FINANCIAL SUMMARY

```
GENERATE LEVEL..ENTER.
GENERATE A BAR.
GENERATING A VERTICAL BAR CHART.
ENTER:
INPUT DATA.
"SALES"
1,985 2,1121 3,1368 4,1737, 5,2361
"EXPENSES"
1,836 2,960 3,1139 4,1441 5,1963
END OF DATA.
TITLE IS "FINANCIAL SUMMARY".
X AXIS LABEL IS "MONTHS".
Y AXIS LABEL IS "MILLIONS OF DOLLARS".
FRAME THE PLOT.
X AXIS IS MONTHLY.
GO.
```
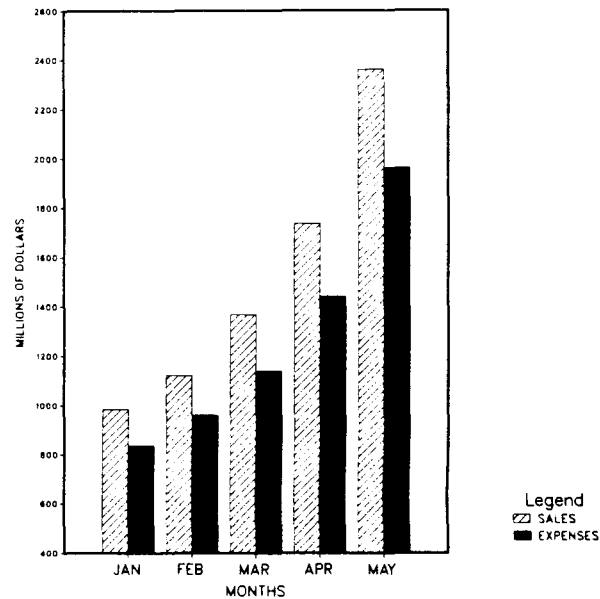

Legend
SALES
EXPENSES

Figure 1: A bar chart and the TELL-A-GRAF input directives you would use to generate it.

SAY IT WITH PICTURES

In an increasingly complex world, the ancient Chinese dictum that a picture is worth a thousand words may be more true than ever before. Businesses continue to expand, scientific research to increase in both amount and depth, and the day-to-day ordering of our work and lives to grow ever more complicated. Because of this, tools that help simplify concepts and information without misrepresenting them are invaluable. DISSPLA and TELL-A-GRAF, two graphics packages now available on the VAX/VMS system at the University Computer Center, are such tools.

TELL-A-GRAF: Graphics at your Fingertips

TELL-A-GRAF, a conversational computer graphics system, produces publication-quality charts, graphs, and textual figures applicable to a wide range of disciplines. Statisticians, engineers, medical researchers, administrators, and humanists will all find TELL-A-GRAF useful. And you don't need years of computing experience to exploit its capabilities! Graphics are created using English-like commands; you need enter only a few basic instructions to produce a fully-designed chart (Fig. 1). Or,

you may design complex graphic creations and store them for other users to access. With only half an hour's practice, you'll be creating truly professional-looking graphics.

TELL-A-GRAF produces four types of data displays: linear charts, bar charts, pie charts, and pages of text (see p. 45). For the most basic plotting specifications, the program automatically generates a legend, scales the axes to fit the data, and centers and positions headings and axis labels. Optional features allow you to vary the size, color, and resolution of the various items, as well as choose among a variety of alphabets and text styles (Fig. 2).

Because TELL-A-GRAF is interactive, it offers you one big advantage over traditional graphics packages: you have the opportunity to view the results of your efforts right at your terminal. Thus you can rapidly experiment with a variety of chart and graph styles to determine which of several possibilities is best suited to your needs. This can save enormous amounts of both time and money, since you only print the figure when you're satisfied that it's right.

CONTENTS

The University of Minnesota adheres to the principle that all
persons shall have equal opportunity and access to facilities in
any phase of University activity without regard to race, creed,
color, sex, national origin or handicap.

Pictures from 37

Input and Output Requirements

To use TELL-A-GRAF, all you really need is a terminal capable of connecting to our VAX/VMS system (both 300 and 1200 baud ports are available). Of course, if you want to display graphic results from TELL-A-GRAF at that terminal, it must be able to handle graphics output. Currently, we support terminals that belong to the Tektronix 401x family, or those that emulate them. In addition, DEC VT100-line units fitted with graphics circuitry ("Retrographics" models) will work. (See "Public Terminals Available" elsewhere in this issue.) Various microcomputers (Apple IIs, Teraks, and others), will also work, provided they have the appropriate software. (Contact the UCC Microcomputer HELP-line for more details.)

For output on something more tangible than a phosphorescent screen, the options are equally diverse. Rough copies of graphs and charts can be printed on the VAX/VMS Printronix line printer; publication-quality graphics are available from a Calcomp four-color pen plotter; and full color slides for presentations and lectures can be produced on our Dicomed 47 image recorder. (Black and white or color 4 x 5 sheet film and Polaroid prints are also available from this machine. Higher-quality, and more expensive, slides can be had from a Dicomed 48 service offered externally.) And all of these various output formats can be produced from a single command! Once you have viewed a plot and are satisfied with its appearance, it's on its way to becoming a slide when you simply type "send". What could be easier?

These, then, are the benefits TELL-A-GRAF offers you: speed, economy, and machine and device indepen-

dence. Rather than delivering your graphic specifications to an artist, you can simply dictate some straightforward instructions to the TELL-A-GRAF program. If you don't like what you see, changes are only seconds away. And for physical output, the wait is reduced to a few hours rather than days. Naturally, such a procedure, in which you are able to do most of the simple work yourself, is also considerably less expensive than turning the same tasks over to an art department. The plots you produce are really limited only by your imagination.

DISSPLA: When Two Dimensions Are Not Enough

If the graphics you need extend beyond the range of TELL-A-GRAF, then DISSPLA can fill the bill. A library of plotting subroutines that can be accessed from either FORTRAN or Pascal programs, DISSPLA offers more complete plotting capabilities, although you must do some programming to take advantage of them. The world of three-dimensional graphics is open to the DISSPLA user; complex relationships between diverse bits of information become instantly comprehensible in this form (Fig. 3). Of course, everything you can do with TELL-A-GRAF is also there; in fact, TELL-A-GRAF uses DISSPLA routines for its plotting operations. (Output formats are the same also.) The batch aspect of DISSPLA also allows you to take full advantage of the processing power of the VAX, while the wider range of options gives you more complete graphic control. For those of you who need this level of graphic flexibility, DISSPLA can meet your requirements.

Здравствуйте! ТЕЛЛ–А–ГРАФ говорит по-русски.

שלום! טלגרף מדבר עברית

Χαιρετε! ΤΕΛΛ–Α–ΓΡΑΦ μιλα ελληνικα.

Bonjour! TELL–A–GRAF parle Français.

Guten tag! TELL–A–GRAF spricht Deutsch.

Hello! TELL–A–GRAF speaks English.

Figure 2: Some alphabets and text styles available with TELL-A-GRAF.

Pictures from 38

Together: A World of Possibilities

Both TELL-A-GRAF and DISSPLA offer rapid graphics development to people in a wide variety of disciplines. A typical list of applications might include:

—the quick preparation of presentation materials from user-supplied or program-generated data: charts, viewgraphs, 35mm slides

—repetitive, periodic charting applications, such as daily, weekly, or monthly progress reports, budget performance charts, or budget projections

—effective presentations: visually portrayed data that communicate patterns, trends, projections, relationships, and anomalies in a highly effective way

—decision making: a tool for graphically analyzing data that simplifies and speeds up the process

—illustrations for technical journals, reports, catalogues, and brochures

To more fully explore the exciting possibilities offered by these new graphics packages, future issues of this *Newsletter* will treat applications relevant to specific areas of interest.

June:	Statistics/Social Sciences
July:	Engineering/Medical
August:	Business/Administration
September:	Humanities/Non-traditional
October:	The Grand View

Our Professional Services Division (PSD) will also be conducting a series of introductory seminars for groups of potential users. If your organization or department might be interested in taking advantage of these free sessions, please contact PSD at 376-1764.

The Details

Documentation

In order to use either TELL-A-GRAF or DISSPLA, you must first be familiar with the VAX/VMS environment. We offer short courses to help you with this, and introductory systems documentation is available from the Computer Store, 211 Experimental Engineering, 373-4877. Manuals for the graphics packages themselves are also available from the Computer Store. Ask for:

TELL-A-GRAF User's Manual	($36.15)
TELL-A-GRAF Pocket Guide	($ 2.75)
DISSPLA User's Manual	($39.60)
DISSPLA Pocket Guide	($ 8.25)

The User's Manuals are quite good, leading you slowly from no knowledge at all to a full and capable use of the software. In addition, you should consult on-line documentation that describes local aspects of these packages. See WRITEUP (TAGDSPL) on any of the three Cyber systems, or TYPE or PRINT the file

sys$writeup:tagdspl

on the VAX/VMS system to have a look at that document. The most up-to-date information on TELL-A-GRAF and DISSPLA can always be found here.

Output Pickup

If you need output in solid form (as opposed to the ever-ephemeral screen), your current choices are line printer in graphics mode, Calcomp 4-pen plotter, and prints or slides. Paper output (from printer and plotter) and Polaroid prints can be sent directly to the particular devices as explained in the on-line writeup. Part of that process allows you to specify site and bin codes for delivery of the output. The default site will be the service counter (or some plainly marked open bin) in 131 Experimental Engineering. Service runs to the plotting devices in Shepherd Labs (where the VAX resides) are made five times daily, so the turnaround should normally be no longer than a couple of hours for the Experimental Engineering site. Other sites that require more transportation will, of course, take more time.

Slide and sheet film are sent out for processing once a day as necessary (the queue will be dumped around noon). Developed transparencies are picked up at 2:30 p.m. on the following day when the next batch is dropped off; they are then returned to 131 Experimental Engineering for accounting. Since this type of processing is considerably more expensive than paper output, the finished product will be kept secure until you pick it up. You will be required to inspect it for accuracy and sign for its acceptance. This is done for your protection. You can expect 24-48 hour turnaround on transparency processing.

Costs

Costs for using TELL-A-GRAF and DISSPLA can be divided into two segments. There is no special charge for using the packages on the VAX/VMS system: your account is simply billed for the amount of CPU time you consume, files you create and store, connect time, and so on, as is the normal practice. Additional charges are incurred only if you produce hard-copy output. Those rates are detailed below.

Printronix line printer:

standard charge $ 0.03/page

Calcomp 4-pen plotter:

set up	$ 0.75
	(will be reduced to $0.25 July 1)
plotting	$30.00/hour

Dicomed 47:

slides (35mm)	$10.00
slides (70mm)	$15.00
Polaroid print	$17.50
4 x 5 sheet	$17.50

Dicomed 48 (outside service):

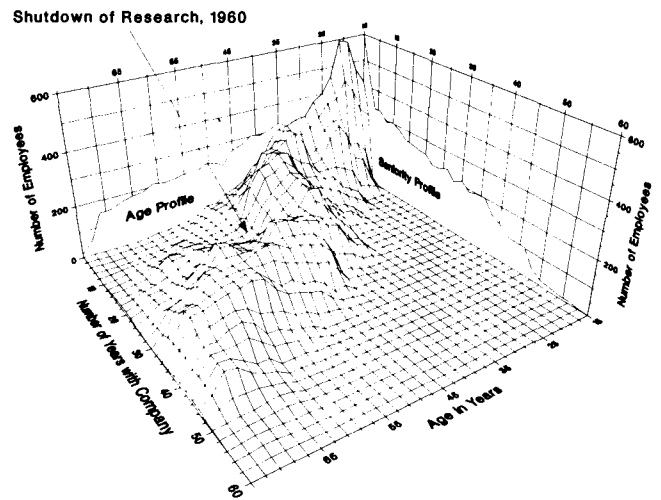|	
slides (35mm)	$15.00

Personnel of Acme Inc.

Figure 3: An example of the three-dimensional graphics generated by DISSPLA.

Help

Help in using TELL-A-GRAF and DISSPLA is available from a variety of sources. If you encounter trouble with the packages themselves, you may call our HELP-line telephone consulting service for assistance. The number is 376-5592. Parties interested in group exposure to these graphics services may contact PSD, as mentioned above. PSD is also available on a contract basis to assist you with graphics production if you would rather not do it yourself. Finally, our face-to-face consulting service in 140 Experimental Engineering offers special graphics consultants to help you between 10 and 11 a.m. Monday through Friday. Feel free to drop by and chat.

Coda

So there you have it: graphics capabilities at UCC to help you communicate your message more quickly and more effectively. TELL-A-GRAF and DISSPLA offer you considerable power for transforming disjoint numbers into meaningful information presented in attractive and engaging forms. And the method for producing this communicative vehicle is truly easy to learn. So take the time to say it with pictures; you're sure to save more than a thousand words.

(Joseph T. Jaynes)

SYSTEM NEWS/NOTES

Computing Conference

The 1982 National Educational Computing Conference will be held June 27-30 in Kansas City, Missouri. This year's conference is sponsored by the University of Missouri-Columbia. A cooperative venture undertaken by 19 professional organizations interested in educational computing, NECC-82 has four major objectives:

—to present in one forum major work regarding computers in instruction
—to promote interaction among individuals at all levels in the various aspects of computer use in education
—to develop and coordinate the various professional groups involved with computer uses in instruction
—to produce a proceedings documenting the status of computers in education

For additional information, contact:

University of Missouri-Columbia
Office of Conferences & Short Courses
344 Hearnes Multipurpose Building
Columbia, Missouri 65211

Cyber Notes

CALLPRG UPGRADE

On Sunday, June 13, we will install a new version of the UCC CALLPRG utility on our NOS systems. This utility processes all FETCH, FUTURE, and PAST control statements, and is used to locate many other system control statements stored as permanent files on the system. This change should be transparent to most users since all necessary conversion work to the system CALLPRG index will be performed by UCC staff members. If you maintain your own private CALLPRG index, however, you will be affected by this change and will have to make appropriate adjustments.

The new CALLPRG program does not require that you differentiate between indirect access and direct access files; therefore, all IA and DA parameters in your CALLPRG index should be changed to PM. Because we anticipate that this will be the most common change you will make to your CALLPRG index, we have already installed the PM parameter in the current CALLPRG program.

You must also change the location of your CALLPRG index. The current CALLPRG program looks for your index in local file CALLPRG. When the new CALLPRG is installed, place your CALLPRG index in the first record of file PROCFIL.

The many differences in the sets of parameters recognized by the current CALLPRG and the new CALLPRG may be summarized as follows:

—New parameters: AW, DR, LO, ND, PM, PR, RS.
—Parameters that are disappearing: D, DA, F, FA, FC, FI, FL, IA, ID, LB, MF, MT, NF, NR, NS, NX, PO, PT, RL, RO, SW, TF, TT, VR, XM.
—Parameters that have not changed or have minor differences: MI, MS, PN, PW, R, UL, UN, V.
—Parameters with significant changes: CC, EX, M, PF, TY.

Other changes of interest: The new CALLPRG utility will scan your CALLPRG index only if the USERPRG option is set. The DEFAULT directive for setting default option values is renamed OPTION* in the new CALLPRG. The new CALLPRG includes a global match character capability. Further details of these and other changes may be found in WRITEUP(CALLPRG).

NOTICE/NOTIFY UPGRADE

On Sunday, June 13, we will also change the NOTICE/NOTIFY subsystem on our NOS systems to use Cyber Control Language (CCL) procedures instead of KCL procedures. (NOTICE and NOTIFY are a pair of companion programs you may use to specify a procedure to be executed at log-in. NOTICE/NOTIFY are also responsible for placing system notes on the banner page for all batch jobs.)

Currently, a procedure file pointer may be set up for a particular user via the PROC command in NOTIFY:

PROC,procedurefile,usernumber,packname.

When the user affected by this pointer logs in, the system generates a

$CALL(PROCFIL)

control statement. After the June 13 change, the PROC command in NOTIFY will have a new syntax:

PROC,procedurename,procedurefile,usernumber, packname.

The control statement generated by the system at login will look like:

$BEGIN(procedurename)

Since the two methods of invoking procedures (CALL and BEGIN) are completely incompatible, you will have to change all procedures called by NOTICE/NOTIFY from KCL to CCL. We will remove all procedure file pointers set up in NOTICE/NOTIFY so that you may re-create them using the new PROC command in NOTIFY.

WRITEUP(NOTEINF) will be updated to reflect this change. For information on how to create CCL procedures, refer to WRITEUP(CCL).

If you have questions about either the CALLPRG or NOTICE/NOTIFY changes call Andy Hastings, 376-5604 or K. C. Matthews, 376-9720. *(Andy Hastings)*

Non-traditional Computing

GENCORD CHANGES

The GENCORD writeup now contains the complete GENCORD Manual as well as information from the old GENCORD update writeup. Because of the line length, it is formatted for line printer output only. To get a copy of the most recent documentation from a batch or interactive terminal, enter:

WRITEUP(GENCORD/L = LIST,PT = AS)
ROUTE(LIST,TID = EA,BIN = xxxx,DC = PR,EC = A9)

To get a copy as part of a batch job, include this control statement:

WRITEUP(GENCORD/L = OUTPUT,PT = AS)

This writeup reflects the current version of GENCORD (formerly FUTURE, GENCORD). The old version is now PAST,GENCORD and a new FUTURE,GENCORD has been installed. The changes for FUTURE,GENCORD will be incorporated into the new GENCORD Manual, which will be available in fall 1982. Questions or problems about any of these changes should be addressed to Vicky A. Walsh, 373-5780. (*Vicky A. Walsh*)

Microcosm

COM UPDATE FOR XEROX 820

As a result of problems with earlier versions of COM for the Xerox 820, we would like all owners of this software to bring or send the COM diskette issued by the Microcomputer Group to our office, 210 Experimental Engineering. We will give you a copy of the latest verion (3.0.5). Your version number is specified on the first line of the COM help page; only versions prior to 3.0.5 need this update.

IMS Journal

DATA BASE DESIGN

Last month, we briefly discussed the data base design process and provided some essential definitions. This month, we'll examine issues in DBMS applications that affect the design process.

The meaning of "application" in computing is nebulous at best. For this discussion we'll define it as the use of computerized information management techniques to assist an organization in its pursuit of an activity or set of activities. These activities could be as varied as the generation of a month-end payroll report or the filing of a lab report on a patient's blood composition. It is essential to know a good deal about these activities in order to help people accomplish them. Before you look at the data items you want to include in a DBMS, you must examine the activities serviced by that data. This is the essence of applications analysis and it is the preliminary step in the design of a data base. In the following paragraphs, we'll examine some key issues you must consider in the design process.

Often, data base designers begin with the data they wish to store. This is natural, since the data is the most visible aspect of any process. But starting with the data

ignores the process and the environment in which it is carried out. A process is a logically related set of activities, such as producing a payroll report. It involves generating the report, entering the necessary data, and all activities in between. Designs that do not consider the process are seldom successful. Your first step should be to look at the process as a whole. From this perspective you can begin to isolate specific elements of the process. Your examination should consider information flow, transition points (activities that alter or enhance information), and document production, the ways in which these activities are accomplished, and how one activity relates to another. If this entire process is only in the planning stages, you should complete a similar analysis "on paper."

Once you have isolated individual steps in the process, you must assess their requirements. You must also note how each step of the process depends on other steps. The most important and most overlooked considerations in data base design include:

Personnel

You must decide who will use your DBMS, and determine their level of computing ability. Your design should reflect the skills and knowledge of the people who will use the system.

Information Output

The ultimate use of output from your DBMS is crucial to its design. Security issues, legal issues, and output requirements often dictate design choice. The output capabilities of your DBMS should reflect the needs of those who will use it (more on this next month).

Availability

A data base design that must be on-line and in use eight hours a day will differ considerably from one used once a week. How critical is the activity you are automating? You must consider the effects of computer failure. Contingency plans and smart design work reduce the trauma associated with such events.

Time Issues

Consider the life expectancy of a data base. One you design for a six month study requires a different design process than that for an ongoing payroll system. The latter will often involve more complex planning. Other important design considerations include data entry and retrieval, and update frequency.

Evolution

Activities often expand and proliferate, especially when new information handling techniques are successful. As a designer, you must be aware of possible new applications for the DBMS. With these in mind, you can produce flexible designs to accomodate evolving needs.

The application analysis effort is, like any other, subject to tradeoffs. You must balance the time you spend analyzing with the importance of the activities for which you are designing the system. Many applications will not require you to examine all the elements we have outlined. Such an approach does lead to good design practice, however, and will assist you in beginning your analysis. Next month we'll explore issues inherent in the data.

SYSTEM 2000

We have received release 2.80C and have run tests to ensure its integrity. The new release supports all documented features, is bug free, and is now available as FUTURE, S2000. Existing PLI programs must be recompiled using the new PLEX precompilers, but no changes to the actual code should be necessary. FORTRAN users should use the FTN4 or the FTN5 compilers; MNF and M77 are not supported for use with System 2000 (they can produce unpredictable results). COBOL4 users should convert their programs to COBOL5 because we will not support COBOL4 much longer. We plan to make version 2.80 current at the beginning of fall quarter 1982, so move to the new version as soon as possible. Documents are available from the Computer Store. The new version is available on the Cyber 730 and the Cyber 74 with the following control statements:

```
$FUTURE,S2000.   $FUTURE,PLXFOR.   $FUTURE,PLXCOB.
S2000.           PLXFOR.           PLXCOB.
```

SIR, VERSION 2

The new version of SIR is available on the Cyber 730 and the Cyber 74. In order to run SIRV2 interactively you must be validated for a field length of 110k octal words. The new version is not directly compatible with version 1.1 data bases. In order to convert your data base to version 2, you must run the utility EXPORT, available in the current version (SIR 1.1). Documentation is available at the Computer Store. Use the following control statements to access the new package.

```
FETCH,SIR.
SIR.
```

If you have problems with field length or with accessing the new product, please call the IMS helpline. Next month we will describe the procedures to convert existing data bases to the new version.

(*Information Management Systems Group*)

MORE CHANGES ON THE WAY

Control Data has released NOS 2 and its associated product set. NOS 2 will not support Record Manager Advanced Access Methods Version 1 (AAM1) COBOL Version 4, nor the COBOL4 to COBOL5 conversion aid package (C4C5). We have already announced that we are removing COBOL Version 4 in October 1983. AAM1 and C4C5 will also be removed at that time. Our schedule is:

June 1982   Release level 552 products that are FUTURE will become current, and NOS 2 products will be placed on the system as FUTURE. Current level 528 products will become PAST and level 460 products will move to FETCH.

October 1982   NOS 2 products become current, level 552 becomes PAST, and level 528 is removed from the system.

October 1983   COBOL Version 4, AAM1, and C4C5 are removed from the system. This includes level 460 AAM1.

When the NOS 2 products are installed, they will be able to access only the newer Record Manager Advanced Access Methods 2 (AAM2). Conversion from AAM1 to AAM2 is straightforward and involves a single FORM copy. We will schedule a conversion class later this year and will prepare a conversion document. If you have questions, call our IMS helpline at 376-1761. (*Steve Reisman*)

Text Processing
NEW SCRIBE PUBLICATIONS

Two new UCC publications are now available to help you use the Scribe formatting program on the Shepherd Labs VAX. *Scribe at UCC* describes how to run the program at this site: Scribe's file conventions, special features and options available here, and differences between information in the *Scribe User's Manual* and our Scribe installation. *Theses with Scribe* explains how the document type MNTHESIS will format theses and dissertations to meet University of Minnesota Graduate School specifications. Pick up these helpful tools at the Computer Store, 211 Experimental Engineering.

NEC SPINWRITER AVAILABLE

We have installed a NEC Spinwriter to produce typewriter-quality printing on the Shepherd Labs VAX. You may print raw text files or files formatted by Scribe or PROSE on the Spinwriter. A variety of typewheels and a limited selection of paper are available. A MOREHELP entry describing this service will be on the system in May. (For information about MOREHELP, see the April UCC *Newsletter*.)

NO GRANTS FOR VAX USE

Because of state and University budget difficulties, we have been forced to curtail our VAX/VMS computer time grant program for faculty and student research. Beginning immediately, no new grants will be awarded for computing on the Shepherd Labs VAX. Grants are still available for the Cyber computers. For text processing and thesis production, this means that research grants enable you to use XEDIT and PROSE on the Cybers, but not EDT and Scribe on the VAX. Those of you who already have grants for VAX computing may use them until June 30, 1982. And, of course, you can still "buy" the computer time you need if you wish to continue using the VAX/VMS system.

For information on any of these topics, call Text Processing Services, 376-2943. (*Renee Holoien*)

PUBLIC TERMINALS AVAILABLE

The problem is *access*. Before you can use the Cyber interactive debugger to speed program development, you need access to an interactive terminal. Before you can use the TELL-A-GRAF interactive graphics package to make bar charts and curve plots, viewing the graphs as you make them, you need access to a terminal that can display pictures as well as text. Before you can use the EDT editor to do full-screen editing, you need access to the special VT52 or VT100 terminals that support EDT in screen mode.

We have provided these software facilities, but they are of little use to anyone who does not own or have access to the right kind of terminal.

Help is at hand! In April, we opened two public terminal clusters. One is located in 167B Social Sciences, the other in 14 Folwell Hall. Each cluster is equipped with three VT100 terminals with graphics capability. Currently, the terminals can only talk to the VAX/VMS system in Shepherd Labs. Soon, they will be switchable between the VMS system and the Cyber 730 + 74 + Cray system. (There will be no connection to the MERITSS system.)

The terminals in Social Sciences run at 2400 baud (240 characters per second) to the VMS system; those in Folwell Hall run at 9600 baud (960 characters per second). These high speeds markedly improve graphic and screen editing interaction. Baud rates to the Cyber will be slower.

Who Can Use These Terminals?

Everyone with a VAX/VMS user name can use these terminals. When the Cyber link is made, everyone with a Cyber account number will have her or his account validated for the public terminals.

Rates

There is no extra charge for using the public terminals at the present time. As soon as we can install the accounting software, however, a $1.55 per hour surcharge will be added to your connect-time charges to recover the cost of providing this service. Although the terminals run at high baud rates to the VAX/VMS system, connect time will be billed at the 1200 baud rate. The surcharge for Cyber connect-time will also be $1.55 per hour, but you will be billed at either the 300 or 1200 baud rate, whichever you choose to use.

Hours

14 Folwell Hall

Monday through Friday, 8 a.m. to 10 p.m.
Saturdays, 8 a.m. to 2 p.m.
Sundays, closed.

167B Social Sciences (key sign-out, 90 Blegen)

During Quarters
Monday through Thursday, 8 a.m. to 12 midnight
Friday, 8 a.m. to 10 p.m.
Saturdays, 10 a.m. to 6 p.m.
Sundays, 4 p.m. to 12 midnight

Quarter Breaks and Summer
Monday through Friday, 8 a.m. to 10 p.m.
Saturdays, 12 noon to 6 p.m.
Sundays, closed.

NOTE: The door to 167B is kept locked. Sign out the key from 90 Blegen Hall. Whoever signs out the key is responsible for the security of the equipment in the room.

Caveats

Pay attention to the signs in the labs! In particular, pay attention to the sign saying to LOGOFF explicitly from VMS before you walk away. These terminals are "hard-wired" to the VMS machine. Turning a terminal off does *not* log you off. If you just switch off a terminal and walk away without entering the LOGOFF command, you are still logged in, accumulating charges. VMS will not time you out as the Cybers do. You could stay logged in for days. More likely, someone else will come along, switch on the terminal, and discover that they are logged in under your user name, with all your resources and files available for the taking.

The VT100 terminals can be set up to work many different ways: reverse video displays (black characters on white background), 132 characters across, and smooth scrolling, to name a few. In particular, the VT100s can operate in either "normal" text mode (for EDT screen editing) or "graphics" mode (for TELL-A-GRAF). A VT100 in graphics mode will not work properly with EDT. Signs and manuals in the lab explain how to switch between normal and graphics mode. You can also ask a lab attendant, or call the HELP-Line (376-5592) for assistance.
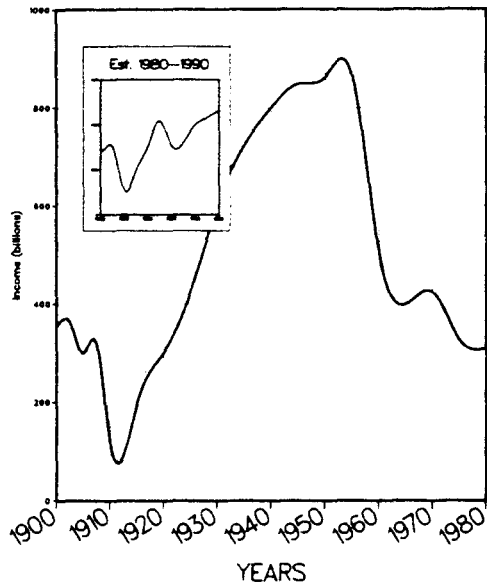
Future Prospects

We plan to add local medium-speed printers to these clusters when certain hardware problems can be solved. You will then be able to get hard copies of your files on-site by flipping a switch and printing the file.

If the public terminal clusters are a success (that is, if they pay their own way), we will add additional public terminal clusters, first in Experimental Engineering, then wherever space and a sufficient user population can be found to support them. (*Linda Merims*)
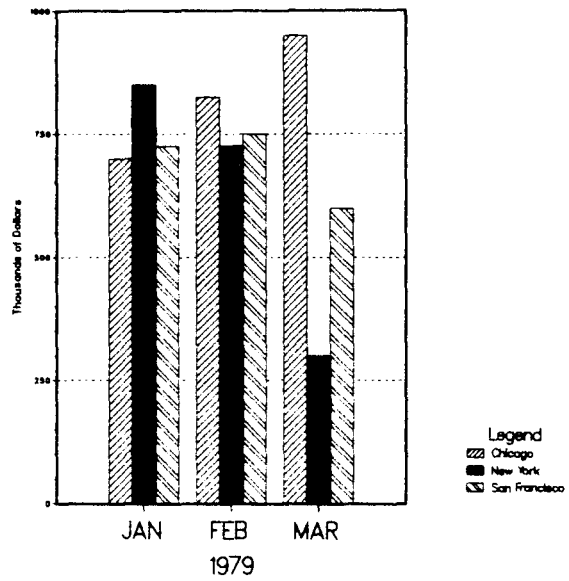

NO MORE FREE SHORT COURSES

Beginning with fall quarter 1982, the short courses we offer will no longer be free. Although we have not yet set the fees, they will be based on the length of the course and the status of the individual taking it. That is, a one-session course will be less expensive than a six-session course, and a University student will pay less than a faculty member or an outside user. The decision to charge for the courses was made as a result of the state and University fiscal crises. Registration for the courses will be handled through the Computer Store. Watch this *Newsletter*, the summer and fall short course schedules, and WRITEUP(CLASSES) for additional information.
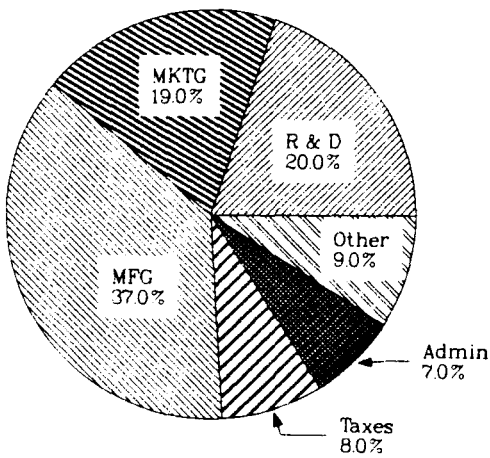
Regional Building Income
1900–1980

Acme Manufacturing
Sales

Cost Breakdown

𝕵𝖔𝖍𝖓𝖘𝖙𝖔𝖓𝖊 & 𝕮𝖔.
Salesmen's Annual Meeting

Agenda

President's Address
Last Year's Results
Discussion
Next Year's Goals
Awards
Dinner

You, too, can produce linear graphs, bar charts, pie charts, and pages of text with TELL-A-GRAF—now available at UCC.

THE COMPUTER STORE WANTS YOU

Our Computer Store, located in 211 Experimental Engineering, is growing. It is now open from 9 a.m.-3 p.m. Monday-Friday, and from 5-7 p.m. Monday through Thursday. Prices are very competitive. A complete list of materials and costs is available on the Cybers with the following control statement:

WRITEUP(STORE = COST)

In addition to paper, ribbons, floppy disks, and plastic floppy disk storage boxes,, the Store sells a complete line of UCC and vendor documentation.

Payment terms are easy: cash, check, University journal voucher, or Cyber account number. Whenever you need supplies or documentation, give us a call at 373-4877 or stop by 211 Experimental Engineering.

WEST BANK NOTES

The West Bank Micro/Graphics Lab is now open in 93T Blegen Hall, adjacent to the computer room. The Apple II microcomputers formerly located in 2 Wilson Library are now part of the Lab, as are two VT100 graphics terminals. All these terminals are hardwired to the MERITSS system (Cyber 172).

Spring quarter hours are:

Mon-Thurs	10 a.m.-8 p.m.
Friday	10 a.m.-2 p.m.
Saturday	noon-6 p.m.
Sunday	4 p.m.-10 p.m.

The consulting staff from 167B Social Sciences has also moved to the Lab.

A *West Bank User's Guide*, which provides a description of computing services and facilities on the west bank, is now available at no charge from the West Bank Computer Center, 93B Blegen Hall, or from the operators in 91 Blegen Hall.

FOR SALE

Two, like-new, Texas Instruments silent 700 data terminals (model 745). Must sell. $900 each. Call Mike Peterson, 373-0082.

PHONE NUMBERS

Budgets 373-2521
Computer-Aided Instruction 376-2975
Computer Hours (recorded message) 373-4927
Computer Store 373-4877
Consulting
    HELP-line 376-5592
       9 a.m.-5 p.m., Monday-Friday
    Business Data Products 376-1761
       1-3 p.m., Monday-Friday
    Statistics Packages 376-5062
       1-2 p.m., Monday-Friday
    Data Bases 376-1761
       1-3 p.m., Monday-Friday
    Microcomputers 376-4276
       10-12 a.m. and 2-4 p.m., Monday-Friday
    Humanities 373-5780
       10:30-11:30 a.m., Monday, Wednesday, Friday
    UNIX 376-8649
       1-2 p.m., Monday, Wednesday, Friday
Contract Programming 376-1764
Data Base Applications 376-1764
Educational Services 376-3963
EDUNET Liaison 373-7745
Engineering Services 376-8153, 376-1023
Engineering Services—Service Contracts 376-8153
Equipment Purchase 376-8153
Experimental Engineering I/O 373-4596
Graphics Software 376-5592
HELP-line 376-5592
    9 a.m.-5 p.m., Monday-Friday

HOURS-line (recorded message) 373-4927
Image Processing 376-2895
Information, Experimental Engineering 373-4360
Information, Lauderdale 373-4912
Information Systems 376-1764
Instructional Labs 376-3963
Job Status, ExpEng (recorded message) 373-4994
Lauderdale Computer Room 373-4940
Lauderdale Operations Manager 373-4920
Lauderdale Services 373-4995
Lauderdale Services Manager 373-7538
Lauderdale Users' Room 373-4921
MECC Liaison 373-4573
Newsletter Subscription 376-4668
Permanent File Restoration 376-5605
Professional Services Division (PSD) 376-1764
Project Assistance 376-1764
Program Librarian 376-1636
Programming Languages 376-7290
Reference Room 373-7744
Remote Batch (RJE) Services 376-3963
Short Courses 373-4360
Shuttle Bus Service 376-3068
System Status (recorded message) 373-4927
Tape Librarian: see Lauderdale Services
Text Processing Services 376-2943
User Accounts 373-4548
User Services 376-3963

OPERATING HOURS

	Cyber 74/730	Cray	MERITSS (Cyber 172)	VAX
M-F	8 a.m. - 4 a.m.	8 a.m. - midnight	7:45 a.m. - 1:30 a.m.	8 a.m. - 6 a.m.
Sat	4 a.m. - 5:15 p.m.	8 a.m. - 5 p.m.	7:45 a.m. - 1:30 a.m.	24 hours
Sun	4 p.m. - 1 a.m.	4 p.m. - midnight	4 p.m. - midnight	24 hours

PUBLIC LABS—TWIN CITIES CAMPUS

Location	Batch	Interactive	Micro	Location	Batch	Interactive	Micro
East Bank				*West Bank*			
Arch 160		X	X	BlegH 140		X	
CentH		X		MdbH		X	
ComH		X		OMWL 2	X	X	
DiehlH 270		X		SocSci 167, 1009	X	X	
ElecE 38	X						
EltH 121, 125		X		*St. Paul*			
EltH N640	X						
ExpE 130	X			BaH		X	
FolH 304a		X	X	BioSci 257	X		
FrontH		X		ClaOff 125	X	X	
KoltH S191	X			McN	X		
LindH		X		NorH 24	X		
MasCan 39	X						
Mayo D388	X			*Lauderdale*			
MechE 308		X					
MinMet 325	X			Users Room	X		
Physics 69	X						
SanfH		X					
TerrH	X	X					
VincH 4		X					
WaLib 204		X					
Zoology	X						

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227 Experimental Engineering
University of Minnesota
208 Union Street SE
Minneapolis, Minnesota 55455

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