

The rapid growth at SAGE last year put a smile on the face of company president Rod Coleman.

Big Year at SAGE Computer

by Rod Coleman

In many ways, April is an anniversary month for SAGE Computer. Two years ago at this time, we had just previewed our SAGE II, and were making plans to begin actual production by summer. But it was also the beginning of our first full fiscal year (FY 82/83) as a business.

Today we've completed our second fiscal year, and it gives us cause to reflect on our accomplishments and optimistically look to the future.

Economically, we've had a banner year. The final figures won't be in from the auditors until later in the month, but indications are that SAGE grew dramatically this fiscal year compared to last: Sales are up 420%, Assets increased 293% and our Profits grew by 467%. Earlier this year we were able to negotiate a major line of credit with a prominent west coast bank to provide us with the additional working capital resources to finance our growth. The fiscal year concluded with strong indications of good things to come. We set a sales record in December, and March was the best month of the Quarter.

Some of SAGE's other accomplishments are even more impressive. Our corporate headquarters and manufacturing facility grew from 8400 sq. ft. to 50,000 sq. ft. Our employees nearly doubled from 40 to 78. Regional offices were opened in Boston and Dallas. An International Division was created with representatives or distributors in 35 countries. We've added 5 operating systems, a dozen new languages, and over 200 new applications to our Software Catalog.

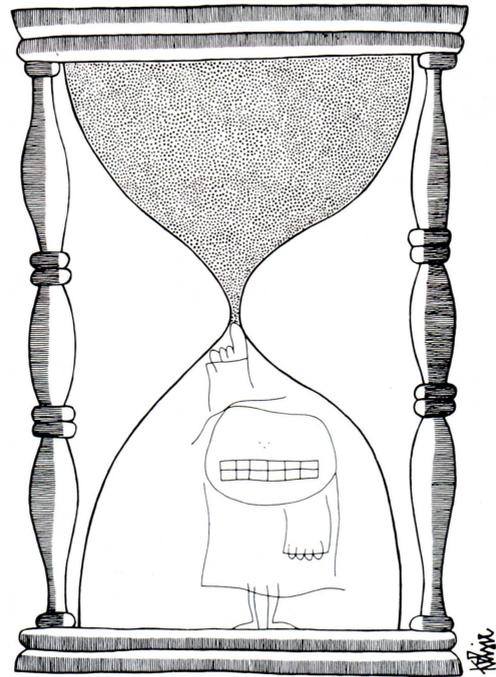
We've also made great strides this year in bringing our Marketing efforts in line with our technical excellence. SAGE has made major improvements to its management team, documentation, advertising, public relations, co-op program and support activity. From the beginning, we've worked on being an open company responsive to customers' needs and inquiries. Although we've grown substantially, that spirit continued this year.

In August we began a monthly newsletter, SAGE News, to enhance our communication with our customers. And the highly successful SAGE Faire '84 in February was evi-

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Benchmarks:

Timing Your Computer?



How do you know if one computer is faster than another? Good question, and one that is nearly impossible to answer. Benchmarks are the conventional solution, but they have some serious shortcomings. No two people seem to agree on a single all-purpose benchmark, and everyone argues that a given benchmark on a given machine can win any contest.

That said and agreed upon, here's a look at a benchmark that we're fond of here at SAGE Computer. It first drew attention when published in the September 1981 issue of *BYTE* in an article by Jim Gilbreath. The program is known as the Sieve of Eratosthenes (pronounced Er-ah-TOS-the-nee-z) prime number generator. In a nutshell, it seeks out all prime numbers from 3 to 16,381 as fast as possible. Gilbreath followed with a second article in *BYTE* in January 1983 updating his findings.

Neither story included timings for a SAGE, but when we did it ourselves, the results were impressive. Here's an enhanced program listing provided by Jim Bandy of Sof-Tech Microsystems so you can try it yourself:

```
{ $R- }
{ $N+ }
PROGRAM Eratotosthenes;
CONST
  Size = 8190;

VAR
  I, Prime, K, Count, Inter : INTEGER;
  Flags : ARRAY [0..Size] of BOOLEAN;

BEGIN
  WRITELN(' 10 iterations..');
  WRITE(CHR(7)); {Ring bell on terminal for stopwatch}
  FOR Iter :=1 to 10 DO
    BEGIN
      Count := 0;
      FILLCHART(Flags, SIZEOF(Flags), TRUE);
```

```
    FOR I := 0 To Size DO
      IF Flags[I] THEN
        BEGIN
          Prime := I + I + 3;
          K := I + Prime;
          WHILE K <= Size DO
            BEGIN
              Flags[K] := FALSE;
              K := K + Prime
            END {WHILE};
          Count := Count + 1
          {WRITELN( Prime );} {For debugging only..}
        END {IF Flags[I]..};
      END {FOR Iter...};
    WRITE(CHR(7)); {Ring bell on terminal for stopwatch}
    WRITELN (Count, 'primes found.');
```

END.

This program features some enhancements from the one originally listed by Gilbreath in *BYTE*. The range checking was turned off {*\$R-*} and he provided a bell to make timing easier.

When SAGE Sales Engineer Dave Cline performed the benchmarks, the timings were 39.4 seconds in Pascal and 4.1 for Native Code (Pascal). The Native Code (Assembler) finished in 1.12 seconds.

For a rough comparison, the IBM PC with its 8088 did the benchmark in 147 seconds in Pascal, 19.4 in Native Code (Pascal) and 4.0 seconds Native Code (Assembler). It takes an Apple II 516 seconds.

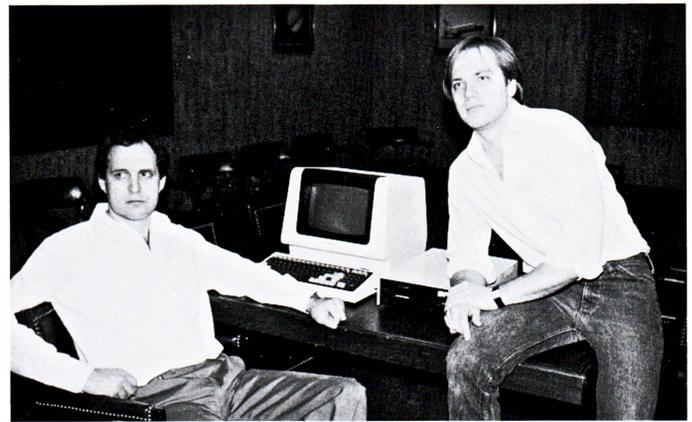
Comparing these numbers against the listed results for all computers in both *BYTE* articles, it's apparent that the SAGE runs the benchmark faster than other micros and gives challenge to many of the minis.

(Late note: Our CP/M-68K staff expert, Bruce Robertson, just ran the benchmark in Native Code (C) and produced a 3.2 second result.)

Help Stop IBM

An anti-IBM group has surfaced in Hermosa Beach, Calif. Known as *AIBMUGO* (Anti IBM Underground Guerrilla Organization), the movement is based on slogans such as: "...decode their EBCDIC", "...push back the IBM barbarian hordes", and this classic, "...guess what brand of computer repeatedly fails on the space shuttle?"

The flyer SAGE News received indicates you can join the movement and get a lapel pin and window sticker by sending \$5 to *AIBMUGO*, 19 Fourth Court, Hermosa Beach, CA 90254.



Alan Anderson and Mark Belcher are the creators of the p-Form package.

Review

p-Form

by Sheri Gurney

While Pascal is a powerful programming language, it does not have any direct utilities to aid in screen design or layout of "video forms".

p-Form is a handy system of useful facilities for implementing these video forms or other console I/O techniques in Pascal application programs. There are two basic components: a form development utility and a library of run-time routines.

Programmers will find a lot of goodies here: input type checking, output display formatting, fully-configurable function keys, use of CRT attributes which can be controlled at run-time on a field-by-field basis, and dynamic inclusion or exclusion from a form at run-time. The p-Form library stores commonly used field descriptions such as name and address, that may then be used in several forms. This adds to the already efficient manner in which p-Form uses memory. Programmers will find many familiar concepts such as a "form" variable similar in concept to a Pascal "file" variable, a form "window" used as the form I/O buffer, etc.

This is not a novice package, but experienced p-System folks will find p-Form easy to use. First timers may find themselves struggling in setting up forms and including video attributes. An example form is provided; however the manual does not include a tutorial section. Although the functions are clearly explained in the 80-page manual, a step-by-step setup would be helpful. Installation of library units may be confusing, but again p-System users will have few problems because the commands such as I)nsert and A)djust are used in conjunction with those of the standard system editor.

The overall package seems to be extremely efficient with respect to execution speed and use of memory and disk space. A typical stored form occupies two blocks of disk space, and using a SAGE II, loads and displays in less than one second (load and display time is, of course, even faster from the hard disk of a SAGE IV).

Overall, p-Form is a powerful, efficient, and relatively simple program development tool which should be welcomed by SAGE users. The package is listed in the SAGE Software Catalog and is marketed by Alan Anderson & Associates, 15221 Berry Trail, Suite 550, Dallas, TX 75848, (214) 233-7065.

New FORTH Out

A 32-bit Forth is now available for SAGE micros. "Software Architects" is currently marketing FourByteForth as a complete development system with an interpreter, compiler, editor, decompiler and debugging tools.

The new package is certainly fast, it executes the BYTE Sieve benchmark in 1.8 seconds and compiles screens at 125 per minute. More information about this new Forth may be obtained from "Software Architects" 1912 Grant, Berkeley, CA 94703. (415) 549-3185.

Year (continued)

dence of our conviction that we will continue to welcome input from, as well as share our planning efforts with, our customer base.

We ended this year by working to define and direct our Sales and Marketing efforts toward those who can take advantage of the many unique features of the SAGE microcomputer. We are actively recruiting vertical market and value-added resellers who can use, support and appreciate SAGE's performance features.

Accordingly, we begin FY 84/85 with a great deal of excitement about our future. We remain confident that SAGE products will remain at the threshold of technological excellence, and we will continually work to take advantage of the latest developments in hardware and software. On the marketing side, we are strengthening our dealer base, not only in numbers, but in quality. We have tightened our standards and strengthened our training and support programs.

We have also responded to your requests. We unbundled the software package. The documentation was re-written to make it more comprehensive. We selected a new terminal to give SAGE a "system look". We aggressively recruited more developers by offering a wide variety of operating systems.

Our commitment to remain a grass roots operation when it comes to satisfying the needs of those involved with high performance microcomputers is at the heart of this company. So as we reflect on our success this year, a toast to you for making it possible and for assisting us in exploring the thresholds of technology.



by Dave Cline

Ever since SAGE Computer first announced the SAGE II at the West Coast Computer Faire in 1982, one question has been asked over, and over, and over: "Where's the graphics?" There have been some solutions proposed, and now, for the first time, SAGE will actively market a new graphics terminal.

The Qume QVT 211gx, which uses the same cabinet and keyboard layout as the current SAGE Terminal (Qume's QVT 102), is a medium resolution graphics station that is fully compatible with the existing system. That means you should be able to use all your existing software on the terminal, as well as using it for graphics. All software packages sold by SAGE will run on the graphics terminal without reconfiguring.

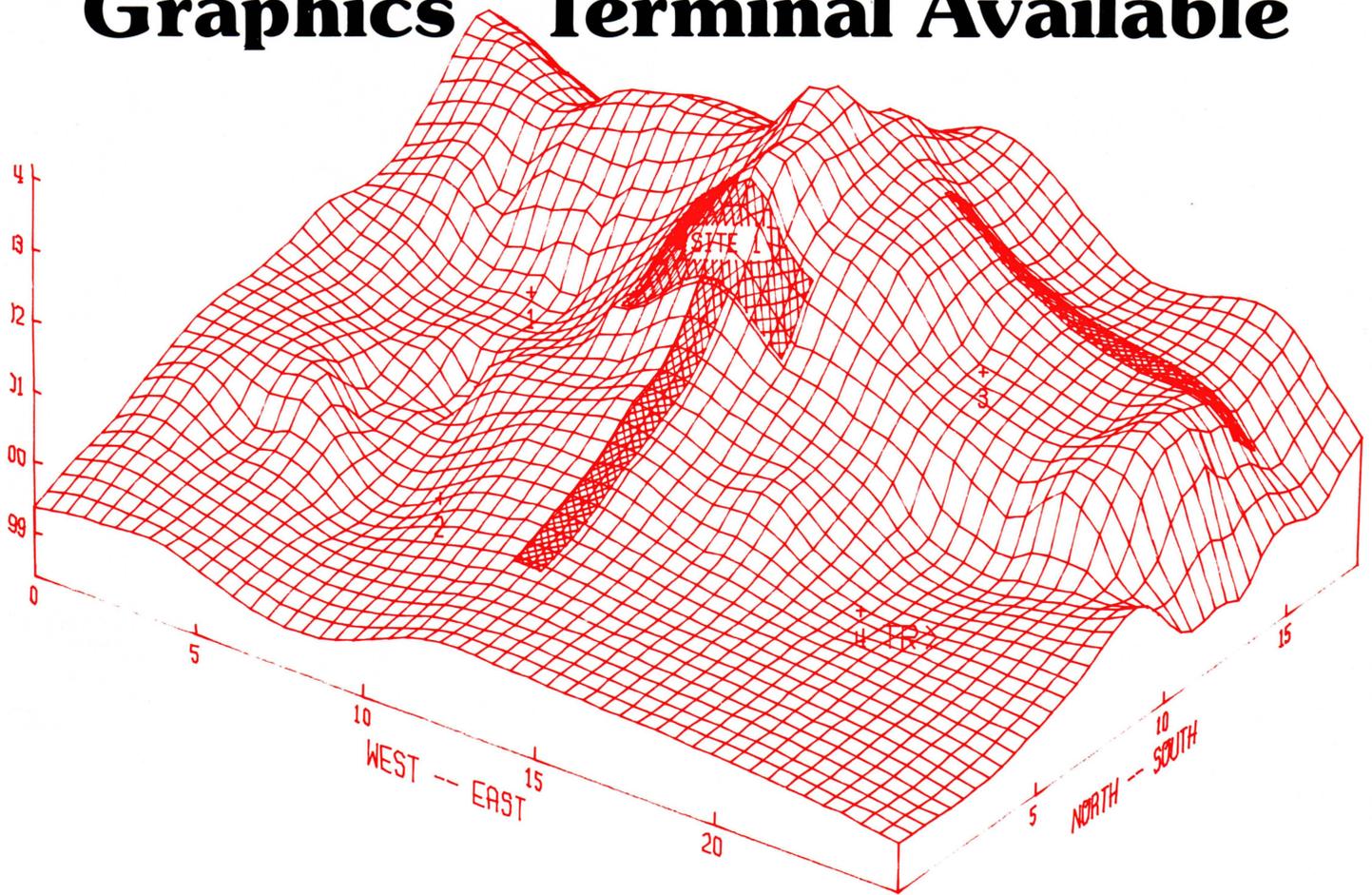
In addition to a larger 14-inch screen, you can specify a green or amber display. I would recommend the amber

after using it for a while. It seems more comfortable to view, and maybe a little sharper than the green screen. I used mine for two months of heavy activity while preparing the Turtlegraphics demo for SAGE Faire '84. I found it easy to use, had no reliability failures, and was very satisfied with the performance. There are units selling for over twice as much that cannot match the features or operation of this Qume graphics terminal.

There are four modes of operation available to the user. First, there is the Normal terminal mode. This acts exactly like the regular SAGE (QVT 102) terminal. The characters on the screen can be left there during the graphic mode, so they can be mixed with graphics images. In fact, the regular terminal mode acts like an independent plane on the screen.

The second mode is the Tectronix graphics mode. This is a compatible subset of the Tek 4014 terminal command set. Because of this command set, there is a lot of existing

Graphics Terminal Available



software that can be easily converted to run on SAGE micros. The biggest difference is the codes required to go from terminal mode to graphics mode, and vice versa.

Within the Tek mode, there are two character modes available, an ASCII set and an APL character set. These are drawn on the graphics screen, so they do not appear as quickly as in terminal mode, but they offer some added flexibility. In particular, they can be drawn any size you desire (even upside-down, backwards, or both). Nice for labeling that special graph, eh?

Last, but not least, is the Native mode. The designers of the graphics for this terminal didn't want to be limited to just the Tek 4014 commands, so they set up the native

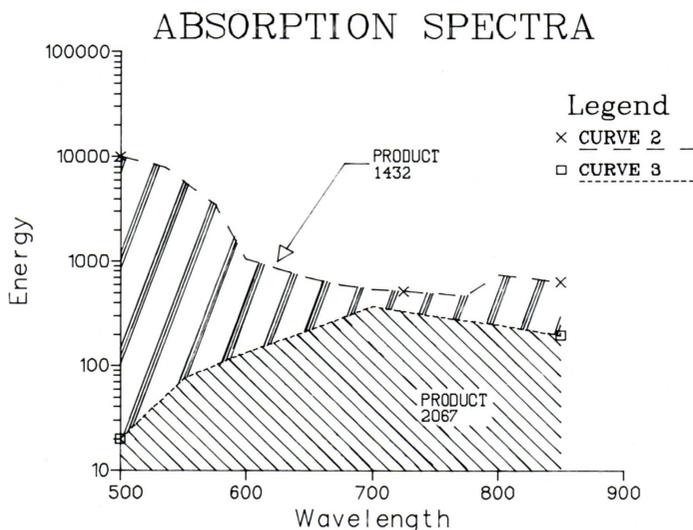
mode for all the other things they wanted to add. You can switch from one to the other, so you can take advantage of the best of both modes. For example, you can go to native mode to magnify the image, then back to Tek mode to draw a 'blow-up' picture or characters. You can also draw simple shapes in native mode with just a single command.

The resolution of the screen, in absolute terms, is 644 by 288. You will never have to deal with that directly, however. This is because the terminal accepts arguments related to the different modes and maps them onto the screen for you.

For example, in Tek mode, you can use numbers in the range of 1024 X 1024, or 4096 X 4096, and they will be mapped automatically onto the screen. The image will be cropped so that ratios will be correct, so a circle will not be an oval, etc. In Native mode, the arguments are 2576 X 991, although it will accept any number from -32384 to +32384. Of course, setting magnification will change the amount of the picture that is displayed.

Software support for the new Qume 211 should be no problem; there are currently two packages running on the SAGE. Next month we'll examine a new a graphics development system running under CP/M-68K from Monterey Computer Consulting that looks like an ideal matchup.

Don't despair if you've already purchased the standard Qume QVT-102 from SAGE. Selnar Graphics of Santa Clara, Calif markets a retrofit board that will convert your machine to a 211. It's not cheap, but will save you about \$500 over buying a new unit. Anyway you go, this new terminal is a bargain in terms of the quality of the graphics for the price and a welcome addition to the SAGE family.



Profile

As SAGE's Director of International Marketing, D. Michael Deignan was a one-man band in promoting the system outside of the U.S. His efforts have paid off with an impressive 40% of total sales. In October of 1983, he was promoted to Vice President of International Operations and has continued the success story of SAGE abroad. The following interview was recorded on one of Mike's rare stays at the home office.

SAGE News: How does SAGE's international market differ from the domestic market?

DEIGNAN: Well, it's different in that it's not a market distinct from the U.S. market; it's many, many distinct markets. Within those markets, there are varying differences in the level of sophistication. Most of the English-speaking countries are relatively sophisticated vis-a-vis some of the more primitive countries in Africa; they are not even at the level of the 8-bit. Secondly, in non English-speaking countries, there are problems of localizing the software, key caps for word processing, making it user-friendly in a foreign language, etc. U.S. manufacturers are not really good at doing that yet; most documentation and most of the technical material are still in English. Therefore, we are dealing with only those segments of the international markets which understand English.

SAGE News: How does that affect your marketing efforts?

DEIGNAN: It's often a stumbling block. Since we are really a 16- or 32-bit machine, there are some markets which understand microcomputers only in an 8/16-bit perspective. When they look at our box, they fully expect an 8/16-bit price. They are not at the level of understanding our concept of "Performance by Design".

SAGE News: How big is SAGE outside the U.S.?

DEIGNAN: The International Division represents 40%-45% of our current business. We have approximately 35 distributors and representatives covering 33 countries. Many of them have been added in the last 120 days and are only in the development stage of the business; i.e., customizing software, foreign language keyboards, etc. These are the basics they must accomplish to make the products suitable for their markets. Once they're established, we'll have a tremendous thrust and should see an extremely strong last half of 1984.

SAGE News: SAGE has been received well in the United Kingdom. Is there any particular reason for your success there?

DEIGNAN: Even at the household level, they have a tremendous appreciation of microcomputers. I think that's due largely to the work of Sinclair (Clyde Sinclair) who's made them quite the rage. Secondly, we do well in that market because we were fortunate to sign TDI Limited of Bristol, England as our distributor. They combined our product with the p-System. As the p-System distributor for Europe, they were able to add value to the product and had sufficient resources to promote it quickly. But most importantly, they were able to take our hardware, add solutions to it, and market it as a "system".



SAGE Vice President of International Operations D. Michael Deignan

SAGE News: What other countries besides the UK do you see doing well with SAGE in the future?

DEIGNAN: Germany, the Benelux countries, France, Italy, Spain; Australia and New Zealand are doing extremely well. We will also do well in Hong Kong and Mainland China.

SAGE News: In perspective, where does SAGE rank internationally?

DEIGNAN: You have to go on a country by country basis, but in the United Kingdom you have to look at it in terms of the 68000's market share. We're obviously Number One. I think it's fair to say that SAGE, in most countries, as a 68000, is probably in the Top Two or Three. The problem is that the 68000 still has a very limited share compared to the 8088 based market.

SAGE News: SAGE prefers to use dealers in the United States, yet in the international market you have distributors. Why that approach?

DEIGNAN: Few companies have the resources to establish their own world-wide distribution channels. Even if we committed the necessary funds, local markets are most sensitive to local methods of distribution. Our distributors, depending on where they are, have been very active because of this. They serve as a local agent of SAGE in adding dealers to the network. TDI has 100, Australia already has 70. In some ways, they are more aggressive in adding dealers than we are here in the U.S.

SAGE News: Do you see any advantages or disadvantages to being in Reno when it comes to the international markets?

(continued on next page)

High Ratings In User Survey

The DataPro Research Corporation's Microcomputer User Survey has given the SAGE II a 3.8 rating (of a possible 4.0) in Overall User Satisfaction

The survey, based on results received from questionnaires mailed to 40,000 microcomputer users across the nation, asked respondents to provide user-ratings from their own experiences. Sixteen percent of the questionnaires were returned and audited by senior level editors of the *DataPro Reports on Microcomputers*. The ratings given for each question were: Excellent = (4.0)0, Good = (3.0), Fair (2.0), and Poor = (1.0).

The SAGE II achieved system unit ratings as high as 4.0 with an Overall Satisfaction rating of 3.8. The ratings for the SAGE II were: Cost/performance ratio - 4.0, Hardware reliability - 3.7, Ease of human interface - 3.6, Ease of expansion - 3.0, Speed of disk access - 4.0, Documentation - 3.4, and Keyboard usability - 3.7.

Users also rated their vendor's technical and hardware support capabilities. SAGE obtained the highest rating of

all vendors mentioned — 3.9 of the possible 4.0. This was higher than IBM, Convergent Technologies, WANG, Alpha Micro, Altos, Sun Microsystems, Apple, Digital and many others.

The survey was conducted last August from a sampling of 40,000 subscribers of *BYTE* and *Popular Computing* magazines. The results were compiled and released as supplements to DataPro's microcomputer publications just last month. As might be expected, the Apple II Plus, with more than a million units installed, tallied the most responses in the survey. But despite that sales popularity, it only received a 3.3 rating in Overall Satisfaction from its owners.

DataPro Research Corporation is a highly-respected international authority in all aspects of computer and microcomputer information. Based in Delran, New Jersey, DataPro publishes a number of leading reference manuals on the industry.

Deignan (continued)

DEIGNAN: There are no disadvantages physically to being in Reno. We can do everything here as well as if we had an office in the BankAmerica Tower in San Francisco. Communications and shipping are not problems because Reno is an International Port of Entry. Customers are pleased with our communications support and the speed with which we ship and respond. Conceptually, there is a very minor problem in that the rest of the world doesn't know where Reno is. For them, it's someplace out in the desert in the midst of a lot of casinos.

SAGE News: Does the difference in currency from country to country present problems?

DEIGNAN: Tremendous problems. The dollar was, up until the last two weeks, the strongest it had been over a period of years. TDI started doing business with SAGE in September of 1982 purchasing product with pounds valued at \$1.73. In January of 1984, the pound fell to \$1.38. So, effectively, TDI was spending 20% more per unit to purchase our product. The dollar has led us to a less competitive situation.

SAGE News: Is there an advantage to the domestic market having an international group at SAGE?

DEIGNAN: Yes, psychologically. I think it shows the company has a lot of credibility. To our U.S. customers, it's reassuring that the rest of the world thinks we have a very good product, and that we've developed a world wide following so quickly.

SAGE News: Where do you think the international market is headed?

DEIGNAN: At the recent SAGE Faire, we had an excellent international representation; 25 different countries attended. It was a fairly expensive trip for those people, yet they came from all over the world. They're an enthusiastic and dynamic group of people who are investing a tremendous amount of money in promoting our products and applications. The future is extremely bright abroad for high performance systems. And SAGE will definitely work hard to be a leader in that arena.

New Dealers

Angelware Computers
Charles Bleadon
Larkspur Landing Circle
Larkspur, CA 94939
(415) 461-9500

Quantum Proteus
Gary Cook
950 Northgate Dr., #101
San Rafael, CA 94903
(415) 499-1880

Med Comp, Inc.
Carole Andrews
142 Crescent Street
Brockton, MA 02402
(617) 583-4480

Theta Electronics
Dan Harding
6451 Golden Gate Dr., #148
Dublin, CA 94568
(415) 829-4083

Top Magazines

There are now more than 200 computer magazines published in the U.S. with a bunch of new ones every week. Guess which one is Number One in terms of circulation? You might be surprised. *Computers and Electronics* leads with 600,000. Rounding out the top five are: *Personal Computing* (460,000), *BYTE* (420,000), *Popular Computing* (306,000), and *Compute!* (270,000).

Questions and Answers

Are there any games available for the SAGE?

Yes. The USUS library includes about a half dozen excellent games. Some of the titles are Adventure, StarTrek, Blackjack, Wumpus, Castles and others. USUS is the p-System Users Group, and the games are free. However, you must be a member in good standing to obtain the material from their library. For more information on USUS, contact the USUS Secretary, P.O. Box 1148, La Jolla, CA 92038. A high performance chess program is currently under development and should hit the market in the next month or two. We'll keep you posted.

I would like to modify the pre-set Multi-User configuration that was on my Build diskette. Is there documentation available to make these changes?

The procedures for setting up a custom Multi-User and configuring non-standard peripherals are both contained in SAGE's Technical Manual. On earlier systems, this manual was included, however it is now an option available separately from SAGE or SAGE dealers.

Customer Support

by Peggy Lakey

Many people have asked how to call a Pascal unit from within a BASIC program. It's actually quite easy. The Pascal unit, however, will have to be bound into MY.LIBRARY using the LIBRARY utility. Here's an example of a BASIC program that will call the unit:

```
REM Assume this part of the Main Program in BASIC
LIBRARY "MY.LIBRARY"
USES PEG1
CALL P1
END
```

In our example above, the Pascal unit is called PEG1 and the procedure is P1. Here's that Pascal unit that you would put into MY.LIBRARY:

```
UNIT PEG1:
INTERFACE
procedure p1;
IMPLEMENTATION
procedure p1:
begin
writeLn('this is p1);
writeLn('I am quitting now, bye.');
```

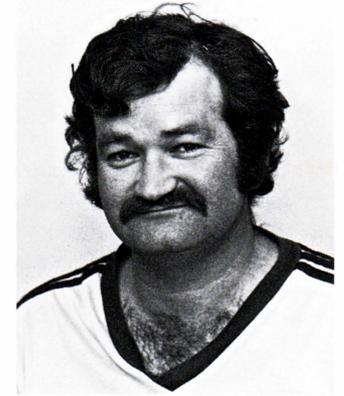
```
end;

begin
end.
```

The Pascal unit can now be called from the Main BASIC program just as a standard subroutine.



Keeli Patterson



Lonnie Cline

People

Lonnie Cline, Technical Support Manager for SAGE, says the most rewarding aspect of his job is "helping a customer solve a problem." Besides overseeing repair, Lonnie is responsible for the updating and upgrading of all our equipment based on customer requests. Lonnie moved to Reno from Northern California seven years ago and began working for SAGE in 1982. On the weekends, Lonnie uses his private pilot's license to take in the Nevada scenery. He's also a marksman who enjoys target shooting.

A familiar voice around the world is that of **Keeli Patterson**, SAGE's International Marketing Manager. Keeli performs a myriad of tasks all geared towards support for our customers outside the U.S. Just two days after graduating from the University of Nevada with a degree in Marketing, Keeli began her career at SAGE. While much of her time at work is spent on the phone or in front of a Telex machine, she is a self-proclaimed "outdoor person" who enjoys softball, skiing, hiking, and camping.

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