Sample contour plots distributed with the newly released version of the NCAR graphics system. Improved contour capabilities and color-fill are among the new features of Version 3. Story on page 2.
Important ACF Telephone Numbers

General Information (ACF) 998-3058
Account Information 998-3035
Computer Status (recording) 998-3433
Computer Documentation 998-3036
Faculty Microcomputer Lab 998-3044
Tape Librarian 998-3452
Applications Consultants:
  14 Washington Place 998-3399
  Tisch Hall 998-3434
  Education Building 998-3435
  Warren Weaver Hall 998-3037
  Third Ave. North Res. Hall 998-3500
Computer Operators:
  14 Washington Place 998-3457
  Tisch Hall 998-3409
  Education Building 998-3421
  Warren Weaver Hall 998-3456
  Third Ave. North Res. Hall 998-3504

Dial-in Access to ACF Computers
If calling from Dial For (bps)
  NYU 53600* 300 - 2400
  Off Campus 995-3600* 110 - 2400
  777-7600* 110 - 1200
* Via NYU-NET, NYU's campus-wide network.
If there is no answer at this number, or if your modem connects but you do not receive the NYUMODEM>> prompt, try any of the following numbers: 995-4331, 4332, or 4333. Please use these numbers only if you experience problems with 995 3600!
  1 Via the NYU Computer System Selector (the MICOM Port Selector, or "switch").

ACF terminals are located in (2), (3), and (5). The ACF's Instructional Microcomputer Facilities are in (4) and (7).

NEW YORK UNIVERSITY
Washington Square Center

Guide to ACF user work areas and other facilities

ACF USER WORK AREA UNIVERSITY BUILDING

1. Warren Weaver Hall
   251 Mercer St., 3rd floor
2. Tisch Hall
   40 W. 4th St., lower concourse
3. 14 Washington Pl.
   basement
4. Education Building*
   35 W. 4th St., second floor
5. Elmer Holmes Bobst Library
   70 Washington Sq. So., B-level
6. 715 Broadway
   (IBM tapes only)
7. Third Ave. No. Residence Hall*
   75 Third Ave., basement
* ACF Access Cards required to use the microcomputers at these sites.

NYU Trolley route includes (7); weekdays, every 15 minutes during the school year.

Hours at ACF Sites

<table>
<thead>
<tr>
<th>User Work Areas:</th>
<th>Regular Hours</th>
<th>Holiday Hours*</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Washington Place</td>
<td>8:30 am-11:30 pm</td>
<td>8:30 am - 5:30 pm</td>
</tr>
<tr>
<td>Tisch Hall</td>
<td>8:30 am-11:30 pm</td>
<td>8:30 am - 5:30 pm</td>
</tr>
<tr>
<td>Education Building</td>
<td>8:30 am-11:30 pm</td>
<td>8:30 am - 5:30 pm</td>
</tr>
<tr>
<td>Third Ave. North</td>
<td>12 pm-2 am</td>
<td>12 pm - 6 pm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Consultants:</th>
<th>Regular Hours</th>
<th>Holiday Hours*</th>
</tr>
</thead>
<tbody>
<tr>
<td>14 Washington Place</td>
<td>10 am - 9 pm</td>
<td>12 pm - 9 pm</td>
</tr>
<tr>
<td>Tisch Hall</td>
<td>9 am - 9 pm</td>
<td>9 am - 5 pm</td>
</tr>
<tr>
<td>Education Building</td>
<td>10 am - 9 pm</td>
<td>9 am - 5 pm</td>
</tr>
<tr>
<td>Third Ave. North</td>
<td>12 pm - midnight</td>
<td>12 pm - 6 pm</td>
</tr>
</tbody>
</table>

* Holiday hours are tentative. A final schedule is posted prior to each holiday via our online news and bulletin board facilities.

Notes: (1) The ACF's public terminals on the B-level of Bobst Library are available during library and study hall hours.
(2) The ACF offices in Warren Weaver Hall are closed on University holidays. Other holiday hours are tentative. Call 998-3433 to confirm.
(3) Currently, the Third Avenue North Residence Hall site is available only to students with "ACF Access Cards".
Insight/Discover Available on IRIS

Workstation’s Molecular Modeling Capabilities Are Enhanced

Version 2.5 of the Insight/Discover software from BIOSYM Technologies, Inc., is now available on the ACF's IRIS 4D/80GT graphics workstation in the ACF's Visualization Center. The two programs are powerful tools for molecular modeling.

Simulation

Discover is a molecular simulation program. It calculates minimum energy conformations, dynamic trajectories, vibrational frequencies, and other physical properties of a molecular system.

The methods and strategies used in Discover are particularly useful for the study of peptide and protein systems. Moledit, which is included with Discover, is an interactive program for building and modifying molecular systems.

Display and Manipulation

Insight is a program for graphic molecular modeling. It can be used to display and manipulate molecular objects from a variety of sources. These include molecular fragment files; the Brookhaven Protein Data Bank; the Cambridge Crystal Data Base; FRODO output files; Discover's energy minimizations or dynamic simulations; external modeling programs; and a molecular sketch facility.

Insight is also capable of displaying such other object types as user objects, contour objects, global objects, and graph objects.

On-line help is accessible once one starts up Insight/Discover on the IRIS. For further information on the capabilities of the software, see either the on-line help or the printed documentation, which is available in two separate volumes in the ACF’s Visualization Center (Room 317 Warren Weaver Hall).

Insight, when run at the graphics console of the IRIS, is easy to learn and to use, and provides a powerful tool for rapidly displaying, modifying and manipulating complex three-dimensional objects. The program employs the high-speed computing and graphics resources of the IRIS — i.e., high-resolution color, a fast-response windowing system, and interactive input via mouse-and-cursor and a hardware dial box, as well as the keyboard.

Getting started

Accounts on the IRIS are available for faculty, researchers, and students. Further information on these accounts can be obtained from the ACF Accounts Office, Room 305 Warren Weaver Hall, 998-3035.

After an account on the IRIS has been established for you, log in at the IRIS console, wait until an IRIS window has been created, and enter the command "man insight". Follow the instructions which you receive on invoking the Insight system and its associated tutorial. Once you have established communication with Insight, you can request on-line help.

Many novice users, both faculty and students, have been able to use Insight on the IRIS after a short startup period.

— Ed Friedman

Displayed via Insight on the ACF’s IRIS color graphics workstation: A simulation of Proflavine bonded to the major groove of DNA. Photo by Jeffrey Bary.

About the ACF’s Visualization Center

The computer graphics equipment in the ACF's Visualization Center (Room 317 Warren Weaver Hall) is available on request to faculty members, research staff and advanced students. As we go to press, facilities include an IRIS 4D/80GT graphics workstation, an AED 1024 color graphics terminal, several color and monochrome graphics terminals and hardcopy devices, the Lyon-Lamb video animation system, video tape recorders, and a Macintosh IIfi. There are also an Evans & Sutherland PS 390 system, as well as a new Stellar mini-supercomputer with an advanced graphics subsystem. For further information on the ACF’s Visualization Center, contact Ed Friedman (998-3051).
A New Version of NCAR Graphics

Improved Contouring, Color-Fill, and Interactive Windowing Are Among the Features of Version 3.00

NCAR, the National Center for Atmospheric Research, has released a new version of NCAR Graphics, a system that has been used for a number of years by researchers at NYU for visualization of their results.

Version 3.00 offers improved contouring, color-fill, text-handling and movie-making capabilities, an expanded list of supported terminals and printers, and—in the version released for UNIX systems—new support for X-Windows terminals and for workstations with an interactive windowing interface.

The new version is available on the ACF's cluster of VAX/VMS computers and on several ACF UNIX computers, including the SUN servers ACF9, ACF14, and ACF15. A version of NCAR is also available on the IRIS workstation in the ACF's Visualization Center.

What is NCAR?

NCAR Graphics is a rather comprehensive system of utilities which perform a wide range of graphics functions. These are used to convert numerical data into various kinds of visual representations. NCAR utilities are accessed from within users' FORTRAN programs, and are particularly useful for dealing with large amounts of data in situations in which complex and resource-intensive computation—beyond the computational capabilities of a workstation—may be required.

NCAR outputs CGM files. These can be displayed on a wide variety of terminals and workstations connected to the computer on which the program was executed. They can also be downloaded to graphics workstations for further display, manipulation and editing, or sent to a variety of hardcopy output devices.

The portability of the CGM files is one feature that keeps NCAR adaptable to the increasingly sophisticated capabilities of graphics workstations. NCAR View is another.

Windowing with View

On UNIX systems, NCAR Version 3.00 avails itself of some of the capabilities of the X-Windows System. With NCAR View, a new package released with Version 3.00, NCAR graphical output can be displayed in windows on workstations and terminals running the X Windows System.

Even more interesting, perhaps, is View's interactive window utility, which allows point-and-click displaying and editing of NCAR output. An interactive

For further information on NCAR...

Faculty and graduate students who are interested in learning more about NCAR and, particularly, Version 3.00 enhancements should contact Ed Friedman (friedman@acfclu.nyu.edu).

Right: The contour plot is mapped onto a coordinate space that has been distorted into the shape of a star. On the cover: The plot is mapped onto polar coordinates (upper right) and a rectangular grid (lower left).
interface of this type is planned for future versions of NCAR for other operating and windowing systems.

What this means is that researchers can transport their applications to and from arbitrary machine architectures. For example, it is possible to develop software on a workstation, run production on a supercomputer, and then view the results on the workstation.

Contouring with Color-Fill

Perhaps one of the most exciting new features of this version of NCAR is the color-fill capability of CONPACK.

This NCAR utility allows you to draw black-and-white or color contour plots from arbitrarily distributed data points. NCAR's improved contour-production capabilities are said to yield publication-quality black-and-white or color graphics.

(Veteran NCAR users will want to use CONPACK in place of the CONREC and CONRAN families of contour routines from earlier versions of NCAR Graphics.)

Plot Labelling, and more

Another new utility, PLOTCHAR, enables the flexible production of high-quality text, labels, and legends. Superscripting and subscripting are available, as well as a selection of character size, angle and position on the plot. Complex mathematical symbols are easily produced.

LABELBAR creates a rectangular bar that can be filled with colors or patterns to serve as a labeled key for a filled plot.

Two other utilities now provide improved support to film-making. GFLASH enables limited picture segmentation, and STITLE provides movie titles; these can be in color, if desired, and either scrolled or stationary.

NCAR Version 3.00 also provides support for a broader range of terminals, workstations, printers, and other output devices.

Copies of the NCAR Version 3.00 documentation are available for inspection in the ACF Visualization Center (Room 317, Warren Weaver Hall—please see page 1) and the ACF's Documentation Office (Room 306 Warren Weaver Hall, 998-3036). For further information on NCAR and, particularly, on new features and enhancements associated with Version 3.00, faculty and graduate students should contact Ed Friedman (friedman@acfclu.nyu.edu).

—Estelle Hochberg, with Ed Friedman

Erratum

In the May 1989 issue of the Newsletter, in an article on the Imagen laser printers, one of the sample commands contained an error.

The correct command to obtain single-sided output from the ACF cluster of VAX/VMS computers is:

IMPRINT/DOCUMENT_HEADER=("PAGEDUPLEX OFF") file-specification

or, more simply:

IMPRINT/DOC=("PAGEDUPLEX OFF") file-specification

We apologize for any inconvenience that this might have caused our readers.
A New Software Archive at the ACF

Selected Shareware and Public Domain Software for PC and Mac Users

The ACF has expanded its services as a distributor of selected public domain and shareware software packages for IBM PC's and Apple Macintoshes. A newly established software archive will permit the distribution of a greater number of public-domain and shareware programs for IBM PC's and Apple Macintoshes. In addition, to make these items more accessible to NYU faculty, students and researchers, the ACF is providing a number of means by which they can be obtained.

A Collection of Software

The new software archive will provide an easy-to-access and virus-free collection of popular utilities, selected because they are likely to be of use to a large number of microcomputer users at NYU. The latest versions of these packages will be acquired, tested and distributed as they become available.

Special emphasis, in this regard, will be placed on the anti-virus software packages. It is particularly important that personal computer users at NYU have the most up-to-date versions of these programs, if they are to maintain the virus-free operation of their personal computers.

The ACF intends the software archive to be a selected collection of software. New packages will be added as it becomes clear that they hold potential interest for a sizeable number of microcomputer users in the NYU community.

Obtaining the Software

Individuals can download the software themselves from an on-line repository, or they can come to the ACF to obtain copies on floppy disk. An ACF account is not required to access the software archive.

The primary repository for the software archive will be the ACF's cluster of VAX/VMS minicomputers. Since these are multi-user machines, the software can be accessed by a number of people simultaneously. Use of the cluster also provides two ways in which software can be downloaded to your microcom-

Shareware and Public Domain Software Available from the ACF

As we go to press, the core holdings of the ACF's new archive of shareware are still being built. Current titles are as follows. (Please see accompanying item for details.)

<table>
<thead>
<tr>
<th>Title</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disinfectant16</td>
<td>Anti-Virus</td>
<td>John Norstad's virus checker/remover, Ver.1.6</td>
</tr>
<tr>
<td>Gatekeeper111</td>
<td>Anti-Virus</td>
<td>Chris Johnson's utility prevents virus infections, Ver.1.1.1</td>
</tr>
<tr>
<td>Gatekeeperaid101</td>
<td>Anti-Virus</td>
<td>Chris Johnson's utility prevents WDEF infections, Ver.1.0.1</td>
</tr>
<tr>
<td>Kermit098</td>
<td>Communications</td>
<td>Macintosh Kermit, Ver.0.98</td>
</tr>
<tr>
<td>NCSA231</td>
<td>Networking</td>
<td>NCSA/BYU Telnet, Ver.2.31</td>
</tr>
<tr>
<td>Publicfolder10</td>
<td>Networking</td>
<td>Claris' Public Folder, Ver.1.0</td>
</tr>
<tr>
<td>Responder11</td>
<td>Networking</td>
<td>AppleTalk Responder, Ver.1.1</td>
</tr>
<tr>
<td>Stuffit151</td>
<td>Archiver</td>
<td>Raymond Lau's Stuffit archiver/dearchiver, Ver.1.5.1</td>
</tr>
<tr>
<td>TeachText</td>
<td>Text Editor</td>
<td>Simple Text editor from Apple, Ver.1.1</td>
</tr>
<tr>
<td>Vaccine101</td>
<td>Anti-Virus</td>
<td>CE Software's Vaccine, Ver.1.0.1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Title</th>
<th>Function</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARC</td>
<td>Archiver</td>
<td>ARC archive utility, Ver.5.2 from SEA</td>
</tr>
<tr>
<td>PKZI02</td>
<td>Archiver</td>
<td>PKZIP/KUNZIP archive utility, Ver.1.02</td>
</tr>
<tr>
<td>CLEANP59</td>
<td>Anti-Virus</td>
<td>CLEAN-UP Virus Remover by John McAfee</td>
</tr>
<tr>
<td>FSP_17</td>
<td>Anti-Virus</td>
<td>FLUSHOT+Ver.1.7</td>
</tr>
<tr>
<td>KERMIT</td>
<td>Communications</td>
<td>MS-DOS Kermit, Ver.2.32/A</td>
</tr>
<tr>
<td>KERM300</td>
<td>Communications</td>
<td>MS-DOS Kermit, Ver.3.00</td>
</tr>
<tr>
<td>NETSCN59</td>
<td>Anti-Virus</td>
<td>NETSCAN (VIRUSCAN for Networks) by John McAfee</td>
</tr>
<tr>
<td>SCANV59</td>
<td>Anti-Virus</td>
<td>VIRUSCAN by John McAfee</td>
</tr>
<tr>
<td>SCANRS59</td>
<td>Anti-Virus</td>
<td>VIRUSCAN (TSR) by John McAfee</td>
</tr>
<tr>
<td>TED</td>
<td>Text Editor</td>
<td>Tiny EDitor, Ver.1.0, from PC Magazine (Ziff-Davis)</td>
</tr>
<tr>
<td>TN3270</td>
<td>Networking</td>
<td>TN3270 Ver.2.2TN from NCSA/Clarkson University</td>
</tr>
</tbody>
</table>
In the ACF's Faculty Microcomputer Lab

At the ACF's Faculty Microcomputer Laboratory, NYU faculty members, researchers, and administrative staff can learn about different kinds of microcomputer hardware and software, and obtain expert advice in the selection and use of personal computers, workstations, departmental networks, and related products.

New Software

The following software items were either newly acquired or updated within the past few months. They are available for examination in the Lab.

<table>
<thead>
<tr>
<th>Software Product</th>
<th>Version</th>
<th>Company</th>
<th>For</th>
<th>Application Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kermit</td>
<td>3.0</td>
<td>Columbia U.</td>
<td>PC</td>
<td>Communications</td>
</tr>
<tr>
<td>NCSA Telnet</td>
<td>2.3</td>
<td>NCSA</td>
<td>PC</td>
<td>Networking</td>
</tr>
<tr>
<td>OmniPage</td>
<td>2.1</td>
<td>Caere</td>
<td>Mac</td>
<td>Optical</td>
</tr>
<tr>
<td>WordPerfect</td>
<td>5.1</td>
<td>WordPerfect</td>
<td>PC</td>
<td>Character Reading</td>
</tr>
<tr>
<td>PixelPaint Prof</td>
<td>1.0</td>
<td>Supermac</td>
<td>Mac</td>
<td>Word Processing</td>
</tr>
<tr>
<td>Microsoft Word</td>
<td>4.0</td>
<td>Microsoft</td>
<td>Mac</td>
<td>Graphics</td>
</tr>
<tr>
<td>Microsoft Word</td>
<td>5.0</td>
<td>Microsoft</td>
<td>PC</td>
<td>Word Processing</td>
</tr>
<tr>
<td>Fourth Dimension</td>
<td>2.0</td>
<td>Acius</td>
<td>PC</td>
<td>Database</td>
</tr>
<tr>
<td>Foxbase Plus</td>
<td>2.0</td>
<td>Fox</td>
<td>PC</td>
<td>Database</td>
</tr>
<tr>
<td>Excel</td>
<td>2.2</td>
<td>Microsoft</td>
<td>Mac</td>
<td>Spreadsheet</td>
</tr>
<tr>
<td>Adobe Type Manager</td>
<td>1.0</td>
<td>Adobe</td>
<td>Mac</td>
<td>Utility</td>
</tr>
<tr>
<td>Apple System Software</td>
<td>6.0.4</td>
<td>Apple</td>
<td>Mac</td>
<td>Operating System</td>
</tr>
<tr>
<td>More II</td>
<td>2.01</td>
<td>Symantec</td>
<td>Mac</td>
<td>Outline</td>
</tr>
<tr>
<td>DBMS/Copy</td>
<td>2.0</td>
<td>Conceptual Software</td>
<td>PC</td>
<td>Utility</td>
</tr>
<tr>
<td>Mathematica</td>
<td>1.2</td>
<td>Wolfram Research</td>
<td>Mac</td>
<td>Mathematics</td>
</tr>
</tbody>
</table>

Hardware

The following hardware is available for examination at the Lab.

<table>
<thead>
<tr>
<th>Computer</th>
<th>Drives</th>
<th>Printers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Macintosh II</td>
<td>Apple SC CD-ROM</td>
<td>Apple ImageWriter LQ</td>
</tr>
<tr>
<td>Apple Macintosh 12x</td>
<td>Denon CD-ROM</td>
<td>Apple LaserWriter NT</td>
</tr>
<tr>
<td>Apple Macintosh Plus</td>
<td>IBM 3363 WORM</td>
<td>Hewlett-Packard Desk Writer</td>
</tr>
<tr>
<td>AT&amp;T Unix PC</td>
<td></td>
<td>Hewlett-Packard LaserJet II</td>
</tr>
<tr>
<td>Compaq 386/20</td>
<td></td>
<td>Other</td>
</tr>
<tr>
<td>IBM PS/2 Model 30</td>
<td>Hayward SmartModem 1200</td>
<td>Apple Mac II Video Board</td>
</tr>
<tr>
<td>IBM PS/2 Model 60</td>
<td>Supra Modem 2400</td>
<td>Kinetics Fastpath Gateway</td>
</tr>
<tr>
<td>Kaypro 10</td>
<td>Datacopy 730</td>
<td></td>
</tr>
<tr>
<td>Zenith SuperSport Laptop</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The ACF's Faculty Microcomputer Laboratory is located in Room 316 Warren Weaver Hall. Visits to the lab are by appointment. Please call 998-3044 to arrange a time. Hours between noon and 8 p.m., Mondays through Fridays, are usually available.

—Gary Chapman

Additional information...

The ACF strongly recommends that people who acquire shareware software from the ACF - or, indeed, from any other source — register the software with its author and pay the recommended monetary contribution. Please call Gary Chapman (998-3044), for additional information on the ACF's new shareware archive.

—Gary Chapman, with Estelle Hochberg
Tips for WordPerfect Users

Some IBM PC Short-cuts

Whether you are using Version 5.1, 5.0, or 4.2, there is a set of standard short-cuts that make WordPerfect much easier to use and, generally, more “user-friendly”. If you are a beginner or even an intermediate WordPerfect user, you may still be treating your keyboard as a glorified typewriter. These short-cuts can help you take advantage of what I believe to be one of the most sophisticated word processing programs yet developed for the IBM PC. Here are just a few.

- To clear the screen of text (and thus clear the internal memory of the text you were working on), simply press F7.
- Answer n to the prompt, and again n to the next prompt. To avoid having to look at the two prompts, you can simply press (in sequence) F7, n, n.
- You would be surprised how often a beginner, not knowing any better, places the cursor at the end of the document and then, character by character, backspaces away to the beginning of the document.
- To get to the top of the document from anywhere at all within it, press home, home, up-arrow.
- To get to the bottom of the document, press home, home, down-arrow.
- To erase a word, place the cursor anywhere on the word (including the space following the word) and press control-backspace.

New Version of WordPerfect for the IBM PC

Program Is Even Better With Version 5.1

WordPerfect offers some strong incentives for IBM PC users to switch from their current word processors to WordPerfect, in particular to its most recent version, 5.1. Users of older versions of WordPerfect also have lots of reasons to upgrade to this release.

In my view, every new version of WordPerfect seems to be designed to take away additional reasons for using any other program. Version 4.2 was, in its day, considered by many to be the most comprehensive word processing program on the DOS market.

Version 5.0 was the first word processor to provide a complete set of features for creating highly attractive documents. In Version 5.0, the program began to straddle the fence between a word processor and a desktop publishing program.

Now, with the release of Version 5.1 in December 1989, there are even stronger incentives to switch to WordPerfect. The program now has links to Lotus 1-2-3, has an improved merging capability and can print labels easily with its new automatic formatting feature. It also has a new Tables feature; pull-down menus; context-sensitive Help; mouse support; and an equation editor with a comprehensive collection of symbols, characters and mathematical symbols, operators and functions.

-Henry Mullish

ACFI/ NYU Newsletter, March 1990, page 6
Mathematica Links Macs and SUNs

Use at ACF Micro Facility Combines Two Types of Computers

The ACF now has Mathematica running successfully in a new configuration that combines the speed of a SUN server with the graphical interface of a Macintosh. At the ACF’s instructional microcomputer facility in the Third Avenue North Residence Hall, users can work at Macintosh SE’s where Mathematica’s “front end” (or user interface) is being run.

In each of these Mathematica sessions, the program’s “kernel” is running on one of two SUN servers, acf14 (“KRAMDEN”) or acf15 (“NORTON”). It communicates with the Macintoshes via Ethernet, using MacTCP, networking software which is installed as a “control panel” device on the Macs.

Advantages

With this configuration, a Mathematica user has the Macintosh advantages of a “notebook” metaphor, cut-and-paste editing, pages that scroll, and graphics images that are resizeable and that can be printed on a LaserWriter. These are coupled with the computing power of the SUN-3 and SUN-4 machines, with their greater memory and speed, and their capacity to store and manipulate large files.

The Macintosh “front end” of Mathematica requires less than one megabyte of memory, leaving about 1.5 megabytes of central memory free on the SE’s at the instructional micro facility. This makes it possible to receive the results of the complex calculations that are being done remotely on the SUN server, and to store them as graphics output for display on the Macintosh, for the production of high-resolution plots, or for subsequent animation of graphics images.

One current user of Mathematica in this Macintosh-SUN configuration has remarked, “What took me one day with a programming language and graphics library, I can do in two hours with Mathematica.”

Elsewhere at the ACF

Mathematica, from Wolfram Research, Inc., is a general system for numerical, symbolic and graphical computation. It can be used both as an interactive calculation tool and as a programming language. The most recent version of the software is 1.2.

Mathematica 1.2 is currently available on several types of ACF machines, and the version on the SUN servers can be used from a variety of workstations and terminals, in addition to the Macintosh SE’s (see accompanying box). An ACF discussion and demonstration of uses of Mathematica in scientific applications is planned for May 1; schedules of ACF talks are available from the ACF Documentation Office, Room 306 Warren Weaver Hall.

—Howard Fink
with Estelle Hochberg

Mathematica at the ACF

Mathematica 1.2 is currently available on several types of ACF machines. In most instances, an ACF account is required.

• The standard Macintosh version is available on the Macintosh server at the Third Avenue North Residence Hall. At present, it can be used on only one Macintosh at a time. To use this version, you need an ACF microcomputer account.

• The Enhanced Macintosh Version is available on the Macintosh IIci in the ACF’s Visualization Center (Room 317 Warren Weaver Hall). It is available, for trial and demonstration only, to faculty, researchers, graduate students and advanced undergraduates.

• The program is also available on three SUN servers (ACF9, ACF14, and ACF15). This version can be used remotely from workstations, microcomputers and terminals by an unrestricted number of users. (See the accompanying item for an example of this.) To use this version, you will need an account on ACF9, ACF14 or ACF15.

For further information on the use of Mathematica at the ACF, please contact Howard Fink (998-3500) or Jeffrey Bary (998-3049). For information on obtaining an ACF account, please contact the ACF Accounts Office, Room 305 Warren Weaver Hall (998-3035).
Coming Soon to the ACF: Some NeXT Computers

Will Be Available for Examination and Trial

NYU has recently signed an agreement with NeXT, Inc., permitting NYU faculty and administrators to purchase NeXT machines (see page 20 for details). The ACF has placed an order for several NeXT computers, and a few of these will be made available for examination and trial.

Educational Workstations

NeXT computers are workstations that are said to have been designed specifically for use in higher education, particularly for the development and execution of interactive “courseware” and educational presentations.

They have a graphical, object-oriented (Macintosh-like) user-interface and software-development environment, called NextStep. Their UNIX operating system (called Mach) is compatible with UNIX 4.3 BSD.

Each NeXT workstation comes with a removable, erasable 256-megabyte optical disk, as its standard mass storage device, plus a “digital library” and powerful searching and indexing software. Also standard are 8 megabytes of memory, expandable to 16 megabytes; a 40-megabyte hard drive; and good audio capabilities, including a powerful sound processor, a microphone jack, and high-quality stereo output.

On-Line References, Other Software

The NeXT’s Digital Library is a buildable collection of on-line reference works — books, images, musical pieces, and so on — stored on the optical disk. Each system comes with a “starter set” of several reference works, including a full dictionary and thesaurus and the complete works of Shakespeare.

In addition to Mach, NextStep, and the Digital Library, NeXT computers come with the following software: a wordprocessor; a graphical electronic mail program with voice mail; tools for the use of sound and music; an SQL database server; Objective C and the GNU C compiler and debugger; Allegro CL Common Lisp; and Mathematica.

Faculty and administrators who are interested in examining and testing the ACF’s NeXT computers may call the ACF’s Faculty Microcomputer Laboratory (998-3044) for further information and to ensure the availability of the computers at a convenient time. They are expected to arrive by late April.

At the ACF’s Instructional Micro Facilities

The following software packages are available to classes using the micros at the ACF’s instructional microcomputer facilities in the Education Building and at the Third Avenue North Residence Hall.

For the IBM PC

<table>
<thead>
<tr>
<th>Software</th>
<th>IBM PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Animator</td>
<td>Quattro</td>
</tr>
<tr>
<td>AtlasGraphics</td>
<td>RightWriter</td>
</tr>
<tr>
<td>AutoSketch</td>
<td>SETL2</td>
</tr>
<tr>
<td>Cookware</td>
<td>Simcity</td>
</tr>
<tr>
<td>dBase IV</td>
<td>Smalltalk/V 286</td>
</tr>
<tr>
<td>Ecotalk</td>
<td>SPSS/PC+</td>
</tr>
<tr>
<td>Lotus 1-2-3</td>
<td>STATICS</td>
</tr>
<tr>
<td>Microsoft Excel</td>
<td>Storm</td>
</tr>
<tr>
<td>Microsoft QuickBasic</td>
<td>Systeme D</td>
</tr>
<tr>
<td>Microsoft Word</td>
<td>Turbo C</td>
</tr>
<tr>
<td>Microsoft Works</td>
<td>Turbo Pascal</td>
</tr>
<tr>
<td>MicroTSP</td>
<td>WordPerfect</td>
</tr>
<tr>
<td>NCSA Telnet/FTP</td>
<td>XLisp</td>
</tr>
</tbody>
</table>

PageMaker Classroom

Additional software can be added at the arrangement of the instructor.

For information on obtaining ACF microcomputer accounts for their classes, faculty members should contact the ACF Accounts Office (Room 305 Warren Weaver Hall, 998-3035). To discuss the instructional use of microcomputer software for your class, please contact Gary Chapman at the ACF’s Faculty Microcomputer Lab, 998-3044.

Individual Microcomputer Accounts

Accounts on the microcomputers at the Third Avenue North Residence Hall facility are also available to individual faculty members and students. There are departmentally-sponsored accounts (for which students must be sponsored by a faculty member), and there are Private Microcomputer Accounts (for which there is a nominal fee).

To apply for an ACF account, or for additional information, please contact the ACF Accounts Office (Room 305 Warren Weaver Hall, 998-3035).
Mainframes and minicomputers

Separate Tables

Hints for \LaTeX{} Users

When working on a manuscript, especially a large one with a lot of tables, it is often convenient to deal with the text and the tables separately. A set of three files available on ACF UNIX and VMS machines illustrates one way of doing this in \LaTeX{}. (See accompanying box for the file names.)

The three files contain, respectively, (1) a main program which corresponds to your \LaTeX{} document; (2) a table development program which enables you to work on one table at a time; and (3) a sample table, which is \texttt{``\input''} by the two programs.

The files also contain documentation that will help you adapt them to your purpose. I will mention a few points here, to get you started.

First, copy the files to your directory. (I would suggest that you rename them in the process.) Then, \LaTeX{} them and print them as you would any \LaTeX{} file.

In comparing the outputs of these files, you will see that the main program (or \texttt{``document file''}) produces captions and a simple insert-table-here placeholder, while the development program produces a label, a date, and the body of the table. An inspection of the \LaTeX{} commands in these files will reveal that, later, when you wish to include the table bodies in the document, you will only need to comment out the \texttt{``\renewcommand\[TABLE]''} command, as has been done already in the development file.

While these files will not meet the needs of all users, they do present a good model, and should help you design macros which meet your particular needs.

—John Kesich

Conferencing System on VAX/VMS Is Updated

A New Version of Caucus on the ACFcluster

CAUCUS, the electronic conferencing system on the ACF's cluster of VAX/VMS computers, has been updated to Version 2.2.

Among the new features offered by Version 2.2 are a \texttt{MENU} mode (enter the command \texttt{MENU} to initiate it); smoother interfaces to editors; a \texttt{LIFO}-ordering option, enabling you to have the most recent conference entries displayed first; and a variety of additional \texttt{SET} and \texttt{SHOW} options.

Anyone with an account on the ACF's cluster of VAX/VMS machines can use CAUCUS. To find out more about CAUCUS, and for help in getting started with it, VMS users should type \texttt{HELP CAUCUS}.

CAUCUS is used by a number of groups and classes at NYU. These include departments in the School of Continuing Education, the School of Education, Health, Nursing and the Arts Professions, and the Tisch School of the Arts. An upcoming issue of the Newsletter will feature some of the uses of CAUCUS conferencing at NYU.

Faculty or researchers who are interested in having a CAUCUS conference initiated for their class or group should contact Jeffrey Bary, at 998-3049.

—Reported by Stephen Tihor and Jeffrey Bary

Software on the ACF's SUN Servers

The following is a list of some of the mathematics and graphics software of the ACF's multi-user SUN computers. (For a related item on Mathematica, please see page 6.)

<table>
<thead>
<tr>
<th>Software Title</th>
<th>acf9*</th>
<th>acf14*</th>
<th>acf15*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(kramden)</td>
<td>(norton)</td>
<td></td>
</tr>
<tr>
<td>CMLIB (Math Library)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>MACSYMA</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>MATHEMATICA</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>KAO</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>NCAR-GKS (Ver. 2 and 3)</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>PRO-MATLAB</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
</tbody>
</table>

*A SUN-4. **A SUN-3.
On the IBM 4381

Notes for Users of the ACF's IBM Mainframe

On March 3, 1990, the first steps were taken to move ACF users' data sets from the older "3350" disk-packs to newer, triple-density "3380" disk-packs. This newer type of disk-pack can hold approximately 1,900 megabytes of data, about five times as much as a 3350.

The first disk-pack to be moved was USER01, and all of its files are now stored on the first of the ACF's 3380's, ACFU01. This migration should be largely transparent to most WYLBUR users. The only exception occurs when a user wishes to create or write a new data set: at that time it is necessary to specify the volume onto which the file is to be written. To do so, one types the following command to WYLBUR:

```
SAVE filename ON ACFU01 [CARD]
```

and includes as part of the JCL instructions:

```
VOL~SER~ACFUO1
```

When a user wants to refer to an existing data set, only the data set name is needed in a WYLBUR USE or COPY command. In JCL, the full statement to read a file still requires only the following single line (displayed on two lines, here):

```
//ddname DD DISP=SHR,
DSN=WYL.uu.ggg.filename
```

Students with XW, YW, and ZW accounts are still restricted to the USER02 disk-pack and are not affected by the change described above. Also note that volumes ACFSTG and SCR301 are still available for short-term storage (one week).

We will let you know as other 3350's are copied, and as new 3380's are assigned to MVS/WYLBUR. For updates, type HELP NEWDISK.

Blocking Factors

WYLBUR users may be interested in an EXEC program that will provide information on the most efficient blocking factor for storing fixed-block data files. (These are files saved from WYLBUR with the instruction CARD or with LRECL=nnn.) Type HELP TRKCAP50 or HELP TRKCP80, and follow the instructions. (Note that keylength for fixed-block files is zero.)

Software Notes

SCRIPT has been upgraded to Version 89.1 on OS/MVS (WYLBUR), as well as on VM/CMS.

LISREL has been upgraded to Version 7.16 on the IBM OS/MVS (WYLBUR) system. Among the new features of this version of LISREL are two new estimation methods, Weighted Least-Squares and Diagonally Weighted Least-Squares, as well as normal theory interval estimates and chi-square statistics for Unweighted Least Squares (standard errors, t-values, etc).

LISREL 7 also offers a Ridge Option for handling covariance and correlation matrices that are not positive definite (as with some econometric models containing identities or regression models with high multicollinearity among the regressors); new plotting options, and more.

Also available now is PRELIS in Version 1.12. PRELIS is a companion-program to LISREL that can process non-normal and ordinal data, and can provide options for handling missing data.

LISREL uses output from PRELIS in lieu of raw data for the estimation and evaluation of linear structural equation systems.

—Bert Holland

A New FORTRAN Compiler on VMS

Automatic Parallelization Is Now Available

The ACF is serving as a field-test site for FORTRAN High Performance Option (HPO), a new release of DEC's FORTRAN compiler for VMS.

In addition to the support for "manual" (i.e., user-directed) parallelization already offered by the current standard DEC FORTRAN compiler, the FORTRAN/HPO compiler provides support for automatic parallelization and vectorization.

While the parallelization feature is usable now, the compiler's vectorization support requires Version 5.2 or higher of the operating system, VMS. We hope to install Version 5.2 or 5.3 within the coming months, and will then add the vector emulator code to permit the testing of vectorization in FORTRAN programs on VMS.

A limited number of manuals are available on a "non-disclosure basis" for users who wish to test this new facility; contact the ACF's Documentation Office, Room 306 Warren Weaver Hall. At present, use of automatic parallelization is probably best done on ACF1 or ACF13, since these machines have multiple CPU's. Please report any problems you encounter by sending mail to comment.

To access the standard DEC FORTRAN compiler, include the /NOHPO option when issuing the FORTRAN command.

—Reported by Stephen Tihor
Supercomputers

Update on the CONVEX

More Disk Space Is Available, Faster I/O Is Planned

The ACF has obtained additional disks for its CONVEX C210 "mini-supercomputer". CONVEX users now have about 1 Gigabyte of disk space available to them for storage of their programs and data.

Sometime this summer, the ACF plans to install a faster disk input-output (I/O) subsystem. This will include a higher-bandwidth bus and a high-performance channel control unit, the CONVEX Integrated Disk Channel (IDC). This should speed disk I/O considerably: IDC's are estimated to be capable of between eight and ten times the throughput of the current disk controllers.

We will have more on the upgrade of the CONVEX's disk I/O subsystem in the next issue of the Newsletter.

CONVEX Now Has Gaussian

A Computational Chemistry Package on the ACF's Mini-Supercomputer

Gaussian 88 has recently been installed on the ACF’s CONVEX C210 system (acf10 — please see related item, above).

Gaussian is a connected system of programs for performing semi-empirical and ab initio molecular orbital (MO) calculations.

The current program, Gaussian 88, is a further development in the Gaussian system of software for applications in computational chemistry. Previous versions have included Gaussian 70, Gaussian 76, Gaussian 80, Gaussian 82 and Gaussian 86.

For more information on Gaussian 88 and its usage, CONVEX users should enter the command "man gaussian" on acf10. Copies of the Gaussian 88 User’s Guide and Programmer’s Reference are available for reference or short-term loan from the ACF (contact the ACF’s Documentation Office, Room 306 Warren Weaver Hall). Copies may be purchased from Gaussian, Inc., 4415 Fifth Avenue, Pittsburgh, PA 15213 (FAX: 412-621-3563).

A Reminder for JvNC Users:

As you will know from previous ACF newsletters and bulletins, the John von Neumann National Supercomputer Center (JvNC) at Princeton, NJ, will terminate its supercomputer operations at the end of April 1990.

The JvNC has announced that JvNC users should not rely on any further access to JvNC supercomputers after April 14th.

Over the past few months, the ACF has been helping NYU users of the JvNC supercomputers to transfer their applications to other supercomputing facilities. As we go to press, all JvNC users of which the ACF is aware have been contacted and have moved their work to other NSF-funded national supercomputer centers.

If you are a JvNC user at NYU and have not yet transferred your work, please contact Ed Friedman at the ACF as soon as possible, preferably by electronic mail (friedman@acfclu.nyu.edu or bitnet%'friedman@nyuacf').

Accounts on supercomputers at the remaining four supercomputer centers funded by the National Science Foundation (NSF) are available; in addition, short blocks of "seed" time can be obtained quickly and easily. If you have not already transferred your JvNC time to one of these other national centers, then you should probably reapply. Please contact the ACF Accounts Office (Room 305 Warren Weaver Hall, 998-3035) for details and application procedures.

from Gaussian, Inc., 4415 Fifth Avenue, Pittsburgh, PA 15213 (FAX: 412-621-3563).
Software notes from ACF users

Managing Research and Lecture Notes On Your Personal Computer

Notebook II Does More Than Manage Bibliographic Information

If you believe the hype, "Personal Information Managers" will revolutionize the way we manage textual information. Unfortunately most of the programs in this relatively new category of microcomputer software seem to have been designed for the corporate, rather than the academic, world; they do not manage effectively the kinds of information that academics use regularly in their work.

Notebook II does. Written by a sociologist, Notebook II was designed to manage and output bibliographical information, but it is being used by growing numbers of scholars and teachers to manage lecture, research, and other types of notes as well.

A Research/Teaching Tool

Every semester, I find a new use for Notebook II. For several years, I have used it to manage annotated bibliographies of books and articles that I have read, to keep track of offprints in my office, and to teach graduate students how to use a microcomputer as a professional tool.

Recently I began to use it to manage research notes. Last spring, for example, in a Notebook II file, I recorded information from 16th-century manuscripts on the family backgrounds of more than five hundred apprentices who began terms in Tudor London. I used Notebook II to explore the information and to produce a variety of sorted lists, and then I "printed" the information in tabular form to disk and read the ASCII file into SPSS/PC+ for analysis.

In an age when many programs seem irrelevant to the academic world, it is encouraging to find so useful a tool.

Some Notes on STENSOR

A System for Algebraic Manipulation of Indexed Objects

TENSOR (pronounced ess-tensor) is an algebraic manipulator which, although originally designed for work in general relativity, has been found useful in various branches of field theory and differential geometry. The program is capable of manipulating and evaluating extremely complicated indexed expressions, and is of interest primarily to physicists and mathematicians. Its use requires a working knowledge of the formalism of tensor algebra and calculus. The brief description which follows presupposes such knowledge.

STENSOR is available at NYU on ACF4, one of the ACF's multi-user VAX computers running the UNIX operating system. It is part of a system of three programs, SHEEP, CLASSI, and STENSOR. These are largely the creations of Inge Frick, Jan Åman, and Lars Hörfeldt, respectively, all associated with the Institute of Theoretical Physics of the University of Stockholm, Sweden.

SHEEP can be used for an extremely broad variety of calculations in general relativity. For example, it can accept as its basic input a specific metric tensor and then provide almost any conceivable information concerning this metric: Christoffel symbols, Ricci tensor, Einstein tensor, curvature tensor, curva-

(continued on following page)
Ease of Use

Notebook II is extremely easy to learn and to use. Unlike most database management programs, you do not need to define the characteristics of fields in advance. You simply name your file and its fields and begin entering text.

Thus, you may have fields for the author’s name, title of book or article, place and date of publication, and other bibliographic information. In addition, because fields may contain up to 50,000 characters, it is possible to use a field for entering more than twenty pages of comments or notes.

Basic text entry and editing functions, including line wrap and the ability to delete, copy, and move blocks of text, make note taking relatively easy. Notebook II is also very flexible, for you may insert, delete, and move fields and in other ways restructure a file after it has been created. Assisted by an excellent manual, including a good tutorial, and simple but informative help screens, it will take you no more than a few hours to learn Notebook II.

Keyword Functions

Especially useful are Notebook II’s keyword functions which allow you to categorize books and articles by subject matter or any other criteria. You may enter as many keywords as you like for each entry, and Notebook II will provide an alphabetical index of keywords at any time, telling you how many entries there are for each keyword.

Keywords are most useful, of course, when you want to retrieve works in a bibliographical file by a certain author or about one or more subjects. Using a variety of “selection” functions, Notebook II will search individual fields or entire records for an author’s name, keyword(s), etc. and display all entries that meet any number of criteria you specify, or create a subfile, called a “view”, consisting of all entries that meet those criteria. Notebook II will also reorder files and subfiles on the basis of one or more sorting criteria in any field.

(continued on page 18)
The Promise of Twisted-Pair Ethernet

Networking A Department's PC's Without New Wiring

Twisted-pair Ethernet is a relatively new kind of network. The first few installations are just now being performed at NYU. In the coming years, however, this approach to networking is likely to become an important one for many NYU departments. This is because twisted-pair Ethernet—which, essentially, involves running Ethernet networks over twisted-pair wires—offers comparatively easy installation; relatively uncomplicated "troubleshooting" when problems occur; and compatibility with NYU's campus-wide network NYU-NET.

The Networking Trend

There is a strong national trend toward the networking of PC's. For example, it has been estimated that, within the next several years, more than 75% of the microcomputers in American companies will be "networked"—that is, they will be cabled in one fashion or another to other microcomputers, so that their users can communicate with each other and share files, printers, data-bases, and other resources. The current figure for the networking of corporate microcomputers is perhaps 20%. A similar movement toward networks is occurring at universities and research institutions.

Many departments at New York University have been participating in this trend, encouraged by the presence at NYU of an overall campus-wide network (NYU-NET) which provides cabling that runs from building to building on campus. In a few cases, individual personal computers are connected directly to NYU-NET. For an increasing number of departments at NYU, however, personal computers are being connected by a departmental network, which is then, in turn, connected to the campus-wide network, NYU-NET. This enables the microcomputers on the smaller network both to share departmental resources (printers, file servers, and so on) and to use extra-departmental services accessible via NYU-NET.

As an example, an ACF network of Macintoshes in the Education Building communicates via NYU-NET with another such network at the Third Avenue North Residence Hall. Users at one location can print on the printers at the other location. And all users of these machines can access the library computer, BOBCAT, or a dialout modem to reach computer systems outside of NYU.

The Trouble with Wires

Wiring can be a significant obstacle to a department that is considering networking its microcomputers.

In virtually all computer networks, machines are connected to each other by means of wires. It is common to hire a contractor to install new wiring in the offices involved—wiring that may have to run over ceilings, through conduits, behind radiators, and so on.

This can be expensive, typically costing several thousand dollars, depending upon the specific features of the office. In addition, this kind of wiring can be difficult to maintain: for example, if a problem develops with the wiring (a hungry mouse might find the cable quite

An example of a departmental network using twisted-pair Ethernet:

In an NYU office, twisted-pair wiring runs from a PC (or a Macintosh) equipped with an Ethernet board to the data jack on the telephone "face plate" affixed to the wall.

From there, the wire continues to the phone closet where, at a wiring distribution panel, it joins wires from all the offices on the same floor of that NYU building. From the panel, the wiring connects to the "hub" of the network of departmental PC's connected via twisted-pair Ethernet.

If desired, the hub may then be connected to a "buffered repeater", which performs signal modifications that allow the local Ethernet to be connected to a broadband cable.
tasty), it may be difficult to locate and repair the fault.

**Twisted-Pair Wiring**

Another approach, not altogether new, is to use pre-existing office wiring. Most offices at NYU already have wires that can be used for data communications. These wires — which, like telephone wires, are “twisted pair” — generally run from the office to the telephone closet on the same floor. They were installed several years back, along with NYU’s new telephone system, for the purpose of transmitting data, rather than voice, over NYU-NET.

Indeed, one current use of these wires is to connect terminals and personal computers to the campus-wide network. What is new is the technical feasibility of using these “data” wires to connect microcomputers to departmental networks, as well as to NYU-NET. (Note that before using these data wires, you must first check with Ed Franceschini, Assistant Director of the ACF, at 998-3050.)

Using this kind of networking scheme (the technical term is “network topology”), each machine that is to be connected has a wire running from it back to a central “hub” in the phone closet (see the illustration on the preceding page). This hub can then be connected, if desired, to NYU-NET’s campus-wide broadband cable.

This approach has been in use for several years for a variety of networks, including IBM Token-Ring networks and AT&T StarLAN networks. However, it has not previously been available for Ethernet.

**What Is Ethernet?**

While “twisted pair” refers to a type of wire, “Ethernet” refers to a set of standards defining such aspects of a data transmission network as the physical medium being used (e.g., the type of cable or wire), rules for data “traffic control”, and the size and structure of the “packets” in which data is transmitted.

More broadly, the term “Ethernet” is used to refer to wires, cables, and, generally, networking devices that conform to Ethernet standards. The development of these standards, and their industry-wide acceptance, have been important in helping to ensure compatibility among the many products that make up, or are attached to, a network. Ethernet has become the premiere approach to networking computers.

**Ethernet and Twisted-Pair**

It is now becoming possible to run an Ethernet over the already-installed twisted-pair wires which stretch from NYU offices to the phone closets on their floors. This emerging capability is the outcome of several years of effort by manufacturers of network products and by organizations concerned with the development of international networking standards. The industry-wide acceptance of an Ethernet standard for twisted-pair wires (colloquially, “twisted-pair Ethernet”) is imminent.

The value of a standard (published technical criteria for what hardware is required and what its attributes must be), is that equipment from diverse vendors can be mixed and matched by the customer, without fear of incompatibilities.

**Twisted-Pair Ethernet at NYU**

Ethernet are in some ways the best kind of network to install at NYU. One reason is that Ethernet represents a very solid, mature networking technology, one which people at NYU have been using extensively for many years.

A second reason is that NYU-NET, the campus-wide network, operates as an Ethernet. Because of this, departmental networks that themselves conform to Ethernet standards tend to be the easiest and cheapest networks to connect to NYU-NET.

Finally, the recent emergence of new standards for Ethernet over twisted-pair wires, plus the widespread availability of twisted-pair wiring — already installed expressly for data traffic — makes twisted-pair Ethernet a most attractive strategy for departmental networking at NYU.

— Gary Chapman, with Estelle Hochberg

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For further information...

Further information on twisted-pair Ethernets and their use at NYU can be obtained by consulting Gary Chapman at the ACF, 998-3044.
New Computer To Replace NYU's Internet Mail Gateway

Faster NYU-NET Service and Enhanced Network Support

A new computer is soon to become "NYU.EDU", NYU's mail/news gateway to the Internet, and a primary provider of support services for the community of Internet users at NYU.

The new machine will replace CMCL2, an older computer that has been serving as the primary gateway for electronic mail sent and received over the Internet, and will take on additional tasks in support of the greatly expanded use of networks by the NYU community.

Faster connections, improved network resource- and traffic-management, and greater reliability are among the benefits that are expected to result for NYU users of Internet and of NYU's campus-wide network, NYU-NET.

The machine is currently being used in a testing mode, and is slowly being given more of the network duties for which it will eventually be responsible.

Faster, More Efficient

The new machine is a Digital Equipment Corporation DECsystem 5400, with a 16 MIPS (millions-of-instructions-per-second) RISC-based processor, 32 megabytes of memory, and 800 megabytes of disk space. It runs Ultrix, DEC's version of the Berkeley UNIX operating system.

The new DECsystem 5400 is up to ten times faster than the machine which it is replacing, a DEC VAX 11/785 upgraded from an older VAX 11/780. It is also much smaller in size (see accompanying photos) and much more reliable and efficient — a reflection of many of the technological advances of the 1980's.

It is expected to become fully operational as a network server by May 1.

The Internet is a worldwide network of academic, research, and corporate networks. Along with BITNET, the Internet provides NYU computer users with connections for electronic mail and file transfer, and for access to remote computers and services.

Other Network Services

Another network function that will be run from NYU.EDU is BOOTP service: each time NYU computers are started up, NYU.EDU will provide them with Internet addresses and other networking parameters that will allow them to communicate correctly with other computers at NYU and outside of NYU.

Domain name service (DNS) is the software which computers on the Internet use to obtain the Internet names and addresses of other machines on the network. DNS will also be run on NYU.EDU. (The term "domain" refers to the fact that the Internet is administratively organized into hierarchical "domains".)

Keeping these networking parameters in one "server" like NYU.EDU aids network administration, by simplifying the task of adapting to changes in networking topologies and policies, and by making it possible to do so without disturbing NYU-NET and Internet users. In addition, network management software to be run on NYU.EDU will collect information that will assist in the management of NYU-NET.

To help minimize interruptions — should hardware problems occur, for example, or when computers need to undergo scheduled maintenance — services provided by NYU.EDU will also be duplicated and distributed geographically among other computers.

A New "Egress" Is Planned

One machine which, in addition to its other functions, is already providing some of these auxiliary network services is "Egress", an older DEC VAX 11/750 which is also slated to be replaced in the coming months by a DECsystem 5400. The new Egress will replicate many of the network services to be performed by NYU.EDU, so as to ensure stability and reliability of network services to the NYU community.

—Bill Russell and Estelle Hochberg
A n important activity of the ACF's Data Base Archive (DBA) is to assist teaching faculty, research personnel and graduate students in the selection, acquisition, and processing of data sets. In this function, DBA services have benefitted individuals in a range of academic departments in various schools within NYU.

In the last issue of this Newsletter, we focused on a few of the current projects, particularly in the Sociology Department (FAS), that have benefitted recently from DBA services. Below, we continue our report, which, for want of space, will have to be completed in subsequent issues of the Newsletter.

We will begin by continuing our focus on DBA-assisted projects in the Sociology Department, and then move on to the Economics Department (FAS).

Instruction and Research in Sociology

Professor Caroline H. Persell, Chair of the Sociology Department, recently used the National Opinion Research Center's General Social Survey cumulative file for her undergraduate course in Research Methods. DBA support included acquisition of the data set from the Inter-University Consortium for Political and Social Research (ICPSR) and extraction of a subset of the data for use in class projects. Professor Persell anticipates using the General Social Survey data again in an upcoming graduate Seminar on Selected Social Institutions.

Last summer, Professor Persell co-authored a paper titled "New Forms of Gender Stratification: Empirically Examining Theories of Educational Stratification" with two graduates of the department, Dr. Peter Cookson and Dr. Sophia Catsambis. The paper, which used the High School and Beyond data file (ICPSR 7896, etc.), was presented at the 1989 Annual Meeting of the American Sociological Association. Further research in this area by these authors is currently in progress.

Also in the Sociology Department, doctoral candidate Robert Heffernan is completing a dissertation titled "The Restoration Process in the American Polity: An Examination of Restoring Forces in Party Competition Among the House of Representatives and the Lower Legislative Houses of the American States." As major sources of data for his research, Mr. Heffernan relied on two data sets obtained from the ICPSR: The Partisan Division of American State Governments 1834-1985 (ICPSR 0016) and The Roster of United States Congressional Officeholders and Biographical Characteristics of Members of the United States Congress 1789-1987 (ICPSR 7803).

Research in Economics

In the Economics Department (FAS), several research projects use data sets acquired and processed by the DBA.

(continued on following page)

### Data Sets Recently Acquired by the DBA

The ACF's Data Base Archive (DBA) acquires and stores data files for instructional and research purposes at NYU. Assistance in the use of these data files is also provided by DBA staff to NYU faculty, researchers and graduate students.

The following are some of the data sets that have been acquired recently by the DBA. (The ICPSR numbers, included below for your convenience, are reference numbers assigned by the Inter-University Consortium for Political and Social Research, the organization from which these data sets were obtained.)

- Political Power in Boston, Mass. and Charleston, SC. 1828-1843 (ICPSR 8653)
- City and County Data Book (USA) 1983 (ICPSR 8256)
- World Tables of Economic and Social Indicators 1950-81 (ICPSR 8197)
- World Tables of Economic and Social Indicators 1960-86 (ICPSR 8947)
- General Social Survey, Cumulative File 1972-89 (ICPSR 9275)
- Candidate Name and Constituency Totals 1788-1987 (ICPSR 0002)
- Panel Study of Income Dynamics, 1968-85 (ICPSR 7439)
- US Historical Election Returns, 1824-1968 (ICPSR 0001)
- Historical Demographic and Social Data (US), 1790-1970 (ICPSR 0003)

The codebooks for these data sets have been deposited in the Social Science Section of Bobst Library (seventh floor).

The ACF's DBA holds and catalogs over 600 studies represented by some 2000 data files, and more are continually being acquired at the request of researchers at NYU. For additional information on the DBA's services, or for help in making use of them, please contact ACF consultants Bob Yaffee (998-3402) or Bert Holland (998-3401).

—Bert Holland
Professor Mark Spiegel is studying the use of tariffs and trade taxes by countries as revenue-raising instruments. Professor Spiegel explained, "Given the distortion associated with the income tax of a country, an optimal trade tax can be computed. This optimal revenue-raising trade tax can be compared to the actual level of trade taxes to identify countries with pro- and anti-trade biases in their tariff structure."

Data for this research were obtained from two large data-collections of the International Monetary Fund (IMF): International Finance Statistics, and Governmental Finance Statistics. The DBA updates these data files regularly, as new data are supplied by the IMF.

Dr. Andrew Racine, a practicing pediatrician and a visiting researcher at the C. V. Starr Center for Applied Economic Research at NYU, is engaged in a study of "The Relationship of Wealth Distribution to the Health Status of Non-Institutionalized United States Adults". Dr. Racine is using several portions of an extensive data collection, Survey of Income and Program Participation, produced by the U. S. Bureau of the Census and supplied through the ICPSR, in addition to data collected from his own practice.

Maury Gittleman, a fourth-year student in the Ph.D. program of the Department of Economics, is studying the relationships of education level and work experience to differential wage changes. He is using the Current Population Survey Annual Demographic Files 1973-1988, obtained from the ICPSR.

—Bert Holland

Report Generation

Where Notebook II really excels is in producing output. Using a powerful report generator, you can design and edit customized report formats for printing bibliographies (annotated with your comments, if you choose), tables, and labels. The program includes a variety of functions for handling underlining and foreign characters, headers and footers, non-printing of empty or duplicate fields, hanging indents, and so on.

Finally, standard utilities enable you to compact files, delete duplicate entries, import files created by popular word processing and database management programs or downloaded from DIALOG and other on-line databases, to merge two Notebook II files, etc.

Two other programs make Notebook II more powerful and easier to use. One program, Bibliography, significantly enhances Notebook II's bibliographical functions. In the text of a manuscript or in its footnotes or endnotes, you enter only the last name and publication year of a work you want referenced fully. As long as the book or article is in one of your Notebook II files, Bibliography will retrieve all bibliographical information and enter it where you indicated in the text in a format of your choice. If you like, Notebook II will also construct a bibliography of all works cited in the manuscript's text and footnotes or endnotes. Another program, nbCitation, provides report formats for APA, MLA, Chicago A & B, Turabian, and other publishing styles, as well as formats used by more than 650 journals, and also offers a pull-down menu system making Notebook II even easier to use.

—Steve Rappaport

(For more information on volume discounts for Notebook II, please see page 20.)
Colloquia on Courseware Continue Into Spring '90

Use of Computers in Higher Education Is Subject of New Series at NYU

Faculty-developed courseware is the focus of a series of colloquia at NYU on the use of computers in the college classroom.

Initiated this past fall to enthusiastic response (see the January edition of this newsletter), the series was extended into the Spring '90 semester with a program of interesting new offerings. Please see the accompanying box for descriptions of the four presentations that remain as we go to press.

The series is sponsored jointly by the Faculty of Arts and Science, the University Computer Center, and the Academic Computing Facility, with support from the IBM Corporation and Apple Computers, Inc.

A HyperCard Workshop

A full-day, hands-on HyperCard workshop, conducted by training personnel from Apple Computers, Inc., prefaced the series of spring colloquia. At this workshop, NYU faculty and administrators were led through the basic steps of authoring applications in HyperCard, a "hypermedia" program distributed by Apple with each Macintosh sold.

An Interactive Multimedia Lab

Professor Jacob T. Schwartz, of the Computer Science Department (FAS), was the very first speaker in the series. His March 9 presentation, titled "Interactive Multimedia Plans and Development in the Computer Science Department", was a discussion and demonstration of applications developed using SuperCard, a powerful Macintosh-based development tool similar to HyperCard.

Professor Schwartz's presentation culminated in a visit to a Macintosh-based multi-media computing laboratory that is being developed. (An upcoming issue of this newsletter will feature an article on the lab and on Prof. Schwartz's planned extensions of the authoring capabilities of SuperCard.)

— Estelle Hochberg

Computers in the College Classroom

As we go to press, four presentations in the Spring '90 series remain. The colloquia are open to all NYU faculty and administrators. If you are interested in attending, please contact Cynthia Kingman (998-2706, or kingman@acfl.nyu.edu); it will help us in our planning. We hope you will be able to join us.

The Hippocrates Project: Experiments in the Use of Computers in Medical Education (Friday, March 30, 2 p.m., Main Building, Room 509). Prof. Martin S. Nachbar, of the Departments of Medicine and Microbiology at the NYU School of Medicine, will discuss and demonstrate instructional material developed and used by student-faculty teams working under the Hippocrates Project. These interactive multimedia teaching materials, in a wide range of disciplines, integrate sound, video, and animation. They have been developed for use in a Macintosh-based environment. Authoring software has included HyperCard, SuperCard, and — for animation — Director.

Project THEORIA — The Ethics Videodisc (Friday, April 6, 2 p.m., Main Building, Room 509). Dr. Robert Cavalier, of the Center for Design of Educational Computing at Carnegie Mellon University, will present "A Right to Die? The Case for Dax Cowart" and will discuss its development and its use in classroom settings. Dr. Cavalier and his colleagues designed this instructional multimedia program as part of a project in developing courseware that supports students' interactive explorations of issues in ethics and aesthetics. The program was the winner of the 1989 EDUCOM/SCRIPTAL award for Best Humanities Software. It runs on an IBM PS/2-50, along with an InfoWindow touch display system (monitor and software) and a videodisc player.

Form and Content: Making Computers Functional (Friday, April 27, 2 p.m., Main Building, Room 509). Professor William Schiff, of the Department of the Department of Applied Psychology (SEHNAP), and Joseph Rosen (Interactive Telecommunications Program, TSOA) will speak on the development of an animated HyperCard stack for classroom demonstration, and the use of modified video within the computer environment. Professor Schiff is co-author of The Active Eye Stack, a HyperCard application which provides dynamic demonstrations, experiments and tutorials for university-level students of visual perception and cognition. Joseph Rosen is currently working with Professor Schiff in the development of video-based interactive measures of human performance.

Strategies for Integrating Computer Technology with Classroom Instruction (Friday, May 4, 2 p.m., Main Building, Room 509). Professor Vivian Klaff, of the Department of Sociology at the University of Delaware, has been involved in computer-assisted instruction for some time, and has developed a series of software modules for teaching demographic principles. Professor Klaff will discuss Project DEM_LAB, an integrated computer-assisted-instruction system created and designed at the University of Delaware, using IBM-compatible equipment. He will also demonstrate the use of demographic software for classroom lecture preparation, classroom demonstrations, and interactive student lab sessions.
General

Computer Discounts: Additional Notes

More on Educational and Volume Discounts

The November and January issues of the Newsletter outlined a number of educational and volume discount programs and other sources of savings on computer products, both for NYU departments and for individual faculty members and students.

We have since received the following additional information. (For a related item on shareware, please see page 4.)

Software

- Digital Equipment Corporation (DEC) and NYU have entered into an agreement that establishes a Campuswide Software License Grant Program (CSLG). The CSLG makes a selective but extensive portfolio of DEC software available, without payment of the usual software license fees, for use on any DEC computer at NYU. The department or project to which the computer belongs must contact ACF Assistant Director Ed Franceschini (998-3050) to avail themselves of this opportunity.

As an extension of the CSLG, the ACF is also working to establish an Educational Software Library (ESL). The ESL makes a selective but extensive portfolio of DEC software available, without payment of the usual software license fees, for use on any DEC computer at NYU. The department or project to which the computer belongs must contact ACF Assistant Director Ed Franceschini (998-3050) to avail themselves of this opportunity.

- Mathematica (see related items on page 6). Wolfram Research, Inc., has no site license program for Mathematica as yet, although it is hoped that one may be developed in the near future. They do offer some educational/volume discounts, but you may do better by dealing with a value-added reseller or a retailer. (For example, somewhat better discounts on the PC version of Mathematica are available through the NYU Book Center.) Wolfram offers matching software grants for the establishment of teaching laboratories based on the use of Mathematica; a proposal must be submitted, and a minimum of five Mathematica software licenses must be purchased. Further information on Wolfram's discount and grant programs is available from Wolfram (800-441-MATH).

- Notebook II. Pro/Tem Software, Inc., offers quantity discounts on Notebook II for the IBM PC (see the related item on page 12). They will provide Notebook II, bundled with Bibliography, for $95, when ten or more copies are purchased together. The agreement requires the designation of some individual at the institution as the local liaison for technical support services from Pro/Tem. The undiscounted price for Notebook II alone is $189; bundled with Bibliography, it is $264.

Departments who wish to arrange such a quantity purchase for their faculty and/ or students should contact Pro/Tem Software, Inc. (800-826-2222). If you are interested in obtaining copies of Notebook II at discount but do not have sufficient participation to organize a "ten-pack", the ACF may be able to help you find additional participants; contact Gary Chapman, at 998-3044.

Hardware

- Apple Products. Stephen Krause, of NYU's Purchasing Services Division, notes the following changes in Apple Computers' warranty policy and educational discounts.

For all Apple products purchased on or after January 1, 1990 (whether or not they were made through NYU), warranties are now extended from three months to one year.

Apple has also improved the terms of the educational discount program in which NYU participates. There is no longer a minimum purchase, and all purchases receive what used to be the maximum possible discount — about 40% to 50%, depending upon the item purchased. Contact NYU's Purchasing Services Division (998-1030) for further information on these discounts for departmental purchases.

- Mr. Krause also notes that Hewlett-Packard's new Series-3 laser printer is available for NYU departmental purchases.

Please let us know...

If you know of any discount arrangements — whether their benefits extend to your department, your school, or to members of the University at large — please let us know. We will share your information in the next issue of the Newsletter.

Please contact Estelle Hochberg, at 998-3036 (Room 306, Warren Weaver Hall).
chases at the same price as the older model, $1295.

- NeXT computers are now available for purchase by NYU departments, under a University contract. (There is no program for personal purchases, as yet.) The educational price for a basic NeXT system (8 megabytes of RAM, Mega-Pixel display, keyboard, mouse, 256-megabyte optical drive, 40-megabyte hard drive, and the NeXT bundled software) is $6495. A laser printer is an additional $2000.

For further details, please contact Stephen Krause of NYU's Purchasing Services Division, at 998-1032. (An item on NeXT computers appears on page 8 of this newsletter.)

—Estelle Hochberg

**ACF's INFO System Is To Be Updated**

The ACF is in the process of expanding the services offered by INFO, its on-line information system. INFO's user interface is also being revised, to make it easier for users to navigate through its expanded collection of offerings.

INFO’s new or expanded services include an archive of shareware and public domain software for Macintosh and IBM personal computers (see related item on page 4), and status reports on computer products and systems. There are also more electronic bulletin boards on a wider range of topics, help with NYU-NET use, and a catalog of the contents of the ACF's Data Base Archive. In the coming months, additional services will include the University telephone directory.

The ACF is considering making the INFO system more generally available as an on-line vehicle by which other NYU departments and groups can inform the NYU community about courses, activities, and other events. If you think your department or group might be interested in using INFO as an on-line means of publishing information of this sort, please contact Estelle Hochberg (998-3036).

INFO is accessible via network or dial-in to the many NYU faculty members, researchers, students, and administrators with personal computers or terminals.

An ACF account is not needed to use INFO. To access INFO, enter CONNECT INFO in response to NYU-NET's ">?>" prompt, or type INFO at the NYU Computer System Selector's SELECTION? prompt. You will receive INFO's welcoming message and main menu, and instructions on the use of the system. (Individuals with accounts on the ACF's cluster of VAX/VMS computers can also access INFO while logged on to their accounts: simply enter the command INFO.)

—Stephen Tihor, with Estelle Hochberg
Featuring:

- Graphics
- Microcomputers
- Mainframes & Minicomputers
- Supercomputers
- Networks
- Data Base Archive
- Courseware
- Software notes from ACF Users