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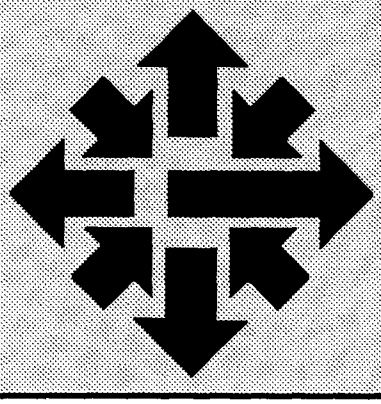


THE NOS 2 CONVERSION: COMMANDS

With the conversion of the MD, ME, and CA machines to NOS 2, you will notice many changes in the way commands work. In addition to the changes in the log-in and help procedures described in last month's *Newsletter*, some commands you are now familiar with will not be available under NOS 2, some parameters will change, and some new and very useful commands will become available under the new system. You can find out about any NOS 2 command by using the on-line manual entitled COMMAND, which you can read by typing EXPLAIN,M=COMMAND. This article explains some of the major changes in commands that are important to many users. The changes have been made to commands in three groups: commands having to do with file management, commands for job control, and commands, functions and symbolic names related to execution control and procedures.

FILE MANAGEMENT COMMANDS

The ROUTE command, which many people use every day, has changed. You will have to remember to revise this command in your procedure files, if you have them, and any other time you ROUTE a file. The UJN parameter will replace the old BIN parameter that tells the UCC operators where to put your output. Where you used to type,

```
ROUTE,FILE,DC=LP,EC=A9,UN=EA,BIN=495
```

under NOS 2 you will type,

```
ROUTE,FILE,DC=LP,EC=A9,UN=EA,UJN=EA*495
```

(*Conversion* continued on next page)

WE'RE MOVING OUT: UCC Leaves Experimental Engineering

Starting in October of this year, you will have to go to Lind Hall to submit jobs or pick up output to use the Reference Room, to meet with a consultant, or to sign up for a short course. You will go to the ground floor of Wulling Hall to open an account or to see anyone about administrative matters.

Because Experimental Engineering will be torn down to make room for the new Computer Science and Electrical Engineering building, some of UCC's on-campus facilities must be moved during the month of September. The new offices for UCC's administrative and accounting groups will be in Wulling Hall. The Reference Room, I/O station, and walk-in consulting will be located on the first floor of Lind Hall in the location of the present Engineering Library. Some staff members, including the Programming and Technical Publications groups, will transfer to the Lauderdale facility. We will provide more specific details about the dates, room numbers, and phone numbers as soon as these become available.

(*Conversion* continued)
You should use the UN parameter to designate a printing site for your job, but the output will be delivered to the site designated by UJN. For jobs routed to EA (Experimental Engineering), you can specify a name (up to four characters) or your initials after the EA* in the UJN to make it easier for you to find your listing in the routed output bin. The RUN, RPW, RFM, RCN, and RPN parameters to ROUTE are no longer needed or available.

The SAVE, RETAIN, DEFINE, and CHANGE commands, all of which affect permanent files, have changed in one detail. Files made public or permitted to other users will not be listed in an alternate catalog (when you CATLIST another user name) unless the file was created with the new AC parameter set to Yes. For example, if a user with user name ABCDEFG saves a file with the following command,

```
SAVE,FILE,CT=PU,AC=Y
```

then all users, when they type,

```
CATLIST/UN=ABCDEFG
```

will see the file named FILE. If you do not specify AC=Y, the file will not be listed, even though it is a public file. The default for all files, including those created under NOS 1, is AC=N. See Exhibit 1 for an example of how the AC parameter affects the listing of a file catalog.

```
/USER,ABC,XXXXXXX
/DEFINE,FILE1/CT=PU
/DEFINE,FILE2/CT=PU,AC=Y
/USER,XYZ,XXXXXXX
/CATLIST/UN=ABC
CATALOG OF XYZ     FM/CAD       85/07/17    16.40.42
          ALTERNATE CATALOG ABC

    DIRECT ACCESS FILES
     FILE2

         1 DIRECT ACCESS FILE, TOTAL PRUS = 0.
```

Exhibit 1. Creating files and listing files with the AC parameter.

JOB CONTROL COMMANDS

Under NOS 2 most users will have a number of new choices, depending on what machine they work on, about how their interactive or batch job works within the system. Briefly, you may now specify two passwords: one for interactive and one for batch jobs. You may detach jobs from your interactive session and let them run in the background. You must now explicitly retrieve dayfiles from SUBMIT jobs. Instead of QUEUE, you must now learn to use ENQUIRE and other commands to do what QUEUE used to do. The following paragraphs describe each of these changes in more detail.

Passwords

Users who are able to submit jobs will have two passwords under NOS 2, one for interactive and one for batch jobs. If you want or need improved security for your account, you may set two different passwords. You can, of course, set the same password for both interactive and batch jobs, and most users will find it convenient to do so. At the

time of conversion to NOS 2, both passwords will be set to your current NOS 1 password. To change the batch password you will have to submit a batch job that includes the PASSWOR command; likewise, you may change the interactive password in a terminal session using the PASSWOR command.

Detaching Jobs

Users who are validated to submit jobs will be able to detach a job during a terminal session, let it run in the background, and recover the job if necessary. If you have especially large programs or sets of data that take a long time to run, this could be a useful feature of NOS 2. For example, during an interactive session, you might type the following commands:

```
SETJOB,SPSSJOB
ACQUIRE,BIGSTAT,BIGDATA
SPSS,I=BIGSTAT,L=BIGDATA
DETACH
```

The system responds,

```
JOB  DETACHED,  JSN=AAGB
JSN:  AAGG,TTY

RECOVERABLE  JOBS

JSN             UJN             STATUS                    TIMEOUT

AAGB            SPSSJOB         EXECUTING

ENTER           GO     TO  CONTINUE  CURRENT  JOB,
                RELIST     TO  LIST  RECOVERABLE  JOBS,
                OR  DESIRED   JSN:
```

If you type GO, you are then able to enter commands in a new job while the SPSS job continues to execute. The detached job is always available for recovery as the primary job: you type RECOVER, the system lists all your jobs in the system, and you select the one you want to work with.

Dayfiles from SUBMIT Jobs

Dayfiles from SUBMIT jobs that are run under NOS 2 will not be retained in your catalog in the permanent file called DAYFILE. Instead, output and dayfiles from submit jobs will go to a wait output queue if you specify "TO" after the file name on the SUBMIT command. You can check this queue with the "ENQUIRE, JSN" or "ENQUIRE, UJN" command. You can make the output and dayfile local with the QGET command. You must in any case take explicit steps to retain your dayfile from a SUBMIT job, because the dayfile no longer appears in your permanent file catalog by default. See Exhibit 2 for examples of the ENQUIRE and QGET commands.

QUEUE and ENQUIRE

The QUEUE command is a modification to the system written at UCC. This command will no longer be available. To list status information about jobs or files, you will use ENQUIRE. To purge a job from a queue, you will use the DROP command. See Exhibit 2 for examples of the ENQUIRE and DROP commands.

EXECUTION CONTROL: COMMANDS, FUNCTIONS, SYMBOLIC NAMES

Some commands, functions, and symbolic names related to procedures and execution control have changed under NOS 2. These changes have occurred mainly because the Kronos Control Language (KCL) will not be supported any longer. KCL is a predecessor of the NOS 1 Cyber Control Language (CCL).

```
batch. $RFL,0.
/new,job                                  { Type in job to be submitted. }
auto
00100 /job
00110 spss,t100.                          { This sets the UJN to SPSS. }
00120 /user                               { This uses the current UN/PW.}
00130 a,spssdat.
00140 spss,i=spssdat.
00150 skip,end.
00160 exit.
00170 endif,end.
00180 dayfile,dog.                        { Retain the dayfile to be safe. }
00190 retain,dog.
00200  *DEL*
/submit,job,to          { "TO" saves the output in the wait queue. }
17.53.23 SUBMIT COMPLETE.  JSN IS AADM.
/enquire,ujn.                             { This gives 1 line of info for each job. }

JSN SC CS DS LID UJN      STATUS           EXECUTING MESSAGE

AADL.T.ON.BC.   .AEUQ     EXECUTING       ENQUIRE,UJN.
AADM.B.NI.BC.   .SPSS     EXECUTING       SPSS,I=SPSSDAT.
/enquire,ujn=aadm                         { This gives 1 line of info for AADM. }

JSN SC CS DS LID UJN      STATUS           EXECUTING MESSAGE

AADM.B.NI.BC.   .SPSS     EXECUTING       SPSS,I=SPSSDAT.
/enquire,jsn.                             { This gives 1/2 line of info for each job. }

JSN SC CS DS LID STATUS                   JSN SC CS DS LID STATUS

AADL.T.ON.BC.   .EXECUTING                AADM.B.NI.BC.   .EXECUTING
/enquire,jsn=aadm                         { This gives everything about job AADM. }
AADM.B.NI.BC.   .EXECUTING                 UJN=SPSS
SRUS=     0.330.  SRU LIMIT= 28224.0.  CM FL= 67700.   EM FL=      0.  SPSS,I=SPSSDAT.

 DAYFILE=
17.53.24.$SETFS,PROC77/FS=AD.
17.53.24.PROC77.
17.53.24.COPYEI,ZZZNOTE.
17.53.24. EOI ENCOUNTERED.
17.53.24.UNLOAD,ZZZNOTE,PROC77.
17.53.25.NOEXIT.
17.53.26.SPSS,I=SPSSDAT.

PENDING COMMANDS =
SKIP,END.
EXIT.
ENDIF,END.
/drop,aadm.                               { This will drop AADM. }
DROP COMPLETE.
/enquire,ujn.                             { This gives 1 line status of all jobs. }

JSN SC CS DS LID UJN      STATUS           EXECUTING MESSAGE

AADL.T.ON.BC.   .AEUQ     EXECUTING       ENQUIRE,UJN.
AADM.B.NI.BC.   .SPSS     WAIT QUEUE
/qget,aadm.                               { Get output + dayfile from wait queue. }
QGET COMPLETE.
/copy,aadm                                { list output + dayfile from AADM }
```

Exhibit 2. Using SUBMIT, ENQUIRE, DROP, and QGET.

Execution Control Commands

Under NOS 2, users on the MD and CA machines will be able to designate, using the UPROC command, the name of a file (usually a procedure file) to be executed at each log-in. Also, the CALL command, which is part of KCL, will still be available because UCC has implemented a limited version of CALL under NOS 2. This command pre-processes a file of commands, putting a ".PROC" command at the front of it, and then transfers control to BEGIN for continued processing.

The GOFO and GOTO commands, also part of KCL, will no longer be available, but they are easily replaced with NOS 2 control structures. See Exhibit 3 for examples of these replacements.

Execution Control Functions

The PFILE and SIZE functions will no longer be available but they can be replaced as follows. The PFILE function is used most often to check if a file exists; under NOS 2 the following commands will check to see if the permanent file SPSSDAT exists and will write a message to the dayfile:

```
GET,SPSSDAT/NA.
IF  (FILE(SPSSDAT,AS))  NOTE..File  SPSSDAT  is  available.
```

As the example shows, you may GET or ACQUIRE a file with No Abort specified and then check to see if the file is assigned to your job with the FILE function AS parameter. If the file is not assigned to your job, then it does not exist. Similarly, the FILE function can return the size attribute: FILE(lfn,FS) is equivalent to the NOS 1 function FILE(lfn,SIZE).

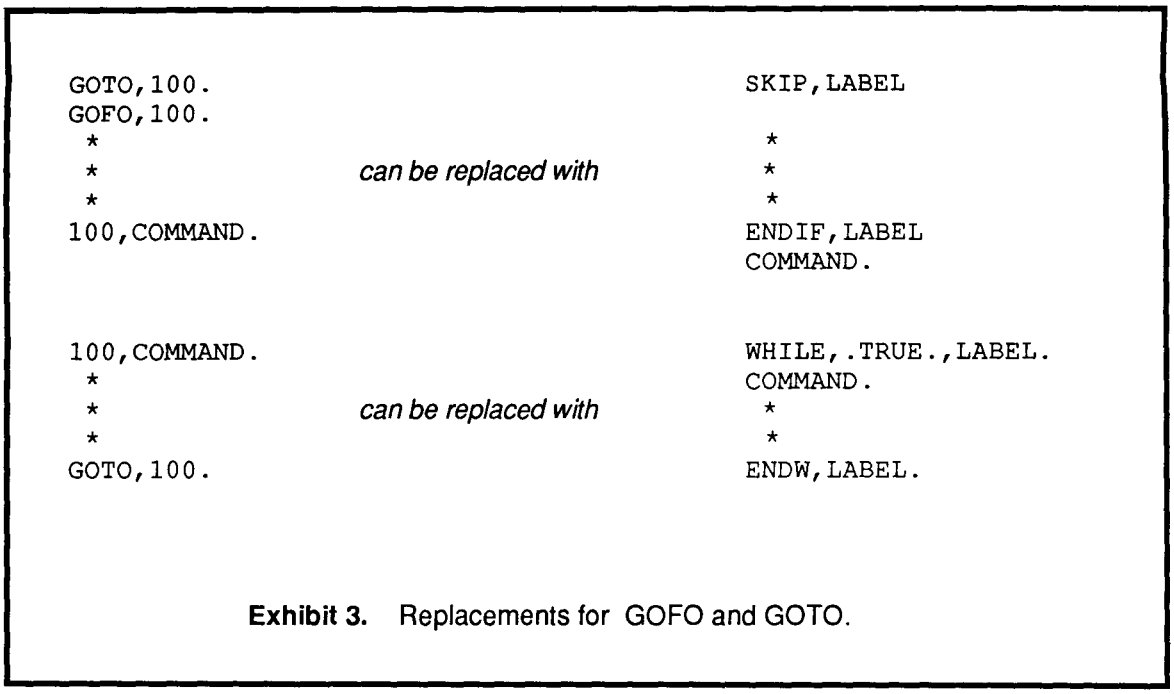


Exhibit 3. Replacements for GOFO and GOTO.

Execution Control Symbolic Names

Some symbolic names have been changed in NOS 2. In the left-hand column are the old names from KCL, in the center column are their replacements under NOS 2, and in the right-hand column are examples of how these symbolic names may be used.

KCL	NOS 2	NOS 2 EXAMPLE
PD	DATE	IF (DATE .EQ. 850704) NOTE..4th of JULY
PT	TIME	IF (TIME .LT. 1800) NOTE..BEFORE 6 PM
MID	HID	IF (HID .NE. CA) NOTE..NOT USING CA MACHINE
DW	WEEKDAY	IF (WEEKDAY .EQ. SUN) NOTE..RUNNING ON SUNDAY

The symbolic name DATE can be used instead of PD ("packed date"), but the format of the returned date is different. DATE returns a decimal value of the form "YYMMDD" instead of an octal field. The value is also different from the one returned by DATE under NOS 1, which was of the form "MMDD." The MID symbol ("machine ID") has been replaced by HID ("host machine ID") in NOS 2.

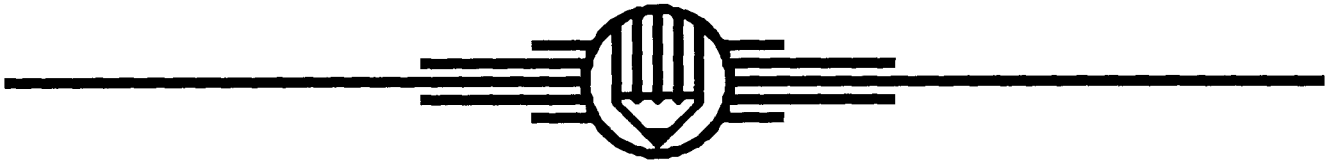
Instead of DW ("day of week"), the WEEKDAY symbolic name can be used, but the value returned under NOS 2 is different from that returned by KCL or by NOS 1 CCL. The following table shows the differences:

DAY	KCL DW	NOS 1 CCL WEEKDAY	NOS 2 WEEKDAY	WEEKDAY SYMBOL
Monday	0	2	1	MON
Tuesday	1	3	2	TUE
Wednesday	2	4	3	WED
Thursday	3	5	4	THU
Friday	4	6	5	FRI
Saturday	5	0	6	SAT
Sunday	6	1	7	SUN

These are some of the differences in commands between NOS 1 and NOS 2. You should look at WRITEUP, NOS2DOC when the machine you work on converts to the new operating system. That WRITEUP contains the information in this and other *Newsletter* articles as well as a listing of all the major and minor differences in commands between NOS 1 and NOS 2.

Complete information on the NOS 2 operating system can be found in the four-volume *NOS Version 2 Reference Set,* which you may examine in the UCC Reference Room. You will also be able to purchase individual volumes at the Electronics desk in the Minnesota Bookcenter in Williamson Hall. New users may find Volume 1 particularly helpful. Experienced users will find Volumes 2 and 3 useful.

(P. Johnson)



Initial Grant Payment Raised to $50

University researchers and graduate students take note: The initial $30 fee you pay for a $1000 research grant in computing services has been increased to $50. This change was announced in a memo from V. Rama Murthy, Acting Vice President for Academic Affairs. We reprint the text of the memo, dated July 25, 1985, in full below.

TO: Chancellors, Deans, Directors and Department Heads

FROM: V. Rama Murthy, Acting Vice President for Academic Affairs and Provost

SUBJECT: Computing Costs Associated with Graduate Thesis Work and Unfunded Faculty Research

For the past two years the University has supported a grants program for providing centrally administered computing services for graduate thesis work and for faculty research which was not supported by granting agencies. This program has been very popular, as evidenced by the faculty research budget having an estimated shortage of $100,260 and the graduate student support budget having an estimated shortage of $137,223 in the 1984-85 fiscal year. This program will be continued in the the 1985-86 fiscal year. Due to funding constraints for instructional support, this program may only be modestly expanded in 1985-86. Efforts will be made to seek additional funding but specific commitments cannot be made at this time.

The charging schedule which appears below is similar to that in effect for the past two years. The initial payment amount has been raised from $30 to $50 to better reflect the cost of consumable products such as paper and disk space. The features of this program are:

1. An initial payment of $50 (not refundable) per user will establish an account of $1,000 for computing costs (03) and on-line computing-related charges (05).

2. All off-line computing related charges and computing costs beyond $1,000 will be fully charged to the user. However, grants will be available under the program presently managed by the Computer Grants Committee which remains in effect. In the past, problems have occurred for people who have overrun the $1,000 account. These overruns cannot be handled retroactively by the Computer Grants Committee.

Since the initial charge is relatively small, you may want to consider absorbing these initial charges for your faculty who have unfunded research needs from your departmental budgets. The same schedule will apply to thesis-related computing by graduate students. The grant will provide a considerable amount of computing at a very low cost and should go far in meeting the computing needs of many of our faculty and graduate students.

We must expect grants and contracts for research projects to include funds for research computing and to pay the full costs of such computing whenever possible, whether the computing is done by faculty members or graduate students. If this practice is not followed, available University funds may not permit continuation of this policy for unfunded research. The Computer Grants Committee will not favorably evaluate requests for unfunded research when sincere efforts have not been pursued through granting agencies. Your cooperation is needed in implementing this policy which, if not followed, will lead to inequities for those who do supply funds for research computing.

Please distribute copies of this memo to faculty and graduate students who should know about it. The Computing Centers will be providing notification to their usual clientele but one of the purposes of the grant program is to reach new and prospective consumers of computing.

NEW EDITION OF IMSL

UCC will replace the International Mathematical and Statistical Library (IMSL) version 9.1 with version 9.2 on all CYBER systems and the CRAY on August 25, 1985. You can access IMSL as a user library as before with this control statement on the CYBERs:

```
FETCH(IMSL/V=compiler  name)
```

where **compiler name** is MNF, FTN, FTN5, M77 or PASCAL. On the CRAY the control statement is

```
LDR,LIB=IMSL
```

A WRITEUP on IMSL is available on the CYBERs. To obtain an index of this WRITEUP, execute the control statement:

```
WRITEUP(IMSL)
```

The routines that had significant changes during this update are listed below.

ABIBN	BEMSON	CTPR	CTPR1	CTRBYC	DGEAR	EHBCKF
EHOUSS	ELZVC	EQRH3F	EQRT2S	EQZVF	FLINV	FTFREQ
FTWENX	GGAMR	GGNPM	LEQ2C	LSVDB	LSVDF	MDBIN
MDBNOR	MDTNF	MDTPS	MMBSJR	MMDEN	OFCOMM	RLFOR
RLFOTW	UGETIO	USPKD	VBLA=DROTG	VBLA=SROTG	VDSWAM	VIPRFF
VSAD	VSAR	VSARER	VSSWAM	ZANLYT	ZXMWD	ZXSSQ

Detailed information regarding the changes is available from Appendix 6 through Appendix 13 in Volume 4 of the *IMSL Reference Manual*, a copy of which is available in the UCC Reference Room. If you encounter any problems when you use IMSL, call our HELP-line, 376-5592.

(S. Gavali)

MATH AND STATISTICS PACKAGES

ALGORITHMS FROM ACM TRANSACTIONS OF MATHEMATICAL SOFTWARE

We now have on the CYBER CA the ACM collected algorithms published in the journal *ACM Transactions on Mathematical Software* starting with algorithm 493 from March 1975. We recently added algorithms 627 and 628 published in March 1985. They are

ALG627 A FORTRAN Sub-routine for Solving Volterra Integral Equations
ALG628 An Algorithm for Constructing Canonical Bases of Polynomial Ideals

All these algorithms are available to users on the FETCH file CALGOPL, which is a MODIFY program library. The list of the available algorithms and control statements to access them are given in the WRITEUP obtained by the command

```
WRITEUP(CALGOPL)
```

The journal *ACM Transactions on Mathematical Software* is available in the UCC Reference Room.

(S. Gavali)

APPLICATIONS REMOVED, RENAMED UNDER NOS 2

As we convert each CYBER to NOS 2, we plan to delete the following applications programs from the CYBER systems:

DARE Continuous simulation system

FMT Text formatter; use PROSE

ISIS Interactive statistical system; use MINITAB

TXTFORM Text formatter; use PROSE

TXTPLOT Text formatter; use PROSE

TXTPRIN Text formatter; use PROSE

TYPESET Text formatter; use PROSE

UMST University of Minnesota statistics system; use BMDP and SPSS

UMTIMER Timing program for CYBER 74 COMPASS jobs

If the removal of these programs causes you problems, please contact the UCC HELP-line at 376-5592.

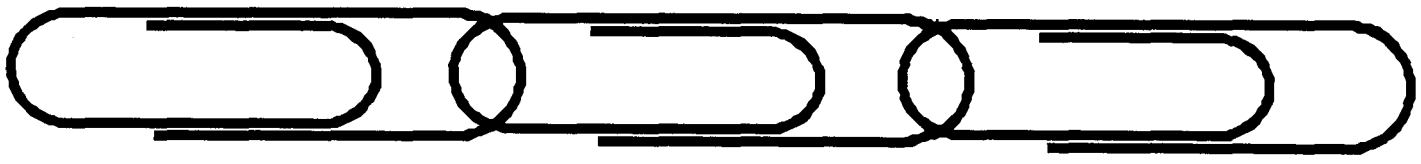
The following packages have been renamed and only the new names can be used on NOS 2:

NSAP Renamed NONSAP, nonlinear structural analysis program

SPICE Renamed SPICE2, electronic circuit analysis program

SSAP Renamed SAP4, structural analysis program

(M. Frisch)



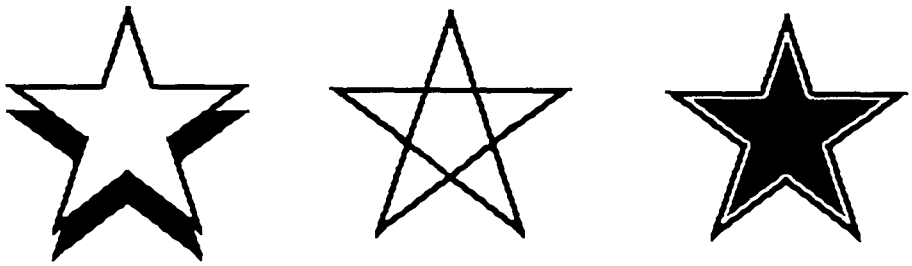
Data Base Update

SIR/DBMS NEW RELEASE

Our current version of the SIR data base management system on the CYBER system is version 2.1.2. We have just placed up the next release, version 2.1.3, as the future version. To access the future version of SIR, use the following control statements:

```
FUTURE(SIR)
SIR,IA.          { Interactive command. }
```

We encourage you to access this version now and use it on your data base. On September 24 we will make it the current version. There are corrections to specific bugs within version 2.1.2 that are corrected with 2.1.3.



SIR DATA BASE SEMINAR

The University Computer Center will offer a SIR Data Base Seminar in September, 1985. If you have large amounts of data and need to manage them effectively, then this seminar is for you. The seminar will run for three days (September 9-11) for six hours each day (9 a.m.-noon, 1:30-4:30 p.m.). Topics include:

- Schema Design
- Retrieving Data
- Reports
- Utilities
- The Relational Query Language: SQL

Lab time will be available on UCC's CYBER 845 computer. Registration will be limited so be sure to register early. The registration deadline is August 30, 1985. The cost of the seminar for University of Minnesota students, staff, and faculty is $200; the fee for non-University persons is $250.

To register, send check or journal voucher to:

SIR Seminar
University Computer Center
227 Experimental Engineering
208 Union Street S.E.
Minneapolis, MN 55455

For further information, call Jerry Stearns at 376-8806.

The Experimental Engineering Building:

A 30-year personal reminiscence
by L. A. Liddiard

The black-roofed, three-floor brick building along Union Street will disappear this fall when its location becomes the construction site of the bigger, brighter, $45 million Electrical Engineering and Computer Science building to be completed fall 1987.

When I first encountered Experimental Engineering I was a student in a fluid mechanics lab course. The lab experiment was to determine fluid flow over a weir by switching, weighing, and dumping Mississippi water into two giant containers in the basement of that building.

Next, Math 165 introduced me to high tech computing using the UNIVAC 1103 on the second floor of Experimental Engineering. The primary memory of the 1103 consisted of 36 William's tubes (CRTs) each *holding* a 32x32 matrix of electrostatic dots (1024 36-bit words) and a 16,384 word drum for secondary storage.

Since the 1103 was installed in 1957, before transistors were used, its circuits were composed of "normal" vacuum tubes that required a 20-minute sequential shutdown to safely remove the electric loads. A PANIC button was available to shut off the loads instantaneously, but we then required several days to replace blown tubes before the machine was operational again.

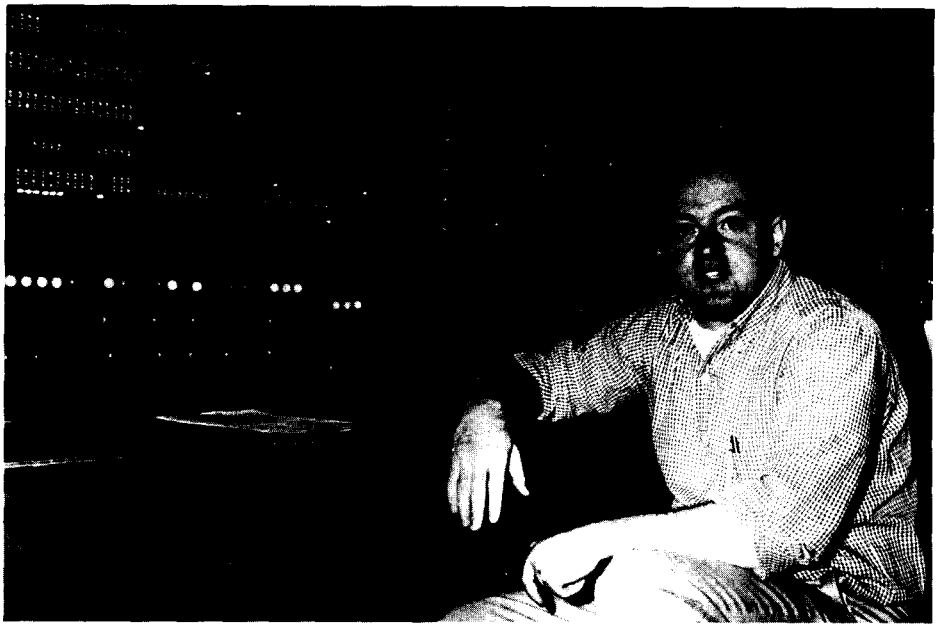
A water-evaporating cooling system was installed in the Experimental Engineering basement to chill this digital electronic marvel. In later years, when smaller computers took less power, the chiller allowed the Numerical Analysis Center (later to be called the University Computer Center) to air-condition most of its offices. (At the time, the University did not typically allow air-conditioning for *people* because it was not that hot in Minnesota.)

In a room adjacent to the 1103, there were three Teletype machines for preparing paper tape programs and printing out hard-copy results. The rules were: The best Teletype was for the real reseacher currently on the 1103, the less reliable one for the classroom student, and the other one out of commission or being repaired. Because of this input bottleneck, each student in Professor Stein's class selected a different problem from a set and translated it into a working program with answers. These programs and results were distributed to the other students to critique for grade points. I use this initial programming experience to explain why I am a better critic than writer of programs.

After a year in graduate school as a research assistant in the Math department, I went off to the real world: Boeing Aircraft in Seattle.

The Experimental Engineering building originally contained a large central open area on a floor of reinforced

Experimental Engineering, circa 1928.



L.A. Liddiard in front of the Univac 1103.

concrete above a basement story, surrounded by two floors of offices. Over the central area a rolling crane supported by steel beams and tracks allowed the workers to move heavy testing machines and materials and work on them under a green glass skylight. There was also an elevator between the basement and first floor. When additional space was required, the University put a suspension concrete floor over the open area as a second floor. This floor had a maximum static load rating of 75 pounds per square foot, so standing with your feet together was not safe.

Onto this floor the University put its first two generations of large central computers; a vacuum tube UNIVAC 1103 in 1957 and the second generation transistor CDC 1604 in 1962. Both of these computers had to be put in place and removed by exterior cranes through second-story windows, since the stairways could not handle large, heavy loads. No elevator to the second floor was ever installed and many boxes of paper and printed manuals were carried or dollied up and down the stairs. When the CDC 1604 was installed, the University replaced the glass skylight with normal roofing to conserve heating and air-conditioning and removed the rolling crane and tracks.

When I returned in September 1960, a promised research assistantship in the IT Math department was not available, but Marvin Stein offered me a position in his Numerical Analysis Center.

Most of the 1103 programming in the Center was done using a one-pass assembler language, but there was also a primitive algebraic translator that quit giving error messages after the tenth one. At this point it gave one message saying, "Go back and read the manual." From that translator I learned never to use cute, humorous, or sarcastic error messages because they quickly grow stale; but users of MNF and M77 know that I grew fond of writing translators that give numerous error messages.

The 1103 was nearing the end of its useful life and a new company called Control Data Corporation (CDC) allowed the University to have time on a CDC 1604 (with a 32,768 48-bit word memory) at its 501 Park Avenue plant. (Seymour Cray had worked on the UNIVAC 1103 before going to CDC, and there was an interesting rumor that the number 1604 was chosen by adding 1103 to 501 Park.)

The CDC 1604 was purchased (instead of a UNIVAC 1107 or an IBM 7090) in 1962 and brought into Experimental Engineering through a window. The CDC 1604 had a speaker connected to the upper bits of its accumulator register so that it hummed as it worked on normal programs and could even do a passable "Minnesota Rouser."

The first large programming project that I worked on was the 2707 simulator (1103+1604) that exactly duplicated punch card and paper tape programs from the UNIVAC 1103 on the CDC 1604. It was validated by passing the 1103 machine diagnostic programs.

The winter of 1962 I damaged Experimental Engineering for the first and only time when a fellow research assistant made a face at me from a second-story window and my answering snowball broke a window pane.

In 1966 the Numerical Analysis Center selected a CDC 6600 over a GE 635 and an IBM 360/67 or /75 to replace the CDC 1604, but the machine was too heavy to install on the second floor. A 5000-square-foot lab was available on the first floor of Experimental Engineering, but the renovation cost of $450,000 was not as attractive as the $900,000 Lauderdale computer center. The Lauderdale building had two 3000-square-foot computer bays and a total of 43,000 square feet and was put up for sale by the local power company, NSP, who had moved into a new downtown Minneapolis building.

Although the CDC 1604 stayed at Experimental Engineering for another two years as an instructional system, when it left, the computer space in the building was turned into office space and additional first-floor space was obtained to house a Remote Job Entry (RJE) station. The phone company supplied a Telpak line (40,500 bits/second) that drove the RJE high-speed card reader and printer and allowed the user to consider the remote CDC 6600 as a campus machine.

As UCC grew, there were the usual on-going negotiations for additional space. As in all political wars, sometimes it was clout from above rather than reasoned discussion that moved negotiations forward, and I remember computer time and different space being offered during the bartering. A larger Reference Room replaced a work area; keypunch machines multiplied as RJE use grew, and then gradually disappeared as interactive use became the norm. A Computer Store expanded from a second-floor caged room with crowd-control fences for the first week of classes to a well lighted and roomy basement room. When the multi-million dollar, deep-discount microcomputer program began last year, the Computer Store was taken over by the BookCenter and the basement room became a study hall.

The hallways were never attractive: sandy construction-block walls and muddy brown paint combined with asphalt tile flooring. There was some consternation when the men's bathroom on the second floor was changed into a women's (since they needed at least one), leaving only a basement facility for men. Cold water fountains appeared at the south end at the first and second floors to supplement the one by the first-floor central doors.

Vending Services brought in milk and product machines (the fastest selling product for a long time was a pack of blank punch cards) and they convinced a nearby secretary to give refunds when the machines goofed. She gave up that service when an irate customer dumped a carton of sour milk on her.

I was given an office with large windows in the renovated 1604 space. I proceeded to fill it with computer material: Twentyfive years of *Datamation, ACM Computng Reviews* and *Communications* plus computer reference manuals and correspondence, listings, and memos have now filled that room to overflowing. Those of us on the east side of the building enjoyed looking out the windows onto the intramural

Inside Experimental Engineering, circa 1928.

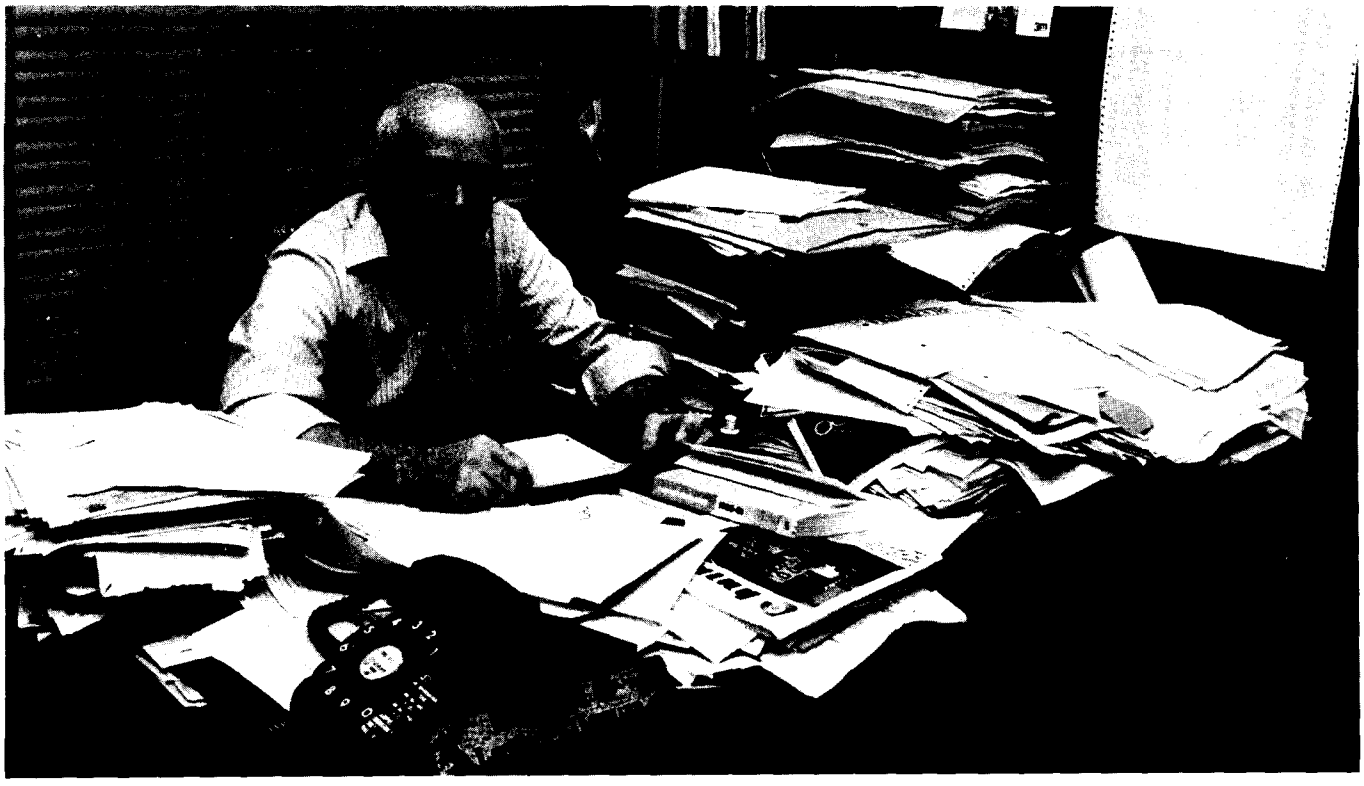
football and soccer fields across Union Street to watch men's football practices, soccer games, and an occasional rugby scrimage. Women used the field for field hockey and rugby. One winter the Minnesota Vikings scraped off the snow and used it for a Super Bowl practice field. The new Radisson Hotel and parking ramp eliminated these fields.

Meanwhile the federal government passed laws regarding handicap access; when the planned second-story walkway between Experimental Engineering and the Aeronautical Engineering building never materialized, Experimental Engineering remained inaccessible to handicapped students.

The need for better Electrical Engineering and Computer Science facilities in the IT complex doomed Experimental Engineering. When the first plans for the building were drawn up, both UCC and MEIS were included in its space. But space for these departments was eliminated to stay within the $45 million limit on the building's cost, while still meeting the needs of the Electrical Engineering and Computer Science departments. The spending limit was for a building planned six years ago, so now, besides not enough space for UCC or MEIS, getting the Electrical Engineering and the Computer Science departments in will be a tight fit.

Time is running out for the Experimental Engineering building. A toothed hemispherical tree mover recently removed two trees planted just a couple of years ago. The flowering shrubs surrounding the entrances were moved to Lind Hall. Even the best grass patches near the building were cut into sod and removed. Core samples have been taken for the new Electrical Engineering and Computer Science building. All of the departments in Experimental Engineering are making arrangments to move before the wrecking ball shatters this building around the first of October. UCC will have quarters next year in the new Supercomputer building on the West Bank, but in the meantime some UCC groups will go into Lind Hall, some to Wulling Hall, and others to Lauderdale. With Micro Services in Shepherd Labs, a micro lab in Folwell, and Engineering Services on Transfer Road, UCC will function from six separate locations.

What do we have left when such a building disappears? Memories: memories of the good times and the bad, now that its sheltering space will be gone. Memories of the knowledge acquired in labs and classrooms, the work we have done, the conversations in the halls about ideas, new events, and people. These last 30 years have passed swiftly for me and what I am left with are few sad and multitudinous joyful memories. *Sic transit gloria mundi.*



L.A. Liddiard in his office in the former computer room.

PHONE NUMBERS

Access:
- CYBER(CA)—10, 30 cps.....376-5730
- —120 cps.....376-5706
- MERITSS(ME)—10, 30 cps.....376-7730
- —120 cps.....376-7120
- VAX/VMS(VA)—(autobaud).....376-8070

Accounts:
- MERITSS.....373-7745
- User Numbers.....373-4548

Computer-Aided Instruction.....376-2975
Computer Hours (recorded message).....373-4927
Consulting:
- HELP-line.....376-5592
  7 a.m.–7 p.m., Monday-Friday
- Statistics Packages.....376-1761
  1–2 p.m., Monday-Friday
- Data Bases.....376-1761
  10–11 a.m., Monday-Friday
- Microcomputers.....376-4276
  9:30 a.m.–noon and 1:30–4 p.m., Monday-Friday
- Scribe, Text Analysis & Humanities Computing.....376-2944
  1–3 p.m., Monday, Thursday, Friday

Contract Programming.....376-1764
Data Base Applications.....376-1764
EDUNET Liaison.....373-7745
Engineering Services.....376-1023, 376-8153
Equipment Purchase/Information.....376-8153
Experimental Engineering I/O.....373-4596
Graphics Software.....638-0541
HELP-line.....376-5592
7 a.m.–7 p.m., Monday-Friday
HOURS-line (recorded message).....373-4927
Information, Experimental Engineering.....373-4927
Information, Lauderdale.....373-4912
Instructional Labs.....376-2703
Instructional Services.....373-7745
Lauderdale Computer Room.....373-4940
Lauderdale Services.....638-0523
Lauderdale Services Manager.....373-7538
Lauderdale Users' Room.....373-4921
Newsletter Subscription.....376-1491
Permanent File Restoration.....376-5605
Professional Services Division.....376-1764
Project Assistance.....376-1764
Reference Room.....373-7744
Remote Batch (RJE) Services.....376-2703
Short Courses.....376-8806
Shuttle Bus Service.....376-3068
System Status (recorded message).....373-4927
Tape Librarian: see Lauderdale Services

OPERATING HOURS

	CYBER (CA)	Low rate	CRAY (CR)	MERITSS (ME)	VAX (VA)
M-F	7 a.m.-4 a.m.	8 p.m.- 4 a.m.	7 a.m.- midnight	7:45 a.m.- 3:30 a.m.	8 a.m.- 6 a.m.
Sat	4 a.m.- 5:15 p.m.	4 a.m.- 5:15 p.m.	7 a.m.- 5 p.m.	7:45 a.m.- 3:30 a.m.	24 hours
Sun	4 p.m.- 1 a.m.	4 p.m.- 1 a.m.	4 p.m.- midnight	4 p.m.-3:30 a.m.	24 hours

PUBLIC LABS–TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro
East Bank			
Arch 148		X	X
CentH		X	
ComH		X	
DiehlH 270, 207		X	
EltH 121, 125		X	
EltH N640	X		
Exp Eng 130		*	
FolH 14, 14a	X	X*	X
LindH 26		X	
MechE 308		X	
Physics 69		*	
SafH		X	
TerrH		X	
VincH 4		X	
Walib 89		X	
West Bank			
BlegH 25		*	
BlegH 90	X		
BlegH 140		X	
MdbH		X	
OMWL 2		X	
SocSci 167			X
St. Paul			
BaH		X	
ClaOff 125	X	X	

* Research cluster; access to CYBER CA and VAX/VMS

X in interactive column indicates access to MERITSS

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Michael M. Skow, Acting Director

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