



SAGE Computers are in constant use at The Evergreen State College. Pictured here are Dave Norton (staff), Franklin Ruetz, Tom Henderson, Art Carter, Nicole Papageorgiou, Eric O'Brien and Mark Lewin (student consultant).

SAGE Moves into the Liberal Arts

by John McGee
The Evergreen State College

You don't have to be a large, research-oriented university to appreciate the SAGETM computer, as students at The Evergreen State College (TESC) in Olympia, Washington, have discovered. Academic Computing at this small, state-supported, liberal-arts college has been using SAGE micros for the past year.

TESC chose SAGE because it offers an easy-to-use environment, the p-System, yet also provides leading edge technology and performance. It not only makes simple use faster, but opens opportunities for more advanced study in such areas as graphics and computer architecture.

Evergreen's curriculum is based on interdisciplinary offerings called "programs", in which a theme is examined from the perspective of several fields of study. This approach to the liberal-arts education and the overall commitment to excellence has attracted Evergreen substantial notice: a recent survey of college presidents by **U.S. News and World Report** (Nov. 28, 1983) named Evergreen as the top regional liberal-arts college west of the Mississippi. Evergreen has been similarly cited by such diverse publications as the **New York Times** and **Seventeen**.

As part of its interdisciplinary approach, Evergreen has a policy of "open computing", with ALL students having equal access to the academic computer systems. This policy has been so successful that the demand now exceeds the supply and continually requires more computing power.

Last quarter, the SAGE machines were used by over 100 students in three classes: Introduction to Pascal, Data Structures I, and The Business of Computers (a program incorporating both the technical and business elements of software development). These students used the SAGEs primarily for Pascal or for text-editing (using the System Editor and Word/7). Advanced students used the Modula-2 System.

There were, of course, some stumbling blocks. Since the typical Evergreen SAGE user last quarter was relatively "green", the documentation proved too technical for our needs. We solved this by writing some of our own. Initially we had trouble with static, but, with the installation of new anti-static carpet, that too is under control.

After an initial "start-up" hump, students liked the SAGEs and, if demand is a good indicator of the SAGE's popularity, they've been quite successful. The SAGEs were Academic Computing's most requested resource for next quarter, with demand roughly twice what could be accommodated.

Holistic Programming?

Theorists in education and psychology are no longer the only ones concerned with left/right brain functioning. Tom DeMarco, involved in computer projects since the early '60's, proposes we apply a bit of this theory to programming.

Since the '50's, computers largely have been patterned on the left brain, that is to say, they have been serial in nature dealing with things in a linear, arithmetic, logical fashion. That, however, negates the right-brain non-linear aspect of our natures — the holistic, inter-relational part which deals with language, pictures, graphs, patterns, music, in fact, with any kind of thinking which can't be done in strictly linear fashion.

While computers were built to work serially, according to DeMarco, there is no reason they can't be patterned after the right side of the brain. In considering non-linear I/O — for example, pictorial or graphics output — this method clearly accommodates the person trying to put together understanding as part of the output.

According to DeMarco, "No one has addressed the right brain from a programming standpoint. While a doctor's questions to his patient are serial — one question leads to the next logical question, a good many applications are not like that — or are carefully squeezed into an inappropriate mold."

The industry standard doesn't allow multiple things to go on in a computer if it can be helped. But why not 5 or 6 serial streams of consciousness running at the same time even though not related to each other?

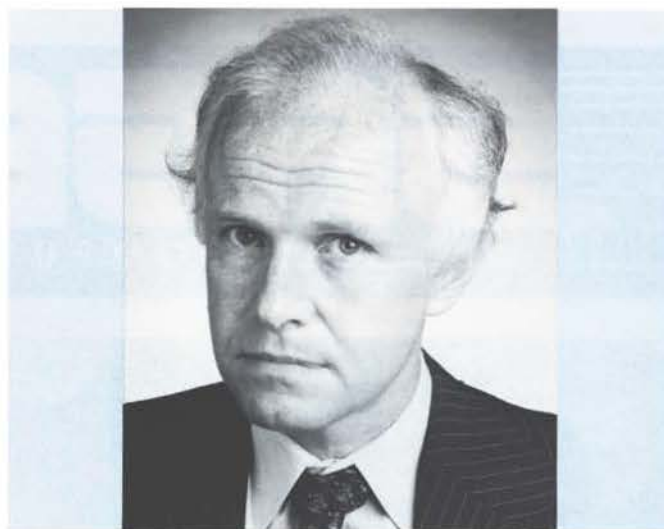
"There are reasons to think this will happen in the future because some things drastically need this approach," says DeMarco. "UNIX is a simplistic example of how this is already happening in operating systems as it sets up a limited set of asynchronous procedures and lets them interact."

"While there is no movement in this direction in the industry, it will come," DeMarco continues. "Now there may be 50 programs running in left-brain hierarchical fashion, but they don't interact. The computer polls each one, 'Hey, do you have anything for me to do yet?' and then moves on to the next."

"But why not have 50 programs working like people?" he asks. "Each one can do its own work, but doesn't need to wait for the others to finish before getting started. At the same time, there can be interaction between programs as there is with any group of workers. In the concurrent or right-brain mode, there would be no passing of control as each section or module would have its own control."

People don't really work in serial form to complete a job, but rather in the concurrent stream. You might work on a program, then go into the filer to check something else, and then return to the first project — or move on to some other.

"Working with several pieces of paper on your desk violates the serial paradox — and why shouldn't programs be developed in the same fashion?" Tom DeMarco's ideas can point our thinking, and our programming, in this direction.



Tom DeMarco

Exploring from your Keyboard

Today microcomputers can open the door to an expanding horizon via electronic information services and computerized data bases. Coming from a number of sources, they permit you to access information in amounts far beyond what any individual could generate alone.

The idea of a data base is not new — it is merely a core of information available to several different users. But the concept of commercial, phone-accessed data bases has expanded dramatically in the past few years, paralleling the rise in the personal computer.

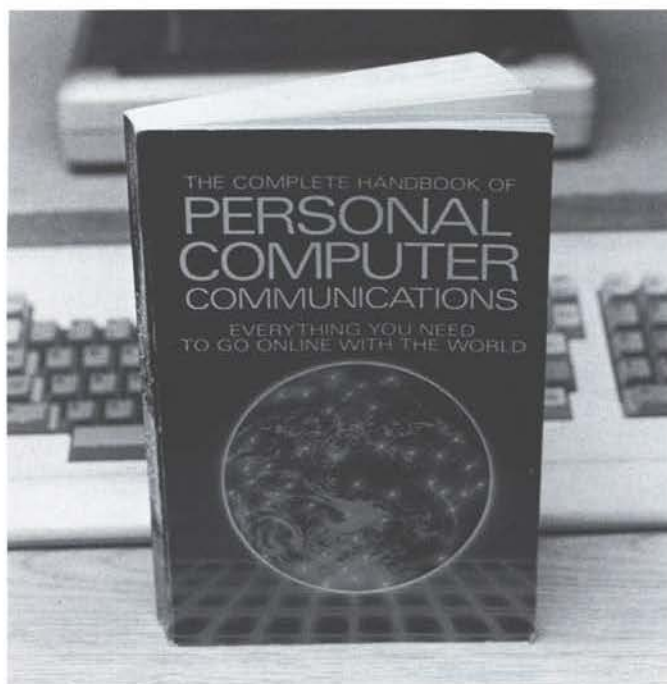
They can be classified into two categories: general and specialized. General services such as *CompuServe*, *The Source*, and *Dow Jones* offer such options as news and information, electronic mail, "bulletin boards", sports, weather, and financial information. You can use them to check an airline schedule or buy a ticket to the opera.

The specialized data bases deal with specialized topics such as scientific studies, legal case briefs, medical histories, and environmental reports. These may be offered alone or as part of a diversified information service. *Dialog*, for example, offers over 150 separate data bases. They cover such wide-ranging subjects as a listing of mail order catalogs, a worldwide news digest from Moscow, and a foundation grants index.

Many producers offer "bulletin boards", centering around a special interest group, and/or electronic mailboxes, for communicating with business associates and friends.

To access any of these electronic services, you need two additional items with your computer: communications software and a modem. There are several good software packages on the market. Most SAGE dealers sell the Hayes 1200 Smartmodem, but there are many modems that will do the job for you. They involve only a simple connection to your phone line and to SAGE's MODEM port.

Entering this world of electronic communication is like finding a new game. At the same time, you'll wonder how you ever managed when you spent so much time waiting on the phone or for a response to your letter.



Review

Electronic Communications

by Lois A. Snedden

When Alfred Grossbrenner, writer and personal-computer consultant, decided to tie into electronic information services, he couldn't find the information he needed in one place. As a result, he wrote **The Complete Handbook of Personal Computer Communications — Everything You Need to Go Online With the World.**

He surveys all that is waiting in the electronic world beyond your keyboard and explains exactly what you need to get started. If you have not yet joined the online crowd, you'll be particularly appreciative of the discussions dealing with those features to look for when choosing your modem and your communications software. Moreover, you will find numerous "Online Tips" — quick, relevant suggestions and information — set off in boxes.

Separate chapters are devoted to the major electronic information services, The Source and CompuServe. These discussions dovetail with the instruction manuals supplied by the two utilities and contain tips, suggestions, and samples not published by CompuServe and The Source.

Further discussions explore the treasure of information available through the three major encyclopedic databases, DIALOG, BRS, and ORBIT, and those databases providing news and specialized business information, the New York Times Information Service and NewsNet. Again, Grossbrenner provides tips on what each contains and how to most efficiently use the services offered.

Everyone wants a bargain and Grossbrenner shows you how to save 10 to 40 percent on tens of thousands of brandname items by shopping from your computer keyboard. Hints are practical, as a user easily can check comparable costs and quality. Grossbrenner also introduces you to the rapidly growing phenomena of electronic banking, where the opportunities are relatively limited compared with what will be available in the future.

There are dozens of ongoing, online conferences with individuals all over the continent. You not only learn how to take part in them, but also how to take part in private online conferences limited to members of your organization.

For those interested in controlling their work hours there is a discussion of the potential of "telecommuting", or working at home with the help of your communicating personal computer. He spells out what you'll need in the way of hardware, software, and company agreement.

At some time or other, you'll want to see "what's out there" for just a phone call. The chapter devoted to **free** computer bulletin boards in North America serves as your guide. Many of these services seem only to be available at night when the board operator is home to monitor what's going on. This slows down your "research" but saves expensive day-time phone charges. I did find that the number listed for the first free board, located in Chicago, was off by one digit — and the respondent had been overwhelmed with calls such as mine! [For the record, the correct number is (312) 545-8086.]

The technical side of data communications is presented for those who want or need to know more about parity, stop bits, translation tables, crossover cables, and the other arcana of the field. Finally, excellent appendices contain everything from a GIGO (Garbage In Garbage Out) eliminator to how to turn your personal computer into a typesetter.

If this sounds like **The Personal Handbook of Computer Communications** has something for everyone, it does. Whether you regularly enter the electronic universe or are just now contemplating going online, you'll want to take a look at it. With this easy-to-understand book, Alfred Grossbrenner has written the indispensable communications guide for beginners and experienced computer users alike.

New Dealers

The number of authorized dealers throughout the country continues to grow. Welcome to SAGE:

L.E. BORGMAN, INC.

Leon Borgman
2526 Park Avenue
Laramie, WY 82070
(307) 742-3178

HALMAR ASSOCIATES

Harold Weinberg
2565 N. 50th Street
Philadelphia, PA 19131
(215) 477-1177

SLOCUMB COMPUTER SERVICES

William H. Slocumb
100 W. Grove, #250
Reno, NV 89509
(702) 329-8878

MICROSTAR LABORATORIES, INC.

Neil Fenichel
1906 3rd Avenue West
Seattle, WA 98119
(206) 285-7399

SAGE Controls Honeywell

Honeywell is one of the most recent converts to SAGE. At their plant in Denver, SAGE IVs are at the heart of a Computer Assisted Manufacturing system designed to produce circuit boards. While it seems unusual for one computer to control the operation in another computer plant, that's exactly what is happening.

Bar code readers, pencil-like devices called Ruby Wands, are used to read a series of black and white lines much like the Universal Product Codes (UPCs) found in supermarkets, which are affixed to materials, badges, and locations. With the help of these bar codes, jobs can be tracked by serial number or lot number, and the intermediate status of the job can be determined at any time.

The system keeps track of plant inventory, does time accounting, traces work flow, and prepares daily reports. Wands, tied into the on-line system, are used to record the station ID, those part numbers being used, the times when a process is started and completed, and the actual time spent. Thus, it is possible to determine instantaneously where something is in the flow: ie. Board 32 is at Station 6 having Resistor 88 installed, and the process has taken 6 minutes so far. There are 120 screens involved, with each screen representing a different action or process.

There are two parts to the picture. The first involves control: control of parts, the flow of work and people's



Bea Flenner uses the Ruby Wand to read bar codes.

time. The second aspect deals with quality: a part that needs rework gets tagged back to the person who installed it. In short order, the company can determine if any trouble lies with an individual or with an individual part.

The Honeywell operation uses two SAGE IVs tied together with remote ports. One is the Host, the other the Concentrator. Ports 15, 14 and 13 from the Host go to Intermec 9300Is.

All five ports from the Concentrator go to 9300Is. The remote goes to the Host. At each 9300I station, there is a terminal. Input is either from a bar code reader (up to ten can be used) or from the keyboard. From each terminal hanging off a 9300I, there are two more monitors so that, in effect, each terminal is replicated three times. Three screens show the same view of any particular process as the system spreads 400 feet in every direction.

The bar code system for the SAGE computer was developed by Micro Research & Development and is being marketed by Cibar of Colorado Springs. The product is known as ProMIS for Production and Manufacturing System.

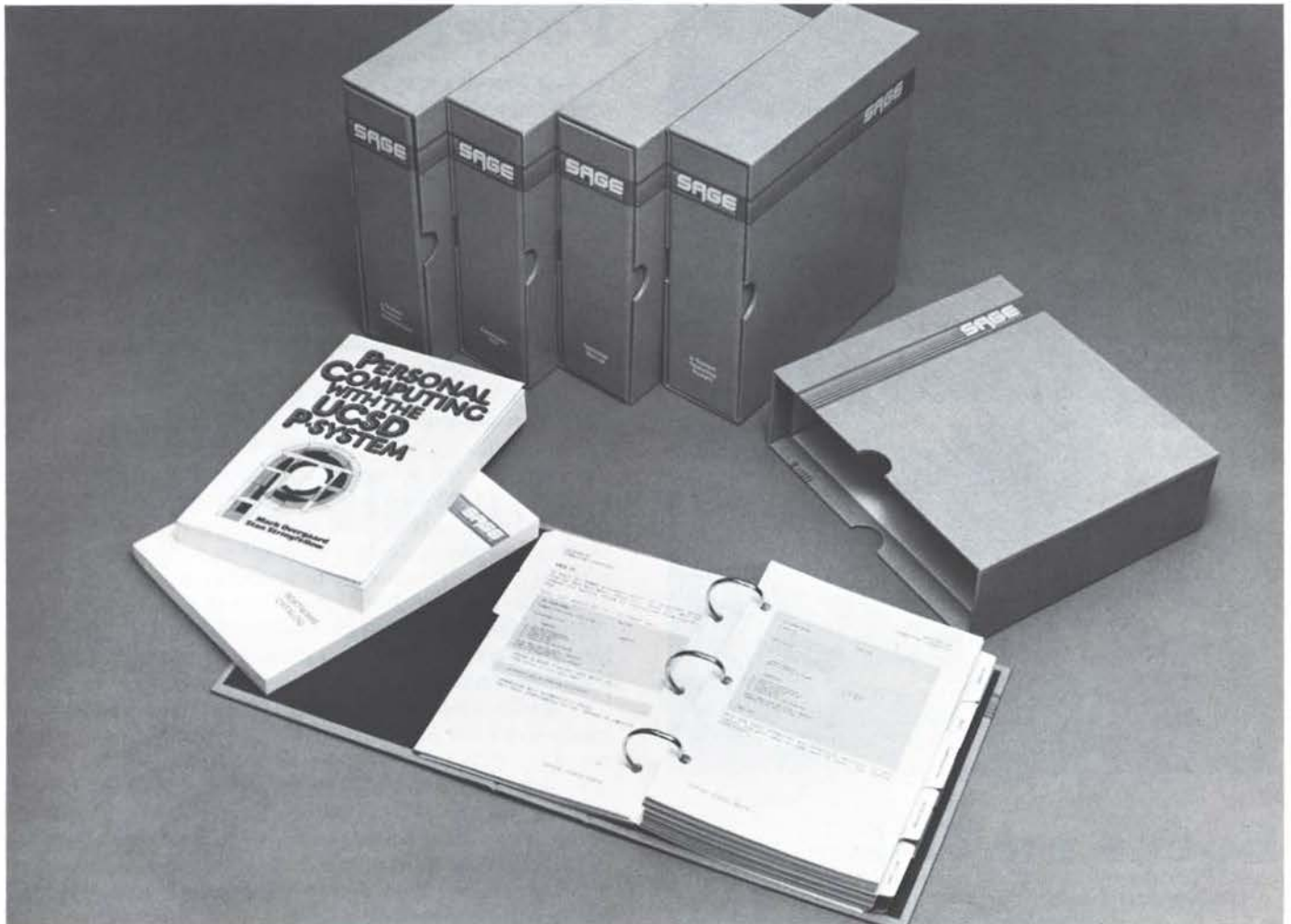
ProMIS can control as many as six SAGE IVs and can handle up to 250 bar code readers. The program handles polling, data base, and all terminals, while allowing people to do things individually. That is, it looks at one thing at a time. The switch-over is under 1/100 of a second, so there appear to be no response-time problems in the current configuration.

This program is applicable to retail stores as well as to manufacturing. The size of the operation is limited only by two factors: the amount of disk space and the size of the data base it will hold as the on-line data base is needed at all times.

The nearest competitor runs this program on mainframes which have a ten times longer response time. According to Marv Donaldson of Micro R&D, "Honeywell couldn't believe it. They didn't think we were updating the data base. And we originally showed them the program on a SAGE II."



Greg Lovenstein enters routing information from a routing sheet.



Documentation

The New Look

At long last our new documentation and software are being released! By the time you receive this newsletter, we'll be shipping. Not only are there new features, but this update reflects SAGE Computer's commitment to increased professionalism and accuracy. You'll appreciate entering the system more quickly and utilizing it more efficiently. We feel we've enhanced the high standards and capabilities for which our hardware is noted.

Our goal was to make the SAGE a practical system for novice users, while not sacrificing any of the detailed technical information which many of our customers demand. Thus, a new *Getting Started* manual has been added. This volume was "focus group" tested several times with non-computer users to insure that our own prejudices would not interfere with readability or ease of installation. The final version allows novices to successfully install, backup and run a system in 90 minutes.

The documentation has been repackaged, too. Replacing the large brown binders are a set of 5-slipcased manuals in the more popular 3/4-book size. Cosmetically, the new manuals feature index tabs for reference and two-color printing to clarify screen examples. The documentation package also includes a copy of *Personal Computing with the UCSD p-System* and the *SAGE Software Catalog*.

The new software, featuring a "Business" diskette with menu-control, eases moving from one application to another. This allows someone, even with no background in the p-System, to use the system immediately.

There are several other additions and improvements. The latest version of the p-System (IV.13) is included, as is the *TeleTalker* communications package from Randy Bush. A pre-configured "Build" diskette allows a quick multi-user setup. The *WORD/7* word processor has been enhanced dramatically. A demonstration, the *Towers of Hanoi*, shows off SAGE's speed. And a menu-controlled setup procedure supports automatic program and hardware configurations for the SAGE, Qume 102, TeleVideo 925 and Freedom 100 terminals.

There are numerous improvements to the system files, including bug fixes from both SofTech Microsystems and SAGE. The changes are detailed in the February IV.13 System Release Notes, which you can receive by dropping us a line here at SAGE News.

For existing customers, the update will be available in two versions. One is for those who purchased their SAGE computer with the word processor and spreadsheet; the other is an Early Bundle Update for those with the BASIC and FORTRAN options. Pricing information is available from your nearest dealer.



Focus on TDI

As the photo shows, TDI, the world's largest distributor of SAGE Computer systems, is right in the middle of the European computer marketplace. At COMPEC, Europe's answer to COMDEX, TDI unveiled numerous software applications to complement SAGE versatility and power. One of the products highlighted was Idris, a multi-user, multi-tasking operating system for microcomputers.

Developed by Dr. P.J. Plauser, formerly of Bell Labs and the UNIX development project, Idris was designed from the ground up to be more than just another UNIX work-alike for microcomputers. Although UNIX version 6 compatible, Idris demonstrates a broader degree of portability and power across a wide range of microcomputers. TDI's director, Roger Howarth, likes the speed of Idris on a SAGE. "It has an Eratosthenes benchmark of 2.75 seconds which is better than a PDP-11/60 running C, and is almost as fast as a VAX 11/780 with C under VMS." Mr. Howarth sees the SAGE/Idris combination as an irresistibly powerful development package for the Business, Science, and Engineering communities as well.

Other software introductions made at COMPEC for SAGE included "Forssight", a powerful business planning and design system, Robinson's color graphic package (which includes business graphics capability), and BOS, a highly successful business operating system that presently runs on 50 different micro and minicomputers.

Alistair Jacks, Managing Director of MPSL, originators of BOS, concedes that "SAGE is by far the most cost-effective machine that runs BOS." TDI agrees and has made plans, through an aggressive marketing strategy, to offer the SAGE/BOS package as a powerful tool addressing the needs of the European business community.

Power through CAD

by Bob Needham

Mechanical Design Manager

SAGE Computer has recently acquired a Computer-Assisted Design (CAD) machine for designing printed circuit boards for our new products. This advanced system gives us capabilities that were only a dream three years ago. The benefits to SAGE include reduced costs, faster turn-around, increased design reliability, and more accurate, better-looking up-to-date documentation. We can now take the design from start to finish in-house, giving us control over steps that used to be done by three separate outside vendors.

The machine extracts data from schematics drawn with a light pen on the 19-inch, 5-color graphics screen. Anything drawn can be plotted on the 8-pen, E-size plotter that is part of the system. The CAD machine gives us the capability of performing different types of automatic design checking that used to be done entirely by hand. This not only frees designers for other work and increases accuracy, but dramatically reduces the turn-around time of a new design.

The machine is very fast and powerful, but it is limited by the speed of the plotter during the drawing of schematics (they consume an average of 130 Kb of memory and take about a half hour to plot). This is like having your computer tied up running a huge text file on a slow printer!

To solve the problem, we hooked a SAGE IV to both devices, using a CP/M-68K interface written by Bruce Robertson, SAGE Software Engineer. Making the CAD machine think it is sending data to the plotter allows it to quickly dump the data onto the Winchester drive, thus freeing the system for further work. We can then have another plot simply by downloading the file from the SAGE to the plotter, without impacting the CAD machine at all! The SAGE has made a powerful tool even more powerful.



Bob Needham is using the Telesis for design work.

User Group Needs You

The **SAGE USER GROUP COMMITTEE** needs your input and support in forming a national **SAGE USERS GROUP**. Some of the benefits a Sage owner could receive from a well-organized user group are: a well-supplied software library, an electronic Bulletin Board Service (BBS), forums for Special Interest Groups (SIG) and/or product and technical updates through a regularly printed group newsletter. Don't miss out.

For more information, please write:

Randy Scott

SAGE USER GROUP COMMITTEE

4905 Energy Way

Reno, Nevada 89502

Hardware

Printer Change

David L. Magglini

Hardware Product Manager

We have some good news and some bad news. First, the bad news. We removed the popular Qume 9/45 Printer from the price list in the last quarter of '83 after being informed that it was being phased out. There are still some 9/45s around but getting them requires as much as a six-month lead time.

This brings me to the good news. The 9/45 is being replaced with the Qume Sprint 11/40. We think you'll like the same high-quality print at a lower price.

There are several other differences. The 9/45 prints at 45 characters per second while the 11/40 prints at 40 cps.

Often-used controls are still conveniently located on the front of the 11/40, but some adjustments must be made with two sets of DIP switches hidden inside. Unlike the 9/45, which required a 9/45A model to interface with serial ports and a 9/45B model to interface with Centronics ports, the 11/40 has a slot in the back which accepts either interface panel, making it more versatile.

Note that the Serial Interface has a male-type plug which does not connect to the SAGE Modem port. Using the Serial Interface & Modem Connector designed by SAGE solves this problem. The SAGE connector itself can be as short as 1', which, when connected to the 5' Qume interface, results in a total cable length of 6 feet. Or you can opt for a 10 or 25' connector, for a 15 or 30' cable when used with the 5' Serial Interface.

For a Qume 11/40 with a 5' Serial Interface, you'll need:

PH0014 Qume Sprint 11/40 letter quality printer 40 cps

PH0016 Qume Sprint 11/40 Serial Interface

and one of the following:

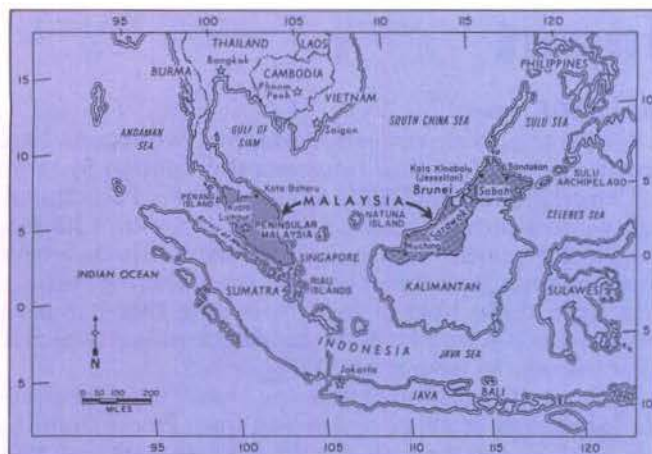
CC0095 1' Qume 11/40 Serial-Modem & Interface Connector

CC0097 10' Qume 11/40 Serial-Modem & Interface Connector

CC0098 25' Qume 11/40 Serial-Modem & Interface Connector

The Parallel Interface does not connect directly to the SAGE Centronics port either. Once again, a 1' connector is available, giving a total length of 6 feet. But, in this case, SAGE's existing parallel printer cable may be used instead if you want the additional length. It comes in a 10' length resulting in 15' when hooked to the Parallel Interface.

(continued — next column)



Impact—Malaysia

Malaysia, situated between the South China Sea and the Indian Ocean, is an amalgam of traditional and modern influences. It has drawn on China, India, Western Europe, Polynesia, and the Arab world to create a unique multilingual and multicultural nation.

For over a century Malaysia has enjoyed economic prosperity based on large-scale rubber and tin production, and the manufacture of electronic components has recently assumed the chief position among Malaysia's exports. Prosperity is also supplemented by other industrialization efforts, petroleum and palm oil production, and a stable system of public administration and public services.

Stability in record keeping has also come to the educational system as more than 10,000 students from Chinese independent schools throughout Malaysia have had their examination results processed and their performance analyzed by the SAGE computer this past year. In addition, each student's biodata and course record are now keyed into the computer for later verification.

Many of the schools are preparing computer courses to build student awareness and are considering hands-on training in computerized accounting, word processing, and database and file management to gear students for a business environment. One Chinese independent school in Kuala Lumpur, using a SAGE IV and programs developed locally, teaches its students practical computer skills to ensure immediate employment.

Furthering its commitment to administer electronically, the United Chinese School Committees Association of Malaysia plans to install another SAGE micro to keep track of the government's education policies and other related matters.

Through computer technology, the West and SAGE now contribute to the mixture that is Malaysia.

Printer — (continued)

For an 11/40 with a 5' Parallel Centronics Interface, you'll need:

PH0014 Qume Sprint 11/40 letter quality printer 40 cps

PH0015 Qume Sprint 11/40 Parallel Interface

and one of the following:

CC0096 1' Qume 11/40 Centronics & Interface Connector

CC0025 10' Parallel printer cable

The new light-weight printer is designed as sleek as its less-expensive price tag.

Input

Dear SAGE News:

Per our telephone conversation some 3 weeks ago, I am finally getting around to returning the Volition Systems ASE I purchased from SAGE. As I stated then, I purchased ASE when I purchased my SAGE IV, but didn't have a chance (or reason before now) to try it. Much to my chagrin I found out that it wouldn't run with my "tube". You were quite helpful in determining that it wasn't designed to run with an ANSI standard terminal (which is what I have). So here it is!

Also, your suggestion of defining a new "type" of variable for passing large strings to and from Pascal routines has worked out fine (I should have thought of this myself!). Thanks for the assistance — SAGE has been and continues to be, an excellent company to do business with.

Jon S. Anthony
Flint, Michigan

(Ed. note — Jon's right; ASE won't run on an ANSI terminal.)

Customer Support

SAGE now maintains a bulletin board service (BBS) for SAGE users as well as several "electronic mailboxes". These are provided through *Telemail* (GTE's TELENET). The bulletin board, called SAGE, offers users a way to post items of interest to other SAGE users and a way for SAGE to send quick news items and program notes of general interest. Through our mailboxes, MAILDROP (for technical support), DEALER (for sales and dealer support), and SAGEWORLD (for International), we respond to questions and special requests.

In the February software release and updates, SAGE provides a communications package, *Teletalker*, as part of its bundle. This program was developed by Randy Bush for USUS and is sufficient for *Telemail* access and for most typical communications.

Anyone with a communications package, a modem, and a *Telemail* account number can read the bulletin board by typing "CHECK SAGE<cr>" at the Command? level, followed by one of the many READ statements after the next Command? prompt.

To set up a *Telemail* account, send the following to SAGEMAIL, SAGE Computer, 4905 Energy Way, Reno, NV 89502:

NAME:

ACCOUNT NAME: (generally first initial, last name)

BILLING ADDRESS:

\$25.00 (to cover USUS administration and membership)

\$6.00 (for the instruction booklets)

Since *Telemail* was established by USUS, the p-System users' group, you need to be a member (\$25.00) to use the service. The two Introduction to TELEMAL booklets, at \$3.00 each, are essential if you have not used electronic mailboxes before. If you're already a USUS member, a version of *Teletalker* is available from the library.

For more information, write SAGE Computer or call us at (702)-322-6868.



Verlene Bonham



Steve Turner

People

As Senior Software Engineer, **Verlene Bonham** handles "anything that's hot". One of her recent projects was the new Business Diskette. She works on system-level programming, writes the test software for hard disks, and is involved in new projects in R&D. In the early days, Verlene was SAGE's sole customer support, as well. She pampers her "expensive" cats, the alley variety that eat a lot, and has a personal library of over 1500 books, most of them science fiction.

Steve Turner is the SAGE Sales Engineer whose sense of humor tends toward burlesque. He uses his varied background in consulting, education, and entertainment to make difficult concepts easy to understand. For relaxation, Steve focuses his creative talents by playing his guitar for friends and by "throwing" pots on his professional wheel at home.

Contact SAGE Computer or check the SAGE Bulletin Board to learn the availability of talks taped during SAGE Faire seminars.

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