternating signs.

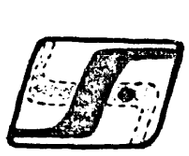
GAMING

There will be a broomball game in McCormick on Saturday 15th at 10:00 pm. It will be

DEAN vs GRADS

For more information contact Gerry Lawless and Margaret Reed.

fed REPort



D. Long

On Thursday, November 6, Federation Council met in room NH 3006. At the meeting Tom Morrisey was hired as the Federation-Societies Course Critique Coordinator. Also, the matter of the Federation privilege cards was discussed. These cards, which grant free admission to a number of Federation events, are held by all Federation Executive members, Society presidents, members of the Board of Entertainment and Communications plus Student Councillors. Art Ram saw financial harm to the federation if all council members and other card holders used their privileges at one event. Shane Roberts and John Shortall saw merit in the system, saving these cards were just a reward for councillors. Shortall did read a letter from Dave McLellan of ES which chastised the actions of course. A compromise motion by Gary Dryden granting the free-admission privilege for council members only (not their guests) was passed by a wide margin as an interim measure.

Then came the issue that would involve much controversy in the Federation. Radio Waterloo responded to my request to apply for unallocated funds in the General Budget. They asked for a part-time coordinator at $72.50 weekly for 26 weeks and for money to pay for increased Bell Canada costs, 8-track tapes and microphones. In Executive a motion proposed by President Shortall recommended giving $4,680 to Radio Waterloo. This was to cover salary for a full time co-ordinator at $145 weekly, $600 for Bell Canada expenses and $300 for 8-track tapes. Attempts by me to reach a compromise on the Executive failed. When this motion came to council An amendment to the motion, reducing the co-ordinator's salary to $72.50 weekly, was proposed by Gary Dryden and seconded by new ES rep Gary Marshall.

I supported the Dryden amendment, which passed in a close vote (to the displeasure of Shortall). The main motion then passed by a wide margin. After this passed, Andrew Telegdi gave notice of motion to rescind the motion at the next meeting, on Sunday, November 16 (at 7 pm in NH 3006). An attempt to set up a hiring committee for the co-ordinator was not approved because Speaker Phil Reilly called quorum.

I would like to explain why I opposed the hiring of a full-time co-ordinator. Radio Waterloo had only asked for a part-time co-ordinator. To give them more than they asked for seemed irresponsible. Also I calculated that if we gave $4,680 to Radio Waterloo then we'd only have $5,500 left unallocated in our general fund. This fund was estimated at $280,000 and was to last us until April 30. I thought that we would have too low a budgetary cushion. I felt that I had to take a stand in this issue to prove a point. Though my decision may have been unpopular, I believed it at the time to be in the best interests of the Federation.

After the meeting I received comments accusing me of being unresponsive to the needs of Radio Waterloo, of denying the prospective co-ordinator a livelihood, and of using the issue to depose John Shortall. I did feel that it was good for Shortall to lose on this issue, because I believe that it will make him a better President. Also I do have concern for the affairs of Radio Waterloo and I tried to find the extra money for them on Friday. However I found that after adding our present fee revenue to the amount expected in January, we would have only $3,500 left unallocated (out of $278,000, which is the new total fee revenue estimate if we gave Radio Waterloo a full-time co-ordinator and $4,680). Trying to have concern for Radio Waterloo and the budget, I have worked out a compromise which I shall propose to council (despite my resignation) because I feel that this is a good proposal. I am against using the auxiliary funds such as the Pub, Record Store, and Flying Shop, to subsidize the General Fund and vice versa. Both the university and our auditors have recommended against this, mainly because a few years ago the Federation complained about the university doing a similar thing. Though we have an accumulated surplus of $100,000, much of that is in equity, not cash, or is committed to such projects as the pub, which we still do not own and which is only now recovering its accumulated deficit.

The compromise involves granting Radio Waterloo $3,727 ($100 short of what they wanted). This consists of a weekly salary of $72.50 for a part-time co-ordinator for five weeks from November 30, 1975, to January 3, 1976, and a weekly salary of $145 for 17 weeks commencing January 4, 1976. Also included is $600 for Bell Canada costs and $300 for 8-track tapes. Dave Assmun, unofficial head of Radio Waterloo, seemed to be in an agreement with this request and was willing to give up new microphones for the time being. This proposal will leave about $4,200 unallocated in the General Fund.

Hopefully the proposal will be agreed upon by the Executive and Council. I feel that it is in the best interest of all concerned. I intend to support it at council because I will still retain my position as a council rep despite my resignation as Treasurer.

BORED?

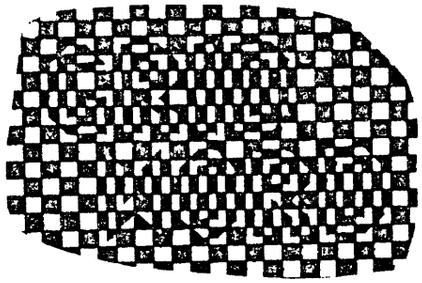
The Creative Arts Board presents:

1. Wild Duck (play) November 18-22, 8 pm.
2. Carol Fantasy (Christmas concert) November 28-29, 8 pm; November 30, 2:30 pm; featuring the Beethoven 9th "Song of Joy", and Bach Cantata #142 "Uns ist ein Kind Geboren"
3. An evening folk concert near the end of the month. Visit the Cultural Programme Centre (ML 254) for further info.

Any person or group interested in doing a noon hour or evening concert (event), contact Gary Prudence, extension 3457 or ML 255, for details of the board's sponsorship.

BLOOD DONOR CLINIC NOV 18 to 20

It is that time of the term for the Red Cross Blood Donor Clinic. The operation is set up in MC 3002, which is the largest side of the 3rd-floor lounge (the half closest to Mathsoc, MC 3038). The faculty that has the largest percentage turnout of donors wins the Blood Bowl (a trophy). The dates are Tuesday, Wednesday, and Thursday, November 18, 19, and 20.



Perhaps this week's GRIDWORD requires a bit of an explanation, like, why was it even printed? Unfortunately nobody knows, so the following brief comment will have to do.

By examining the clues you may have already figured out that the solutions to them are numbers. Although this is correct, the required solutions are in fact letters. Or to be slightly more accurate, Roman Numerals.

Possibly a bit confusing, but this and a bit of logic should be all you need to get started and finally finished.

HORIZONTAL

1. 33 vertical - 300
4. 35 vert x 8
8. 86 horizontal - 3
11. 12 vert - 10
13. 23 vert x 13
15. 33 hor - 200
17. 65 hor x 62 vert
18. 10 vert x 5
20. 59 vert + 5
21. 31 vert / 10
22. 67 vert x 4
24. 51 vert + 800
26. 67 hor / 5
28. 66 hor x 5
29. 21 hor x 100
30. 1 hor - 16 vert
32. 72 vert + 2
33. 15 hor + 200
34. 87 hor x 100
36. 5 vert - 74 hor
38. 21 vert - 9
40. 29 hor + 90
42. 61 hor + 115
44. 51 hor - 6 vert
46. 67 hor - 52 vert
47. 21 vert + 1
48. 27 vert x 14
49. 21 hor x 20
51. 72 vert x 21
53. 65 hor + 20
55. 78 hor + 50
56. 69 hor - 50
58. 21 hor x 2
60. 87 hor x 3
61. 4 hor / 12
63. 31 vert + 0
65. 78 hor / 10
66. 72 hor + 2
67. 26 hor + 104
69. 42 hor + 90
72. 31 vert - 11
74. 78 hor - 27 vert
75. 67 hor - 63 hor
77. 72 hor - 27 vert
78. 53 hor + 115
79. 53 hor - 26 hor
80. 14 vert + 30
82. 31 vert - 13
85. 58 hor x 3
86. 39 vert x 2
87. 84 vert + 13

VERTICAL

1. 29 vert - 200
2. 62 vert x 15
3. 31 vert x 11
4. 14 vert x 10
5. 15 hor - 100
6. 76 vert x 21
7. 27 vert x 5
8. 59 vert x 20
9. 39 vert - 21
10. 6 vert / 10
12. 11 hor + 10
14. 8 vert + 21
16. 15 hor x 3
19. 46 hor x 10
21. 38 hor + 9
23. 31 vert / 2
24. 67 hor x 10
25. 50 vert - 15
27. 71 vert - 31
29. 33 hor + 400
31. 21 hor x 10
33. 30 hor x 16
34. 54 vert x 30
35. 42 hor - 40
36. 44 hor - 80
37. 6 vert + 41
39. 41 vert + 6
41. 9 vert x 2
43. 62 vert - 1
45. 9 vert x 8
50. 76 vert x 16
51. 87 hor x 70
52. 23 vert - 20
54. 10 vert + 1
57. 84 vert + 196
59. 20 hor - 5
62. 2 vert - 840
64. 60 hor + 40
66. 12 vert / 10
67. 35 vert + 15
68. 71 vert - 40
70. 61 hor + 9
71. 68 vert + 27 vert
72. 27 vert + 9
73. 31 vert / 5
76. 81 vert - 20
78. 6 vert / 4
80. 31 vert - 5
81. 76 vert x 2
83. 30 hor - 99
84. 21 hor - 7

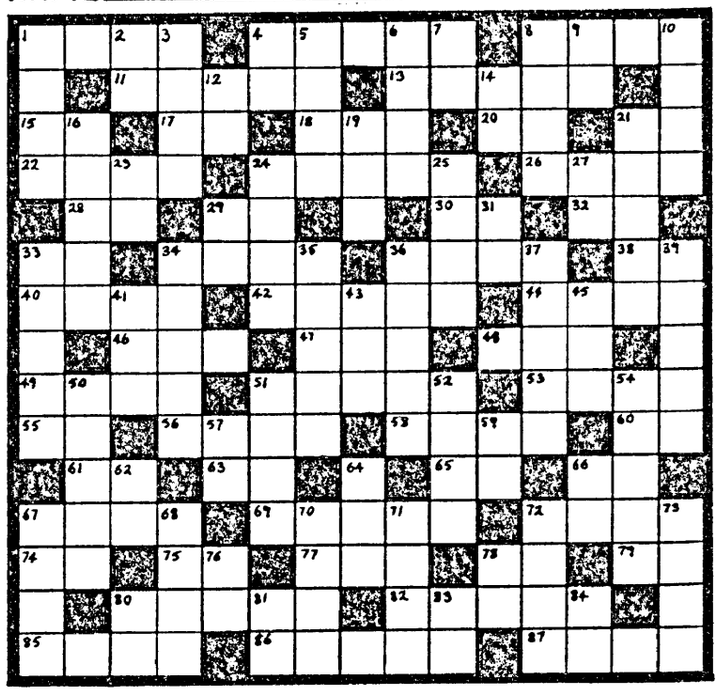
```
6
"
;
//*
$       COMMENT
*
C
NOTE.
REM
/*    */
a
COMMENT    ;
'COMMENT'    ;
```

This week we have no winner to last week's cryptic article because neither Owen nor any other reader submitted a solution. There were a few tricks used such as encoding a blank as a "t" and an "e" as a blank, but even with these extra stratagems, no one found the "WORD" enough of a challenge to surrender a solution. Presented below is an interpretation of the solution that was found in the MathSoc office. May I suggest that it be ignored.

SKIPTHIS

I say, didn't you notice the heading? Didn't you see that you were supposed to skip this? Then why on earth do you go on? I assure you you'll get nothing out of this. Go on to the next page! If you haven't stopped you're only wasting your time. This is the moment to show that you have got enough character to stop. Didn't you understand? STOP!!! Now we are halfway through and you are still going on. You can't help reading the next line. Or can you? No, indeed I was right. What on earth are you getting out of it? Nothing. But you're acting as if you're bewitched. There are only a few lines left, so show that you have some will power and stop! But you're probably still curious enough to keep right on wasting your time by reading these very last words. Aren't you?

NAME_____ ID. NO._____



MyTHLETICS

BROOMBALL:
NEWEST SPORTING THRILL "SUICIDE BROOMBALL". MATH LOSES 2 PLAYERS IN 1ST GAME. COACH PREDICTS MANY MORE LOSES.

The MATH HACKS broomball team is doing its part in the world population reduction effort. Last week they lost 2 players to Fred Good's chain of funeral parlours and delicatesens.

IRENE was pronounced dead on arrival at K-W Hospital after sustaining brain damage to the left thumb. The incident occured at the Barn Monday night during a fight with Dave Schultz of the "SEWER WORKERS", a team in the K-W broomball and beer-glass eating league (meetings every Wednesday night at the New American Hotel. Draft 30¢, 25¢ for the beer and a nickel for the glass).

Funeral services will be held at the Village 2 cafeteria next week when she will be served up to her friends (and unsuspecting villagers) as cold-cuts.

JOHN AUSTIN took the big leap too. On Friday in his 1st league game, he fell over the boards landing square on his index figure. Last Tuesday he was declared legally dead as no response could be elicitted from his body (although there was much debate as to whether this was out of the norm).

CATHY SCOTT also took her hand at playing BEAT THE REAPER, but won by default. The REAPER wouldn't take her as there was too much damage to the material done during the game, sending her back labeled non-recyclable.

There have been complaints from some quarters that this column deals too much with the hard facts of competitive sports. To appease these person HACKLETICS has been started. Devoted to the sporting events indulged in by the non-select people who usually dominate this column, some of these sports are:

1) BURGERS & FRIES AT HORVEY'S
- record time 45 minutes return
2) FORKING
- 5236 forks in one session
3) SPEED TYPING
-(cgo,rjh)=(99,102)
4) THE MOTHERS PIZZA RUN
-record still up for grabs
5) BOOT THE 'BUN
-record still held by Ford Auto-boot: time 55 sec.

RUGGER

The linemen half of the MATH football team (MILES, ORINDORF, JOHN, BOB, SCROOGE, and DRYDEN) impersonated a 7-aside RUGGER squad last Sunday afternoon at beautiful fog-bound Lake Columbia. Impersonating a RUGGER taem was about as close as they got to real RUGGER.

Part way through the 1st game, they became a 6-aside RUGGER team as MILES had to take a time-out (the rest of the game), to relieve his stomach. The rest of the tournament the other teams refused to go near him, and nick-named him "THE HAPPY HONKER". At one point in the game we became the 5-aside RUGGER team as DRYDEN blew a knee-cap and had to be put out to pasture.

During the 2nd game DRYDEN hired 6 plugs and sent them out on the field disguised as the MATH RUGGER team, as the rest of the team was so washed out, they were having trouble bleeding let alone playing. This rouse was quickly discovered as the MATH team actually scored some points, and were disqualified.

Through great skill and determination (although without scoring any points) the MATH team made it to the play-offs with an impressive 0-4 record, with a 0-23 for and against point record.

In the final game MATH mustered a legitimate 7 man team (against South 3) without plugs by making DRYDEN lie in the end-zone as the 7th man. By some miracle the team actually was controlling the game and SCROOGE would have scored a try if he hadn't been fouled. With MATH pressing, South got a 3 on 1 break on DRYDEN who was judiciously guarding the turf he was lying upon in the end-zone. DRYDEN made a valiant effort to defend the goal (actually he screamed at them not to step on him if they had to score) but was overwelmed by the superior man power. The tournament resulted with MATH in 8th place out of an 8 team league with a not unimpressive 0-27 point record.

unclassifiable ADS

SCIENCE FICTION CLUB: The first meeting of the UOW Science Fiction Club will be on Nov. 20/75 in the Humanities Undergrad Lounge HH280 at 7:00 pm. For further details see the Nov 10 issue of mathNEWS or Scisoc News, or the last issue of mathNEWS or contact Scisoc or send mail to 'scisoc' or 'benightingal' on the honeywell. Please spread the word around to anyone who might be interested. See you there.

-WANTED - a bed. Contact Brian, 884-5138.

FOUND - KEYS - near Westmount Plaza. Identified by apartment # 234210. Phone 884-7729 to claim.

NOTICE: Tinnie Tsang, Lucille Tok, and Terri Garrison have until November 28th to pick up their refund of Mathsoc fees.

FOR SALE: Datsun 510. Mint condition. New clutch, brakes, radials, etc. Very well maintained since new. Price negotiable. Must be seen to be appreciated. Phone Gregg, 745-3079.

FOR SALE: Vega GT. Flawless condition. Many options and performance extras. New engine, brakes, wheels, wide ovals. Price negotiable. Enthusiast's car. "Must be seen". Phone Gary, 579-0577.

FOR SALE: 23" black-and-white admiral TV cabinet, reception, picture, etc., all very good. New picture tube. Asking $60... yours for free!!! with purchase of Gary's Vega, above.

- APARTMENT TO SUBLET - Summer '76, 3 bedrooms, 1 1/2 bathrooms, perfect for 4 people, sauna, laundry, The Greenbriar, near Westmount plaza, $280 per month, call 579-2408.

Some uneasy

Problems

The response to the problems section has declined somewhat since last issue. This week we received only 3 contributions giving solutions to problems and no new problems were proposed by the readers of this column so all three problems come from the editorial staff this week. So if you come across a problem you think is interesting enough that you'd like to see someone solve it, send it in. This way, instead of just you and your friends trying to solve it, you'll have the entire Faculty of Mathematics working on <u>your</u> problem and you'll even get your name printed in this fine newspaper. Who knows, you may even be able to sneak one of your assignment questions past us and have us all working on your assignment! Anyhow, here are this week's problems.

Q16. Let a,b,c,x,y and z be complex numbers and consider the corresponding points in the Argand plane. Show that the two triangles whose vertices are the points a,b,c and x,y,z respectively will be similar if

$$\det\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ x & y & z \end{vmatrix} = 0$$

Q17. Show that for all positive integers n, there is a positive integer k such that

$$(\sqrt{2}-1)^n = \sqrt{k} - \sqrt{k-1}$$

Q18. Prove or disprove: if $a_1 + a_2 + a_3 + \ldots$ is a convergent series of real numbers then $a_1^3 + a_2^3 + a_3^3 + \ldots$ also converges.

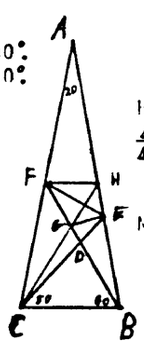
The following are the solutions to last week's problems, as well as Q5 (finally!). Although we received two solutions to Q13, one by the proposer (Greg Fee) and one by A.M.F. we delay printing them until next week since we don't have enough space in this week's column. They both employed Gamma and Beta functions in their solutions so unless anyone comes up with a more elementary solution, next week we'll print their solutions for those of you who can understand it. We restate the problem here.

Q13. Show that $\prod_{k=1}^{\infty} \frac{8k(2k+1)}{(4k^2+2k+1)^2} = \frac{1}{2}\int_0^{\frac{\pi}{2}} \frac{d\theta}{\sqrt{1-\frac{1}{2}\sin^2\theta}}$

Q14. Let $n = \prod p_i^{a_i}$ be the prime decomposition of n. The number of divisors of n is $\prod(a_i+1)$ (by a little combinatorics e.g. M239a). If $\prod_{d|n} d = \prod p_i^{2a_i}$ $(= n^2)$ the power of p_i on the RHS is $2a_i$ and the power of p_i on the LHS is $\frac{1}{2}a_i(a_i+1)\prod_{j\neq i}(a_j+1)$. To see this note that p_i can be raised to all the powers $0,1,2,\ldots,a_i$ and for each of these powers the number of divisors containing that particular power is $\prod_{j\neq i}(a_j+1)$ so the total contribution to the power of p_i on the LHS is $(0+1+2+\ldots+a_i)\prod_{j\neq i}(a_j+1) = \frac{1}{2}a_i(a_i+1)\prod_{j\neq i}(a_j+1) = \frac{1}{2}a_i\prod(a_i+1)$. Hence by unique factorization $\frac{1}{2}a_i\prod(a_i+1) = 2a_i$, so $\prod(a_i+1) = 4$ and by inspection the only solutions in positive integers are $(3+1)=4$ and $(1+1)(1+1)=4$ corresponding to $a_1 = 3$ and $a_1 = 1 = a_2$ i.e. $n=p^3$ or $n = p^1q^1$ where p and q are primes. For the general case $\prod_{d|n} d = n^k$ it's not hard to see that one arrives at the equation $\prod(a_i+1) = 2k$ so to classify all multiplicatively k-perfect numbers we need only solve this.
e.g. $k=3$ $\prod(a_i+1) = 6$ and the only solutions to this are $a_1=5$ or $a_1=2$, $a_2=1$ so $n = p^5$ or $n = p^2q^1$
S.C.L. notes that if $m = \prod(a_i+1)$ then $\frac{1}{2}a_j\prod(a_i+1) = \frac{1}{2}a_j m$ = the power of p_j in the expression $\prod_{d|n} d = n^k$ (note that in the above discussion about a_1, a_i could be changed to a_j and the argument carries through with no change. This was done merely to fix ideas). Now $\prod_{d|n} d = \prod p_i^{a_i\frac{m}{2}} = (\prod p_i^{a_i})^{\frac{m}{2}} = n^{m/2}$
Hence if $\prod_{d|n} d = n^k = n^{m/2}$ and m is odd then n must be a perfect square since the LHS is an integer.
Solutions submitted by S.C.L. and A.M.F.

At long last the solution to Q5 will be published. We have received only one solution to this problem (from S.C.L.) and the following is our solution. The first thing that has to be done is to calculate a few angles. This we will do without resorting to trigonometry although for the calculation of the ratio of the appropriate areas we will need trig after all.
Given: ΔABC is isosceles and $\angle A = 20°$. $\angle FBC = 60°$, and $\angle ECB = 50°$.

Since ΔABC is isosceles and $\angle A = 20°$, $\angle ACB = \angle ABC = 80°$
$\angle EDF = \angle BDC = 180° - 60° - 50° = 70°$.
Construct H on AB such that $\angle BCH = 60°$ and let HC intersect BF in G. Then $HF \| BC$ and ΔBCG and ΔFGH are equilateral.
Now, $\angle BEC = 180° - \angle EBC - \angle BCE = 180° - 80° - 50° = 50°$.
$\therefore \Delta EBC$ is isosceles.
$\therefore EB = BC = BG$ since ΔBCG is equilateral.
Since $EB = BG$, ΔEBG is isosceles.
$\therefore \angle BEG = \angle BGE = 80°$.
$\therefore \angle EGH = 180° - \angle DGE - \angle CGD = 180° - 80° - 60° = 40°$.
$\angle BHC = 180° - \angle HBC - \angle BCH = 180° - 80° - 60° = 40°$.
$\therefore \angle EGH = \angle EHG = 40°$.
$\therefore \Delta EHG$ is isosceles and $EH = EG$.
Also $HF = GF$ since ΔFGH is equilateral.
$EF = EF$
$\therefore \Delta EFH \cong \Delta EFG$ (SSS)
$\therefore \angle HFE = \angle GFE = \frac{1}{2}(60°) = 30°$
$\angle FED = 180° - \angle EFD - \angle EDF$
$= 180° - 30° - 70° = 80°$.
$\therefore \angle FED = 80°$ and $\angle EFD = 30°$.



Now all the angles shown in the diagram are known.
If we let $AB = AC = a$, then $EC = BC = 2a\cos 80°$.
It's easy to see that $\Delta AFE \sim \Delta CDE$.
$\therefore \frac{\Delta AFE}{\Delta CDE} = \left(\frac{AE}{CE}\right)^2 = \left(\frac{a - 2a\cos 80°}{2a\cos 80°}\right)^2 = \left(\frac{1 - 2\cos 80°}{2\cos 80°}\right)^2$
By the sine law (applied to ΔBDC and ΔEDC), we have

$$\frac{BD}{\sin 60°} = \frac{DC}{\sin 50°} = \frac{DE}{\sin 20°}$$

Since ΔDCB and ΔDCE have the same altitude,
$\frac{\Delta DCB}{\Delta DCE} = \frac{BD}{ED} = \frac{\sin 60°}{\sin 20°}$
Applying the sine law to ΔBDE and ΔBDC, we get
$BD = \frac{DE\sin 40°}{\sin 30°} = \frac{CD\sin 60°}{\sin 50°}$
Since ΔBDF and ΔBDC have the same altitude,
$\frac{\Delta BDF}{\Delta BDC} = \frac{DF}{DC} = \frac{(\sin 30°)(\sin 60°)}{(\sin 40°)(\sin 50°)}$

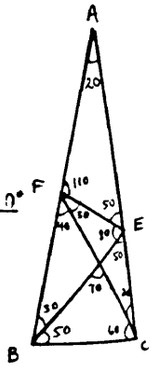
$$\therefore \frac{\Delta BDF}{\Delta CDE} = \frac{\Delta BDF}{\Delta BDC}\cdot\frac{\Delta BDC}{\Delta CDE} = \frac{\sin 30°\sin 60°\cdot\sin 60°}{\sin 40°\sin 50°\sin 20°} = \frac{\sin^2 60°}{(2\sin 40°\sin 50°)\sin 20°} = \frac{3}{4\sin 80°\sin 20°}$$

Hence, our final result is:

$$\frac{\Delta AFE + \Delta DBC}{\Delta BDF + \Delta CDE} = \frac{(\Delta AFE/\Delta CDE) + (\Delta DBC/\Delta CDE)}{(\Delta BDF/\Delta CDE) + 1} = \frac{(1/2\cos 80° - 1)^2 + \sin 60°/\sin 20°}{3/(4\sin 20°\sin 80°) + 1}$$

Messy, ain't it?

$$= 0.66612388$$



Q15. We are required to show that

$$\sum_{n=1}^{\infty} \frac{1}{n(n+1)(n+2)\ldots(n+k)} = \frac{1}{k(k!)}$$

The obvious proof proceeds as follows. It's easy to see that $\frac{1}{n(n+1)(n+2)\ldots(n+k)}$ is equal to

$$\frac{1}{k}\left[\frac{1}{n(n+1)\ldots(n+k-1)} - \frac{1}{(n+1)(n+2)\ldots(n+k)}\right]$$

Hence, we get that $\sum_{n=1}^{\infty} \frac{1}{n(n+1)(n+2)\ldots(n+k)}$

$$= \frac{1}{k}\sum_{n=1}^{\infty}\left[\frac{1}{n(n+1)\cdots(n+k-1)} - \frac{1}{(n+1)(n+2)\cdots(n+k)}\right]$$

$$= \frac{1}{k}\left[\frac{1}{1\cdot 2\cdots k} + \sum_{n=2}^{\infty}\frac{1}{n(n+1)\cdots(n+k-1)} - \sum_{n=1}^{\infty}\frac{1}{(n+1)(n+2)\cdots(n+k)}\right]$$

$$= \frac{1}{k}\left[\frac{1}{k!} + \sum_{j=1}^{\infty}\frac{1}{(j+1)(j+2)\cdots(j+k)} - \sum_{n=1}^{\infty}\frac{1}{(n+1)(n+2)\cdots(n+k)}\right]$$

$$= \frac{1}{k\cdot k!} \quad Q.E.D.$$

Solutions submitted by Greg Fee and someone who calls himself A. Many Fold (this person circumvented the obvious proof and used the gamma function!!)

this ∑ THEOREM week's

Prove: $-1 = 1 + 2 + 4 + 8 + 16 + \ldots$

Consider $f(x) = 1 / (1 - x)$

Long division as follows:

$$\begin{array}{r} 1 + x + x^2 + x^3 + \ldots \\ 1 - x \;\overline{)}\; 1 + 0 \\ \underline{1 - x} \\ x + 0 \\ \underline{x - x^2} \\ x^2 + 0 \\ \underline{x^2 - x^3} \\ x^3 + 0 \\ \underline{x^3 - x^4} \\ x^4 + \ldots \end{array}$$

gives the result

$$1 / (1 - x) = 1 + x + x^2 + x^3 + \ldots$$

Setting $x = 2$,

$$1 / (1 - 2) = 1 + 2 + 4 + 8 + \ldots$$

Therefore $-1 = 1 + 2 + 4 + 8 + \ldots$

Implication: Any negative integer can be expressed as an infinite sum of positive integers; ie, in two-space, the further right we go on the positive x-axis, the closer we come to zero!

The dumb editor did notice but we needed the filler anyways. →

the RISTO report

GREAT PUMPKIN

Well, Math/arts week is long gone, (Oct 27 - Nov 1 -- for those of you who didn't notice it) but since this is the first issue since then, I'll comment on some of the events now. The first few days of the week featured a bridge tournament, a spelling bee, and a slide rule contest. The bridge tournament was well attended as was the spelling bee which was held in the Humanities building which received an enthusiastic response. However, the slide rule contest held in the Math lounge at noon on Wednesday did not go well as there were few competitors and virtually no audience. One major problem with this contest was that the audience couldn't see what the competitors were doing so that interest was lacking.

On Thursday night a wine and cheese party was held in the Faculty lounge. Although slightly less than 100 people attended, all had a good time which was shown by the fact that they drank the place dry by 11:00. The music provided by the folk singers was adequate and how can you beat getting drunk at only the cost of 50¢.

However the Hallowe'en pub on Friday night was a different story. Although all who attended had a great time, there weren't more than 50 people in the room all night. This reporter had a great time sitting at the door at 8:30 (the pub started at 8:00) trying to convince people to come on in when the room behind him was completely empty. Using such lies as "We're just getting started now", "Most people are going to show up later", "The room isn't really as empty as it looks", and "Most people are in the far back corner where you can't see them", and feeling like a fool, eventually he conned some people to come in. What article would be complete without a contest? (No don't adjust your sets, mathNEWS hasn't goofed, I'm just trying to sneak in a piece that was cut from my volleyball article last week... our dumb editor doesn't read this stuff so I'll probably get away with it.) Name the ex-treasurer of the Federation of Students. Address your submissions to CONTEST and put them in the mathNEWS mailbox before 4:00 pm Nov. 25th. Include your name. The winner will get his/her name printed here and will win a free Mathsoc ruler, Federation handbook, last year's antical and I'll even stamp your ID card. If I know you then you're not eligible (if you don't know me then I don't know you). Also you must be a member of Mathsoc (if you're not, you aren't allowed to be reading this.) The music (we're back to the Hallowe'en pub) provided by John Denham was excellent and all in all those who did attend had a great time.

On Saturday the semi-formal was held at the Concordia club. About 150 people attended what was apparently a very well run affair and a most entertaining evening. In the opinion of some n-jineers, who will go nameless, it was a hell of a lot better than their semi-formal which was held on Nov. 8. (John Corman, Prez of Engsoc should know, he was at ours).

All in all it was an excellent week for those of us who took the trouble to attend the events. (by the way, did anyone notice that the free movie, "Theatre of Blood" on Thursday night was the same one that the Federation charged $1.00 for on the weekend. I hope you didn't get ripped off). The two social directors, Selma Sahin of Math and Andy Seibel of arts, are to be congratulated in their battle against the forces of anathy. Maybe more people will turn out for next term's Math/arts week.

mathLETICS

MATHSOC'ERS 2, GREEK STUDENT ASSN. 1

Wednesday night (October 29), or rather, early Thursday morning, the Mathsoc'ers won the A League Soccer Championships in a lengthy, strenuous, and hotly contested game. This was probably the longest intramural game, in any sport, ever played at Waterloo. In total, there was 140 minutes of soccer played, starting at 9:30 pm and ending at 12:30 am. The Greeks drew first blood in the first of two 30-minute halves. Since the Greeks are a strong offensive team, Math's main concern was to stop them on the Math side of half before they were able to work in for the shot. This defensive emphasis paid off, thanks to the work of fullbacks Al Watson, Paul Schalm, and John Rosall, and halfbacks Steve Duncan, Graham Johnson, Bruce Dalke, and especially Jim Valliant. Jim's ball control and great range were key factors in holding off the Greeks, but also made him an occasional Greek target for aggressive tackles and extra footwork after the ball had gone. However, this strategy made it hard for the Math forwards to gain the equalizer, despite a number of close opportunities. With 6 defenders, only 4 of Ken Fong, Gerard Leung, Martin Harris, and Mike Toohey were on at a time.

The forward line did get a big boost when veteran Bernie Sander arrived with 10 minutes left in regulation time. Bernie had just rushed back from Halifax where he'd been with a research group. But then, with 5 minutes left, Math got their break; a penalty shot was awarded for an elbowing call, which was hotly disputed by the Greeks. After 15 minutes of argument, and threats of leaving the game, the Greeks watched as Jim Valliant neatly tucked the ball in the corner for the tie.

Overtime was to consist of sets of two 10-minute periods, until someone was leading at the end of a set. It wasn't until the 1st period of the 4th such set (i.e. in the 7th 10-minute overtime period) that Steve Duncan set up Gerard Leung for Math's second goal. Math held tenaciously to their slim lead to gain the victory.

Bill Lexmond played a solid game in net all the way, robbing the Greeks of two sure goals. But he also had help. Twice the posts were on his side, deflecting the ball away; each of Al Watson and Paul Schalm (who both played the entire game) was the last man back on two occasions, and saved goals by steering the ball aside. Also, near the end of the 3rd set, the Greek team had their opportunity at a penalty shot, but it went wide. Bill must have intimidated him.

An excellent effort was put out by both teams, especially considering the length of the game and the sub-zero temperatures. The Greeks had great individual ability which Mathsoc'ers countered with teamwork, hustle, and desire. After the final whistle, the team gathered around captain Bruce Dalke to accept the Mackay Trophy from Peter Hopkins, making this Math's second consecutive victory.

The team would like to thank the referee and linesman for a well-officiated game and for sticking it out for the entire length, and would like to congratulate the Greeks on a fine game.

Congratulations once more to the Mathsoc'ers for a great all-out effort. The team overall had 5 wins, 3 ties, and only 1 loss for the whole season. And one last thanks to Alison for being there to watch every game.

nightmare

Dear mathNEWS:

I send this letter to complain about the treatment of one of my articles in the last issue of mathNEWS. I am referring of course to my article on the sport of volleyball. Not only was the most important section cut out but even worse it was placed under the heading "Mythletics". /* Do you mean before or after it was cut out? --Ed. */ Now as any half-wit knows, "Mythletics" is written by some demented donkey who goes around claiming that he's the president. /* Our policy is that <u>any</u> demented donkey may write it. */ I was both shocked /* Who else would try to commit honorable suicide with a flashlight battery? */ and ashamed when I saw my article in that column. Mythletics doesn't bear the slightest resemblance to reality while my articles, as you know, are the truth, the whole truth, and nothing but the truth. I sincerely hope that you do not repeat this intolerable mistake again /* When was the first repetition of it? */ in the future /* Would you prefer the past? */ .

Sir Risto

FUN and GAMES

The Campus Center was opened April 4, 1968. At the time the Campus Centre was run by a Director.

On October 21, 1968, the students held a sleep-in to show their discontent about their lack of control.

Their voice was heard and the Campus Centre Board was formed, consisting of student and staff members (of which Math is one).

The Campus Centre Board is the governing body and meets every two weeks to discuss and decide on policies for operation of the Campus Centre. These meetings are open to evervone interested. They are announced in the Gazette before each meeting.

The turnkeys are the students hired to run the Campus Centre under the Campus Centre Boards' direction. Turnkeys are found at the front information desk in the Campus Centre Great Hall where many services are offered such as a student directory service, chess sets, cards, games, magazines, coffee, etc.

The hiring of turnkeys involves two sets of interviews and a brief training period. The jobs are available to registered students of the University of Waterloo only.

The Campus Centre is a building primarily for the students. There are many facilities available in the Campus Centre these including the ping-pong room, the television room, stereo room, piano room, and the newly opened games room (pin ball and pool tables). There are also two lounges available for meetings.

Other services offered by the Campus Centre Board are Wednesday night movies, various tournaments, and the Crafts Fair which runs the 3rd week of every month, plus special events such as dance and theatre.

UP and COMING

ANTI-CAL

mathNEWS welcomes your criticisms, comments, suggestions, etc. All letters should be signed, but if requested, a pen name will be used. Put your Feedback articles in our MAILBOX on the 3rd floor outside the lounge, or mail it to us on the 'Bun (userid mathNEWS), or take it to M&C3038 and have it put in our mail slot or put it in the mail addressed to mathNEWS. M&C3038.

ACCESS

Dear mathNEWS:

I just finished reading Burloaf's comments on "Wages for Housework" and I have to say, I'm pleasantly amazed to discover that there exists someone on campus with common sense who is allowed access to a typewriter and printing press.

After reading the Chevron (and alternately laughing and puking), I was beginning to wonder.

Jim Hodges
1st year regular math
Renison College

de Map

Dear mathNEWS:

Av come off it guys! What the heck are you trying to pull anyway?

Sure, I've seen the "maps" in mathNEWS, but the things are so damned small, you can't really tell distances on them. From the math17NEWS building, it's about 3 inches to Village 2 (at least, that's what I thought when I left for an exam in that unknown region). I was ten minutes late for that exam, and I had planned to be ten minutes early. So I got out my ruler and, sure enough, it's not 3 inches to that ROOM, it's 3 and a quarter inches. Maybe a shuttle service could be arranged between the math17NEWS building and Village 2 using Kitchener Transit buses which are not not yet transiting Kitchenerians to and fro.

And that Exam Room! It looks like it might have been, at a happier time, a lounge. There's a huge fireplace at one end, great for emergency destruction of notes you "didn't know you'd brought in with you." The only problem is, you have to get there 5 minutes early to reach the fireplace in time for your exam, the room's that big.

If you are stuck walking, there are two main routes you can take. The south route takes you on a scenic tour of the Bible Belt and Westmount Road. This route is your best bet if you're not in too much of a hurry. Along with the drawback of being longer, this route also has the hazard of crossing Laurel Creek(?) twice. Beware! You never can tell what's going to come out of that stream (no one ever said it was a stream of water).

The north route is fine - unless it's raining, when it's a mud bath in places, or unless it's sunny, in which case dust bowls develop. One person last year stepped into one of these bowls (I think he was one of the guys who moved the exam room to Village 2) to prove there was no danger. Security had to pump the dust out of that bowl for three days (plus the delay of getting there in the first place) before the guy was found.

(From all this, you can probably tell that I live in a CIVILIZED PLACE: off campus.)

Well, I have to get a move on now, as I want to get a seat by that fireplace for my Christmas exams. I sure hope it doesn't snow between now and the exams, or I'll never make it on-time.

Der Frosch

WOMEN in mathematics

-WOMEN IN MATHEMATICS: EMMY NOETHER (1882-1935)

Emmy (or Amalie) was born on March 23,1882 in Erlagen Germany. Her father,Max Noether was already a great mathematician at the university there. Her father was a strong influence on her and her brother Fritz both of which followed in their father's profession. Emmy was tutored by Paul Gordon and in 1907 she wrote her doctoral thesis on systems of invariants. She was persuaded to come to Gottingen by Hilbert where she worked with him on relativity. Although she had her doctorate she received no formal appointment as a lecturer. When Hilbert tried to remedy this injustice he was rebuffed. Annoyed he declared at one meeting '... I do not see that the sex of the candidate is an argument against her admission as a Privatdozent. After all the Senate is not a bathhouse' To frustrate members of the faculty, Hilbert allowed Emmy to give the lectures to his courses.

During the 1920's she helped establish the axiomatic tendencies of abstract algebra,studied noncommutative algebras, their representation as linear transformations and their applications. She possessed an ability to work with abstract concepts and could visualize remote, complex connections without resorting to concrete examples.

Her personal life was quiet at Gottingen. Mathematics occupied all her hours but early in 1933 with the rise of as she was a Jew and a liberal. She went to Princeton to lecture at the Institute for Advanced Study but after a year and a half there she died very suddenly after an operation on April 14,1935. She was only 53 and at the apex of her career.

-Albert Einstein spoke of her as 'the most significant creative mathematical genius thus far produced since the higher education of women began' Her old friend Hermann Weyl delivered her eulogy in which he said 'she was a rough and simple soul but her heart was in the right place' She was heavy of build and loud of voice (she was often called 'der Noether' with the masculine article) but was most unassuming and utterly unselfish. Weyl also said 'the memory of her work in science and of her personality among her fellows will not soon pass away. She was a great mathematician, the greatest I firmly believe that her sex has ever produced.'

WARNING

WHY WE MUST GO TO THE MOON

Many persons have asked me, why should we send men to the moon. These concerned citizens question the wisdom of spending billions to explore space, when so much remains to be done here on earth in combatting acid indigestion and dull, unmanageable hair. To these people I give a simple answer: We need the data that the moon and the planets can provide. And we need it pretty quick.

It is no longer a secret that the world's resources of unprocessed data are running dangerously low. Experts estimate variously that known reserves, once so abundant, will be exhausted in five to fifteen years. Unless new supplies are found before then, a crisis of unprecedented proportions will be upon us. To a world running out of raw facts, the moon promises a vast, untapped mine of new information, never before punched on cards, and sufficient to take the pressure off the situation for decades. SURVEYOR II revealed what appear to be natural lumps of pure data the size of turtle eggs lying exposed on the surface, waiting to be scooped up. So rich a trove so near at hand makes the moon our best hope for staving off a dilemma that becomes yearly more acute. Indeed, the spectacle of a grown man travelling 250,000 miles to gather a sackful of pebbles takes on meaning only when we consider it in this light.

Still, "I don't get it," some troubled questioners persist, and their artless query strikes close to the heart of the issue. For few laymen are able to appreciate the danger toward which we are swiftly drifting. In a few short years, all the data the earth has to offer will have been ground through the world-wide array of data-processing machines; all the computations possible will have been performed, analyzed, printed out, and stored. Eventually, one by one, the tape reels will come to a halt, the control units will cease their clicking, the flickering console lights will fall into a steady, ominous pattern. Computer centers everywhere will be suffused with the dull reddish glow of a thousand warning FEED lights demanding input.

Unless we go to the moon now, there will be no input to feed them. The thought has given men at Rand Corporation the cold shivers.

Why is this so? That is a question the experts seem reluctant to talk about. "A busy computer is a contented computer," they murmur. And indeed, extravagant measures are taken to protect the big brains against the possibility of idleness. They are kept running around the clock, watched by relays of operators oriented to scramble for fresh material when the FEED light glows. Originally, this began as a matter of economic utilization of costly equipment. But it has long since gone far beyond that simple concept. Again, the experts are vague. "The devil finds work for idle circuits to do," they are apt to mutter, uneasily. This topic meets everywhere with ill-concealed anxiety and evasiveness, and a chilling conclusion eventually forces itself upon one: at bottom, nobody knows--nobody really knows for sure how the computers would react if the data stopped coming.

"They ask for data--we give it to them," snapped a dean at MIT. "We don't want no trouble."

"They are smart cookies," said an IBM engineer carefully. "Their memories are exhaustive, their logic is infallible, their decisions are--ruthless." He hesitated. "They do not know compassion." Then he clammed up.

The importance and urgency of gaining access to the lunar data fields is apparent in the vast amount of money, effort, and risk involved in bringing it about. The conclusion is inescapable that, not only does no one know what to expect from a population of computers contemplating starvation--no one cares to find out. The expedition to the moon is a gigantic undertaking, fraught with peril and demanding of much sacrifice. But there is little choice. We must go.

Stolen from Saturday Review, December 13, 1969.

WELCOME to another masthead....
....First we will list those souls who made it out to the meeting last week when mathNEWS pasted antiCal together....we did that rather than put out an issue last week....but even though we put 65 pages together its only getting sent into the printer this week....oh well....antical supplied the subs that fed DON HALL; KATHY-X; JJLONG(who had one too many); GARY PRUDENCE; GARY DRYDEN; RANDALL McDOUGALL; LLOYD GOULDING;DENNIS MULLIN; and the indexy MARK BRADER.....

++

....now on to this weeks masthead....this issue was put together by an all volunteer staff which quickly declined during the evening...this will eventually make it over to Graphic Services which will print 10pages 1000 times....

now for the rumours and stray garbage department....bet you wondered if C&D really honey on those doughnuts...well the honey is real...someone found a bee encoated on the outside of a doughnut recently.....despite our best efforts mathNEWS has spent about 840 dollars on 7 issues....117 dollars of which have gone to the federal & provincial governments in taxes.. ANTICAL i s currently surveying classes...if your class has not been surveyed yet....come to the mathSoc office(MC3038)... Ron Hipfner has made a speedy recovery and has even had time to attend the math curriculum committee where he discovered that math314 will be an alternative to math334 as a requirement for the math degree....there is a broomball game between the grads and the dean this saturday(see page 2)....antiCAL is now under way and is in a great state of chaos....despite the best efforts of Gary Prudence to arrange otherwise...its raining outside....its 935hrs....i am currently in a state of memory fault....scific club is starting up(page 5)...flash--Federation of Students will be holding a meeting sunday nov 16th at 7pm in Needless Hall in 3006....the masters just narrowly missed being drowned in coffee....

Our staff this week devoured 5 kaisers supplied by Ron Hipfner...a bunch of hotdogs and a brown liquid(coffee???????) Thanks goes to those who supplied articles....in particular Dick Helmus....and Bruce Dalke. To templeton:we almost used it but no one wanted to darken it in....and now::::::
DON Almost grid editor HALL; jjLONG(resigned?); the on the move MPDILLON; the card players DWGILLETT 9,RSMCDOUGALL 5,MSMITH 2; BOB zip SANDIFORD; GGhackDRYDEN; GARY active PRUDENCE; RANDYproblemeditorMORRISON; TOMgridwordeditorKEITH; DENNIScoping-alongeditorMULLIN; JIM almost MANTLE; PETER on a bike RAYNHAM; STEVE dumbo RISTO; MARK who stayed to paste up page one BRADER ....and I that is I oh forget it....i think that was everyone....rjb dropped by briefly after the soothsayer(see last week)....

It is now 1036....good morning Don...jj just said goodnight....a quote from selma "maybe I'll eat half my sandwich" You may have noticed that I'm getting desparate....and now the typewritter is going wacky....i surrender crash