

## nickels & dimes

# COMPUTING CENTRE

Well, spring is in the air, a new term is upon us, and so is a new computer services accounting system, not to mention the new two digit computer phone system, and even the newly renovated Honeywell terminal room.

Accounting (for those not already painfully aware of it) is now on a supposedly "real money" basis. This led to the removal of the GENERALISE accts. from APL (but then nothing happens in APL since they decided the I.P. Sharp update was too much bother to implement). It also means that the Computer Sc. Club probably won't get much in the way of Computing Centre Acct. #'s.

Of course this brings in an interesting procedure for handling course accounts, to be specific, each SACC requires a HASP account (everything, naturally, requires a SACC card) to which your student ID and personal lock (initially your initials). Naturally this allows a check to be made as to whether (a) you really exist (b) you're really in the course and (c) you haven't used too much time already.... need I add that since it's possible, they've already done it...

They hope to have it fully useable soon....

At the same time about 50 major changes were made to WITS ... if you didn't

# MAKES MUCH CHANGE

recognize it then maybe that could explain it....

A more general change was also made to the system of computer lines. There are now a number of "computer phones" installed randomly about the building, which are now about the only way of getting a computer line.

All the numbers are 2 digits:

01-39	2741	service?
41-49	2741	vm
51-59	ASCII	vm
61-69	ASCII	service?
71-89	2741	honeybun
91-99	ASCII	honeybun

Any of them can be used with an extension phone by prefixing them with "29" to make a 4 digit number.

To keep up with all these major "improvements" the 'bun has renovated MC3018 so that it can look crowded with half the people.

And on the subject of Computers & Comp. Sci. you might note that Math 132B now discourages tutorials (i.e. they aren't compulsory). The tutors are all grad students (you have to make work for them somehow) who don't know WATIAC except one who helped write it (the theory being perhaps that if is the average, not the individual, knowledge which counts).

CONP. SCI. DISCONNECTS.

ISSUE 5.1  
THURSDAY, MAY 16, 1974.

# math NEWS

while you were away

## COSMIC PROFUNDITY, PHANTOM RETIRES

This past winter term saw a number of developments take place-- from the proposed faculty and degree name changes to the retirement of mathNEWS' own phantom. To update those math students returning from work terms, mathNEWS presents the following summary of happenings as recorded in the term's pages of mathNEWS.

Not unusually, the term began in low gear but January 15 saw a development take place that became one of the most (only?) contentious issues for the term. On that date the Mathematics Faculty Council passed the following motion: "that we approve the proposed changes in the name of our faculty and degrees to: Faculty of Mathematical Sciences, Bachelor of Mathematical Sciences and Master of Mathematical Sciences." Faculty members strongly supported the move

and, in fact, the motion was carried without discussion or opposition. Since little, if any, student opinion on the matter had been solicited, mathNEWS decided to try to determine how students felt. The February 1 issue carried a small questionnaire asking students whether they did or did not approve of the proposed changes. Of the over 100 respondents to the opinion poll, 82% were opposed to the

(COSMIC, cont'd on p.2)

## DROP & ADD

This is a reminder that the deadline for adding courses this term is next Tuesday, May 21. The final day for dropping courses is Friday, June 28.

(COSMIC, cont'd from p.1)  
changes, 16% were in favour and 2% did not care. Due to the apparent student opposition to the name game, a forum was hastily and poorly organized by the math society featuring a discussion with Dr. R.A. Staal, main proponent of the "mathematical science" name. It was at this session that Dr. Staal jokingly revealed his personal favourite name: Faculty of Mathematical Profundity.

As it turned out students were not the only ones voicing opposition. The Science Faculty let it be known that it too would not be happy with any such changes. Among other things, that faculty expressed a desire to retain its control of the word science. As the term ended the issue still had not been brought before senate for final approval or disapproval. And this is where the matter still lies.

Other January happenings, as reported in mathNEWS, included, much to the relief of many stats students, the installation of several Hewlett-Packard 45 advanced scientific calculators in room 3047; the Federation-Societies Conference (Jan. 19-20); computer science club recorded record membership.

January 22 through Feb. 3 was the winter term's version of math week sponsored by the math society. About the only excitement resulting from the week's activities was the triumph of Ribbit--the computer science club's chess program which captured a tenth place medal in the chess tournament. As for the rest of math week, the absence of any sign of snow resulted in cancellation of both the ski trip and the toboggan races. But of course, there were still the pubs.

The month of February witnessed as major a happening as was recorded in the issue of the 15th: "Ah well, after many weeks of being annoyed by various mathNEWS gremlins and generally frustrated, and many months of filling this column with any boring trivia that came along...not to mention waiting for the APL update...well it has outwaited me...I QUIT..." ---the resignation of the phantom, in his own words.

In other February news, the Coffee and Donuts stand announced an expanding of its service to selling subs, soups and hot chocolate; before his retirement the phantom took a swipe at the computer science days; Shakuntala Devi, the "human calculator" from India gave a demonstration of amazing speed at arithmetic before a packed audience in MC 2065; Janice Halligan, Cindy Harris and J.J. Long are elected math reps to the Students' Council; re-elected Federation of Students' President Andy Telegdi rewards several society people for campaign support, among them mathsoc president Cindy Harris whom he named vice-president.

The month of March featured the arena poll in which students more or less acknowledged that they did not want to fund an arena. The March math society elections had a 10% voter turnout -- a figure low even by mathsoc election standards. Anyway, Jim Langer was acclaimed 1974-75

president and Phil Lanouette was elected vice-president. In other news that month, the faculty held its hard sell campaign on March 19 as several hundred potential mathies, parents and friends were treated to a "Campus Day"; math again won the blood bowl, boasting the highest faculty turnout for the Circle K Club's blood donor clinic; "Regular Math saw their hopes of regaining the coveted Bullbrook Cup, emblematic of intramural hockey supremacy dashed Monday night at the hands of an aroused kinesiology team."; the March 15 issue carried a stalker's test "Are you a latent stalker?" (an offer to come in Tuesday nights and watch the phantom streak was not taken up by anyone).

So ended another term and another volume of mathNEWS. Hopefully you will enjoy volume 5 this term. If you have any time to spare on any Tuesday night why not drop in and give us a hand? You'll find us in MC 3011.

"A single curve, drawn in the manner of the prices of cotton, describes all that the ear can possibly hear as the result of the most complicated musical performance...That to my mind is a wonderful proof of the potency of mathematics."

- Lord Kelvin

may 7

## CAL<sup>1</sup> PRIORITY

"Anticalendar will eat up most of the budget this term," remarked acting spring term math society president Paul Armstrong at last Tuesday's (May 7) meeting. In fact, approximately \$2500 has been scheduled to finance the 1974-75 version of the anticalendar.

Treasurer Don Sheehy outlined for council a tentative budget for this term. Mathsoc is starting the term with a bank balance of about \$4500 left over from last term. An additional \$1400 is expected from spring term society fees. Aside from the sizable portion allotted for the anticalendar, Sheehy's interim budget assigns \$800 for social activities, \$500 for a contingency fund, \$400 for mathNEWS, \$150 for education and approximately \$100 for each of office supplies, computer science club, honoraria, and athletics. It was noted that a good deal of reshuffling of funds is likely to occur since mathsoc hopes to substantially aid the computer science club in presenting its computer chess tournament which will be held later this term.

In other business, president Armstrong reported that plenty of lockers are still available and can be had by claiming same in MC 3038; social director Christine Charlebois revealed that no social events have yet been planned but she is open to suggestions; society by-elections are to be held within a month's time to fill vacant seats; the new math society constitution,

(MATHSOC, cont'd on p.3)

(MATHSOC, cont'd from p.2)

passed by a referendum held last term and scheduled to go into effect this past May 1, still has not been approved by the Federation of Students.

In a final move, council ratified the spring term executive consisting of social director Christine Charlebois, administrator (secretary) Joan Scarrow and treasurer Don Sheehy. Following this, speaker Cindy Harris, former mathsoc president and current vice-president of the Federation of Students, adjourned the gathering.

and, may 14

## \$750<sup>00</sup> MISSING

Due to a discrepancy of approximately \$750<sup>00</sup> from this past year's funds, mathsoc council was unable to satisfy the budget presented by treasurer Don Sheehy at this past Tuesday's meeting.

Funds have been allotted as follows for this term:

Anti-Cal	\$2500.00
CSC	301.40
Contingency	325.74
Education	100.00
Honoraria	100.00
Mathletics	100.00
mathNEWS	400.00
Office Supplies	50.00
Orientation	100.00
Petty Cash	25.00
Publications & Education	110.43
Social	800.00
	-----
	\$4912.57

In other business, nominations are open this Friday for 1B, 2B, 3A & 4A by-elections and will close the following Friday with election day scheduled for June 3; math weekend is tentatively scheduled for July 6,7,8 with social director Christine Charlebois entertaining ideas of an amateur night, a picnic and/or a camp-out; the position of mathsoc vice-president is to remain vacant for the term; Gary Dryden was ratified as Federation Board of Education rep. and Director of Publications and Education.

this week...

## BIRDWATCHING M.D.

Professor Ernest (Ernie) Jen-Hao Chang was born in Shanghai, China, on September 27, 1944. He grew up in North Borneo. (For all you non-geography students, that is somewhere in Malaysia, near New Guinea, near Hong Kong.) He is now a Canadian citizen, and married (Drat!). His wife works as well, and they share the cooking 50-50. Prof. Chang takes care of the plants in his house, and usually ends up doing the dishes, while his wife does the cleaning up. Other interests are birdwatching, taking photographs which he

develops himself, concerts, eating in T.O.

His degrees were obtained in various places: the B.Sc. which majored in Math and Physics at U. of Manitoba, the M.D. at the University of British Columbia, and a Masters in Math at U. of Waterloo, completed May 1974.

Professor Chang's work involves medical information systems. This is the study of how to record a patient's history in such a way that you can retrieve just what you want from a complex system.

His experience with Medical Data analysis started in Regina from 1964 to 1967, where he worked for more than two years on the Patient History Record File in the Saskatchewan Medical Care System. The history file was updated and maintained, as well as claims processed against a patient's previous recorded history. While working with Dr. D. Anderson at U.B.C. in 1969, he became acquainted with Health care delivery problems. He furthered his interest in this area at the Graduate Summer School of Biostatistics at Berkeley, and subsequently while auditing one term of the M.P.H. (Masters of Public Health) program at the School of Public Health in Berkeley. While with the Medical Clinic at Powell River, he prepared an analysis of Physician Utilization profiles from PAS data for the purpose of ongoing Peer Review.

At Kaiser-Permanente (San Francisco, California, 1970-71), he was involved with the largest experiment in the computer-stored medical record to date, and gained an acquaintance with the advanced concepts of preventive health maintenance and disease screening for which Kaiser is well-known.

The title of his Master's thesis here at Waterloo is "A Demonstration Model of a Distributed and Interpretive Data Base". As a typical data base application, a pilot model for medical information network is implemented.

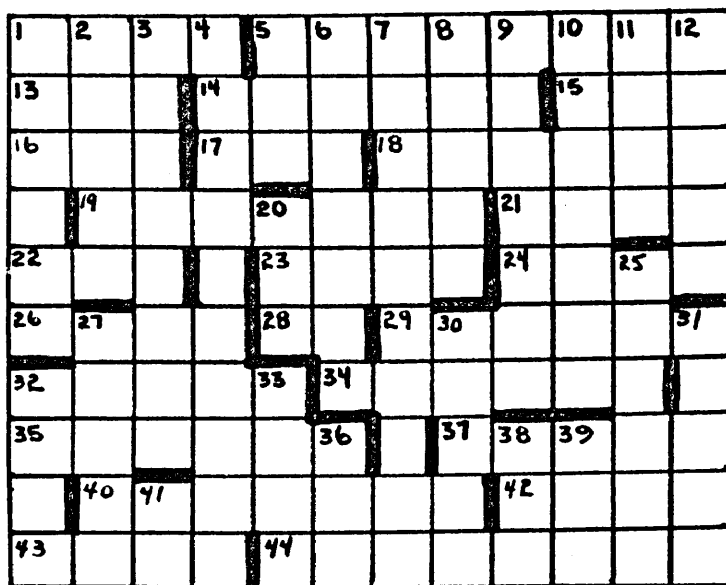
Prof. Chang has been with this University since August 1973. Officially, he is working for the Department of Applied Analysis and Computer Science, and is a Research Associate. He has taught only 240B, and now 132B as well. He enjoys teaching, yet wants to pursue his interests in research as well.

In the professor's opinion, U. of W. excels in technical areas (among others). However, it is a young university, and there is no tradition, are no diversified humanities. He is thus surprised that there is little politics of import. The students are more mature, not given to throwing people in the river, or putting soap in the fountains. This seems to be due to the co-op programme and the focus on technical subjects, which attract a more sensible type of student.

Last term, mathNEWS was a forum for buying a 360. The paper does a good job keeping on top of political "things" in the faculty. However, it seems to be slanted towards computing. Pure math or statistics is more difficult to produce for the public, or use to influence students: it is more fun to play games on the computer.

DOWN

- 01 Take the animal back - I wanted a thin coat /6/  
 02 Oh, the last letter? It's Greek to me /5/  
 03 You pay for it, after giving her a ring /4,4/  
 04 A claim: toys (when misused) make the 360's system crash /2,8/  
 05 Where you might find a sleeping flower /3/  
 06 Concise - the French hyperbola, perhaps? /7/  
 07 Getting rid of the Honeywell, for a separate price /10/  
 08 's an old memory of a lay /5/  
 09 Split honours, six of the highest introduced by a cheat? /7/  
 10 Without you, Caesar dies sounding like a cannibal /2,5/  
 11 A plant part can be radical /4/  
 12 A feeling - I hear a little money /5/  
 20 A chart /3/  
 25 If a lush hits it, it won't be for milk /6/  
 27 ...or Sal might be altered by the sun /5/  
 30 Iowan /5/  
 31 I hear not many letters make energy sources /5/  
 32 Flights before tea could make for a hard skin lump /4/  
 33 I appear to be a stitch /4/  
 36  
 & The double helix /3,3/  
 38  
 39 This isn't in with anybody /3/  
 41 Negative /2/



NAME : \_\_\_\_\_

PHONE : \_\_\_\_\_

MONDAY  
MAY  
27

\*\*\*\*ACROSS\*\*\*\*

- 01 I'm crazy about railway engines /4/  
 05 Swagging roars - but there's glitter in the BS /8/  
 13 American Medical Association /3/  
 14 Here, the medium is the message /6/  
 15 It holds a nail to the foot /3/  
 16 He's the last man I'd expect to be mayor /3/  
 17 Here you might find a star number cruncher /3/  
 18 Wouldn't it be sweet if Bonnie had two heads? /6/  
 19 Allure and charm? What a crazy, rum goal /7/  
 21 Unscientific bachelor's speciality /4/  
 22 This little horse is always complaining /3/  
 23 I'm a girl from a clean neighbourhood /4/  
 24 There's six squares to a box (but a mathie might find 2 to 8) /4/  
 26 Pussia, China, India etc. - it's all the same /4/  
 28 Transcendental dessert /2/  
 29 Eat like a bird? Luther protested, and 32 was thrown out of the Church (in 1521) /4,2,5/  
 34 Where you might find a hung-un queen /6/  
 35 Nearly all falsified - I was together, united /6/  
 37 We scripted after rot set in /5/  
 40 Anne went after an ant for her aerial /7/  
 42 Nothing, a void /4/  
 43 Helen's weight of gems /4/  
 44 Attractive financiers /8/

=====WARNING=====

Most clues are cryptic - not straight definitions, but hints at the word. For example, "It's clear I'll be in the plan" might be a clue for plain (pla-I-n); note that the clue includes a definition (clear) as well as a hint at the word's spelling. Anagrams (for example, "this drink might produce a trance" would be a clue for nectar; note that the wording implies an anagram on "trance") and puns are also fair game.

\*\*\*\*\*GRIDWORD COMMENT\*\*\*\*\*

This gridword by DAVID TOTTILL

Welcome back! The gridwords in issue 4.10 were won by:

KATHY WILSON and DAVE McDONALD

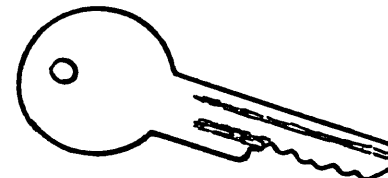
The gridword winner is selected in a draw from all the entries which have:

- 1) a name and phone number
- 2) are in the mathNEWS mailbox in MC3038 by 6pm on the date specified.
- 3) a correct solution

DEADLINE: for 5.1 is Monday, May 27, 1974  
PRIZE : one free T-shirt.

For creators of gridwords:  
Submit your gridword to mathNEWS. If it is chosen for use in mathNEWS you will get a free T-shirt.

Good Luck!



# THIS Σ WEEK'S THEOREM

THEOREM: Prove any two numbers are equal to each other.

PROOF: Start with the relation:

$$x = a - b$$

Multiply both sides by x

$$x^2 = ax - bx$$

Square both sides of the first equation

$$x^2 = a^2 - 2ab + b^2$$

From the above two equations

$$ax - bx = a^2 - 2ab + b^2$$

or

$$ax - a^2 + ab = bx - ab + b^2$$

or

$$a(x - a + b) = b(x - a + b)$$

If we divide both sides of this by  $(x - a + b)$  we obtain  $a = b$ . This is obviously false, as  $x = a - b$ , but then this is because we are dividing by zero. Very well, let us write:

$$\frac{a(x - a + b)}{(x - a + b)} = \frac{b(x - a + b)}{(x - a + b)}$$

When  $x = a - b$ , this becomes  $a(0/0) = b(0/0)$ . To evaluate this, we use L'Hopital's rule, which states for fractions of the form  $0/0$ :

$$\lim_{x \rightarrow a} \frac{f(x)}{g(x)} = \lim_{x \rightarrow a} \frac{f'(x)}{g'(x)}$$

Differentiating, we get

$$a(1/1) = b(1/1)$$

or

$$a = b$$

"The mathematician, carried along on his flood of symbols, dealing apparently with purely formal truths, may still reach results of endless importance for our description of the physical universe."

- Karl Pearson

"Mathematics is the only good metaphysics."

- Lord Kelvin

## unCLASSIFIED

(Note: mathNEWS will print your classified ads FREE OF CHARGE. Just jot them down on a slip of paper, take it to room MC 3038 and have someone there deposit it in the mathNEWS file. Or, drop your ad in the campus mail (a free service) addressed to: mathNEWS, MC 3038. Weekly deadline for submissions: TUESDAYS: 4:30pm.)

NEEDED: Someone to sign a lease (Sept. 1974) for a two-bedroom apartment in Waterloo Towers. You stay from Sept. to Dec., we stay Jan. to Apr., then you come back. If the arrangement works out, we could sign the lease the following year. Call 745-6497.

## WHAPPENING?

May 16 Campus Centre Board meeting at 1:30pm in CC135.

May 16-7 Bruce Miller at the c.c.pub.

May 20 VICTORIA DAY

May 21 MathSoc meeting 4:30pm in MC3010

The University Senate meets at 7:30 pm in Needles Hall(formly Student Services)room 3006. On the agenda will be the revisions to increase sabbatical leave salaries. If you're opposed - then attend!!!

May 21-5 Michael Lewis at the c.c.pub. (it may be your last chance)

May 22 Introduction to the Bun. To help new users familiarize themselves with the Honeywell. 10:30am and 2:30pm in MC3011

May 23-6 Fed Flick "Live and Let Die" 8pm in Arts Lecture Hall 116. 75¢ for Fed members.

May 24 Mathematics Convocation 10am PAC

May 27 Gridword deadline 6pm.

May 28 MathSoc meeting 4:30pm MC3010.

mathNEWS PRODUCTION NITE VI PM

## SUB<sub>μ</sub> SCRIPT<sub>α</sub> IONS<sub>θ</sub>

This term a number of students on work terms will be mailed copies of mathNEWS. This marks the first time that mathNEWS has attempted a subscription service. The offer was made to students last term at a fee of \$1.00 to cover printing and mailing costs and a number of mathies took us up on the offer.

Oh yes, to those receiving mathNEWS by subscription, you can still enter the gridword contest. Just solve the gridword and mail it in. Good luck.

# math ETICS

## ACTION UNDERWAY

For all of you athletes who missed the meeting on Monday (all 30 of you, who either didn't see the sign or didn't bother to show up), MATHLETICS are officially under way for this term, under the auspices of your athletic co-ordinators Jacqueline Hearne and Gary Dryden (captains, if you need these people, they can be found in the Bridge lounge, playing FISH, only between the hours of 8:30 am and 4:30 pm Monday to Friday until August 1.)

MATHSOC has official Math teams in Competitive Basketball (2 teams, 1 in A league and 1 in B league), Competitive Baseball (A league) and Co-ed Softball, Innertube Waterpolo and Volleyball. If you haven't signed up for any of these sports,

it's too late anyway. Your only solace (if you're female) is to show up Thursday night at the girl's competitive basketball organizational meeting, if you are planning on any organized physical activities.

Our spies tell us that Competitive Basketball and Competitive Baseball have very competitive teams (it looks like we have a bunch of winners this time), so we hope we will be reporting a lot of success stories on this page in the future.

NOTE to those already signed up for teams: Please watch the Athletics Bulletin Board outside the third floor lounges and/or the glass windows outside C&D for details concerning game times and practices.

## get a bite of the 'BUN

Students who wish to obtain a Honeywell 6050 userid must punch a card in the following format:

1-20 Surname  
21-23 Initials  
25-33 Student ID  
35 Course name

One card per math course is necessary. Resources \$500.00 and 12 links file space will be given for each course. Bring your cards to MC5060. Don't try and cheat though because all information will be checked against the registrar's registration data.

## BD of ED MEETS

The Committee of Society Representatives of the Board of Education met Tuesday the 7th of May and the representative from Engineering Soc. proposed that a trip to the Stratford Shakespearean Theatre be held on Friday July 1<sup>st</sup>. The cost of this outing will be \$5.00 which includes the cost of the bus trip and tickets. Tickets for 40 students will be available to members of all faculties in the Engineering Society office in the near future, so visit MATHSOC in the next week or so to find out more details. We hope this event is well attended by Mathies because it is your money, even though the Federation is partially subsidizing the trip.

Elger  
Fropwith  
sez:  
why wait?  
Do it NOW!  
fer egsampul  
come awn  
aut an'  
join mathNEWS



FEED  
BACK

mathNEWS welcomes your criticisms, comments, suggestions, etc. All letters should be signed, but, if requested, a pen name will be used. Submit your feedback to MC 3038 and have someone there deposit it in the mathNEWS file. Or, drop your letters in the campus mail (a free service) addressed to: mathNEWS, MC 3038.

# WALBOL

or

(because it was originated  
at this university)  
WATEVERFOR, or  
SNOJOB

All presently available programming languages have one major shortcoming, namely, their "Computer-jargon" orientation. We choose, as an example of this, COBOL with its highly technical terminology. i.e.

"MOVE DATA-AREA-1 TO DATA-AREA-2." This was the motivation for creating WALBOL. WALBOL is a block structured programming language similar to ALGOL and COBOL. The difference lies in the fact that WALBOL is much more readable than either of these.

## 1) NUMERICAL CONSTANTS.

Programmers have often complained that in presently available languages numerical constants are too difficult or "mathematical" to understand. i.e. fortran "E" notation .12000000E 01 can be very confusing, so WALBOL has done away with numbers entirely. Below are examples of WALBOL numerical constants:

```
THREE
TWENTY-FIVE
SEVEN POINT FIVE (or alternately)
SEVEN AND ONE HALF
POINT THREE ONE FOUR ONE FIVE NINE
WITH THE DECIMAL POINT MOVED THREE PLACES
TO THE RIGHT.
```

## 2) STATEMENT LABELS.

All statements have a beginning and end of statement delimiter to avoid confusion which sometimes arises between statements. The beginning of each statement is denoted by a numerical constant. These are sequential and start at ONE. The end of statement delimiter is "END OF STATEMENT" <number> where <number> represents the beginning of statement delimiter for that statement. i.e.

```
THIRTY-THREE <statement> END OF STATEMENT
THIRTY-THREE. (the period being optional).
```

(note: "END OF STATEMENT" is a reserved word in WALBOL)

## 3) IDENTIFIERS.

WALBOL identifiers are similar to those of most other languages with the exception of FORTRAN. Ansi FORTRAN does not allow for variable and subprogram names longer than six characters. WALBOL on the other hand, requires a minimum length of six characters for each identifier. Lazy programmers might be tempted to use something like "AAAAAA" in WALBOL to replace "A", however the WALBOL compiler will detect this and print out the warning "UNIMAGINATIVE VARIABLE NAME" at each occurrence of the identifier.

## 4) INSTRUCTION SET.

WALBOL contains a wide and varied set of commands.

a) COMMENT STATEMENTS. Comment statements (being the most important part of any programming language) naturally, have an important place in WALBOL. Documentation

is delimited as follows:

"THIS IS A COMMENT STATEMENT" followed by the necessary documentation. (note: As with identifiers there is a limit to the minimum size of comments. It is 100 characters. Also there must be at least as many comments as source statements to insure proper documentation or else the program will not execute.)

(another note: "THIS IS A COMMENT STATEMENT" is a reserved word.)

## b) DECLARATIONS.

There is one declaration statement in WALBOL. It has the form:

```
DECLARE <variable> TO BE <type>,
<variable> TO BE <type>, ..., AND <variable>
TO BE <type> where examples of <type>
follow:
```

```
THREE DIGIT INTEGER
SEVENTEEN CHARACTER STRING, and so on.
```

## c) EXPRESSIONS

The five basic FORTRAN operators are +, -, \*, /, \*\*. The corresponding WALBOL operators are:

```
<variable> PLUS <variable>
<variable> MINUS <variable>
<variable> MULTIPLIED BY <variable>
<variable> DIVIDED BY <variable>
<variable> RAISED TO THE POWER <variable>
```

## d) ASSIGNMENT STATEMENTS.

Assignment is accomplished by the "IS ASSIGNED THE VALUE (OF)" keyword. i.e.

```
"X VALUE IS ASSIGNED THE VALUE
SEVENTY-THREE"
```

```
"VARIABLE TWO IS ASSIGNED THE VALUE
OF VARIABLE ONE PLUS X VALUE"
```

## e) INPUT AND OUTPUT.

Even though WALBOL has only been around a few days, it has already received wide acclaim for its effectiveness with input and output. The WALBOL input and output keywords are "BRING IN" and "PUT OUT" respectively. Since free formatting is difficult and time consuming all BRING IN and PUT OUT statements must be formatted. A correct output statement in WALBOL would be for example:

```
TWENTY-SEVEN PUT OUT THE CAT, AND THE DOG
USING SEVEN NUMBER SIXTEEN END OF
STATEMENT TWENTY-SEVEN. where "THE CAT"
and "THE DOG" are the output variables.
```

Format statements have five components. These are integer formats, real formats, character formats, blanks, and strings.

INTEGER FORMATS: These are in the form "<number of integers><number of digits>-DIGIT INTEGER" For example: THREE FOUR-DIGIT INTEGER. This is equivalent to FORTRAN's 3I4 (now that's confusing)

REAL FORMATS: These are similar and are of the form:

```
"<number of reals><number of digits before
the decimal point>POINT<number of digits
after>"
```

CHARACTER FORMATS: "<number of strings><number of characters>-CHARACTER STRING"

BLANKS: "<number of blanks> BLANK"

STRINGS: Strings are set apart by the WALBOL keywords "STRING" and "END OF

(WALBOL, cont'd on next page)



(WALBOL, cont'd from previous page)  
STRING"

So, for example of input and output:

```
START THE MAIN PROGRAM
ONE AAAAAAB IS ASSIGNED THE VALUE SIXTEEN
POINT ONE END OF STATEMENT ONE
TWO BBBBBC IS ASSIGNED THE VALUE FOUR END
OF STATEMENT TWO
THREE CBCRADIO IS ASSIGNED THE VALUE ZERO
END OF STATEMENT THREE
FOUR BRING IN UNCLE CHARLIE, AND HIS SON
USING FORMAT NUMBER TWELVE END OF STATEMENT
FOUR
FIVE FORMAT NUMBER TWELVE SIX-DIGIT
INTEGER, TWO BLANK, FIVE-CHARACTER STRING
END OF STATEMENT FIVE
SIX PUT OUT AAAAAAB, BBBBBC, CBCRADIO,
UNCLE CHARLIE, AND HIS SON USING FORMAT
NUMBER THIRTY-TWO END OF STATEMENT SIX
SEVEN FORMAT NUMBER THIRTY-TWO TWO POINT
TWO, SIX-DIGIT INTEGER, STRING WALBOL IS
GREAT END OF STRING, ONE-DIGIT INTEGER,
THREE BLANK, SIX DIGIT-INTEGER, FIVE-
CHARACTER STRING END OF STATEMENT SEVEN
EIGHT STOP EXECUTING THE PROGRAM END OF
STATEMENT EIGHT
END OF THE MAIN PROGRAM.
```

```
$ENTRY
THREE HUNDRED AND ONE HENRY
```

```
.....
OUTPUT
SIXTEEN POINT ONE FOUR WALBOL IS
GREAT ZERO THREE HUNDRED AND ONEHENRY
EXECUTE TIME: TWO POINT FIVE SECONDS
COMPILE TIME: TWENTY-THREE SECONDS.
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(final note: In spite of the fact that WALBOL has been in existence for such a short time, a comprehensive list of WALBOL keywords has already been compiled. It is presently available in the bookstore under the title "Webster's Dictionary".)

Any questions and/or problems should be referred to: Richard Devitt MC 3002, or Gerry Suggitt MC 3075.

(or phone ext. 2391)(special thanks to S.D.)

mathNEWS - a news weekly published at the university of Waterloo, is financed through mathematics society fees and is available free of charge to math undergrads. The views and opinions expressed herein are those of the mathNEWS staff and are made independently of both the university administration and the math society. mathNEWS welcomes your contributions, suggestions, criticisms, advertisements (published free of charge), feedback, etc. Contact us via room 3038. We put the whole thing together on Tuesday nights in MC 3011; feel free to drop in. Circulation this issue: 500 .

Despite sabotage we made it (and in record time at that). We put out a minor request: would the person who deprived us of our headline pens (along with ink and stencil) return them or else we will be forced to give you a bill for \$xx, where  $10 < xx < 20$ , so we can replace them.

You may have noted that we have about 2 pages of filler (another record); if you did notice then why are you back on campus????

Our next issue will be put together on May the 28th between the hours of VI and XII. So if any of you 553 other mathies want to help come on out or for that matter any of our 11 subscribers are quite welcome (or ant(ho-hum)one else).

For this issue we had 8 people for 8 pages....

PETE unlocked RAYNHAM, GARY DRYDEN goalie, RANDALL where's that front page article McDUGAL, CATHY POTTER our fancy clipper, SUE BOND (the Phantom sent me), JOHN sticky fingers PEEBLES, INGRID SPLETTSTOESER (pizza editor), and DENNIS one line at a time HULLIN.

\*\*time sharing off at 02.543 on 05/15/74

## PUB RUNNING DRY

mathNEWS has learned from a source in the Federation's Board of Entertainment that the campus centre pub "may close within two weeks". A Federation executive member has told mathNEWS that the pub is presently losing an average of \$100 per day.

So should you harbour any plans to make use of the pub you should do so while the term is young - you might not have the same chance two weeks from now.

## BUSES <sup>keep</sup> on TRUCKIN'

On Friday express buses will be leaving from the Campus Centre for Islington Subway Station at 11:30am, 1:30pm, 3:00pm, 4:30pm. Travel time is 1 1/4 hours. Tickets on sale only at the Central Box Office.



## BARE FACTS ABOUT LOCKERS (enginews style)

Math Society president Paul Armstrong has informed mathNEWS that plenty of lockers are still available with over 150 having been issued to date.

You can claim your locker (if you are a mathie and have paid your \$2.50 society fee) by coming to the MathSoc office, MC 3038. Then instead of lugging books around all day, you can lay them in your locker.