

PRinT SScreen

The Newsletter for the
Stanford/Palo Alto Users'
Group for the IBM PC

January 1989

Volume 7, Number 1



***My AT
is now
an 80386***

see page 7

**THIS
MONTH**

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CLUB NEWS

Raffle

Come to the January 25th meeting and be eligible to win a beautiful leather-bound Computer Desk Reference and Appointment Calendar (worth \$19.95). The appointment calendar includes:

- Quarterly Travel Planner
- Travel Guides with Maps
- World Time Zones
- Toll-Free Airline Numbers

The general reference includes:

- Major Hardware & Software Companies
- Computer Conferences & Trade Shows
- Command Summaries for 22 Business Software Programs

Microsoft Corporation donated the book to our group.

EasyData Modem

Over a dozen members got in on the

group buy of the inexpensive 2400-baud EasyData modems. Several members have experienced trouble with these modems. If you have had problems contact Justin at GCH Systems technical support — 968-3400.

November Meeting

Chris Bowman of KnowledgeSet discussed CD-ROM applications at the November 30th meeting. Unfortunately, due to technical difficulties we were unable to see the video he had brought. Since Chris left us a copy of the tape, we will probably view it at a future meeting.

Chris explained that KnowledgeSet works with companies to develop CD-ROM applications for their large internal databases. CD-ROMs can hold up to 600MB (20,000 pages) of information and can find anything in about two seconds because of the way the data is

January-February Calendar

Jan. 25	Group Meeting	7:30	Next Meeting
Feb. 8	Planning Meeting	8:00	Date: Wednesday, Jan. 25
Feb. 13	Microsoft Word SIG	7:30	Time: 7:30 p.m.
Feb. 14	Novice SIG	7:30	Place: Polya Hall, Turing
Feb. 22	Group Meeting	8:00	Auditorium (Rm. 111)
			Stanford University

All members are welcome to attend the monthly planning meeting, where we make decisions on the future of the group. Call Beverly Altman, 329-8252, for the location of the next meeting.

indexed. They are also more durable than floppy and hard disks. Possible applications include:

- Technical documentation
- Reference manuals
- Catalogs
- Telephone directories
- Archives

Chris admitted the biggest problem is getting the data from the current system into the proper format for the CD-ROM. The front-end engineering is quite expensive.

Conspiracy is Uncovered

Several SPAUG members have suspected it for many months now — that PRinT SCreen was being run by a conspiracy. Editor Rebecca Bridges and Production Editor Rick Altman confessed recently, announcing their engagement to be married. Yes, to each other. Film at 11 and further details as they come in...

Membership renewals

For the two months preceding the expiration of your membership you will find a renewal envelope enclosed in your newsletter. Use this envelope to promptly send in your \$25 check (\$10 for students) so that you won't miss an issue of the monthly newsletter. A current membership card will then be sent to you in the next PrtSc.

Goodie Coupons

Remember, the "Goodie Coupon" attached to your membership card is presently good for one free disk: the library catalog, Disk of the Month, or a blank disk. Trade in your coupon for a disk at a future meeting.

DIR C:\January

The main speaker at the January 25th meeting will be Charles Pack, Director of Computer Operations for the American Association of Individual Investors. He will be demonstrating his Personal Portfolio Analyzer. Though his interest is mostly in stock investments, his program will handle other investment types as well.

Don't forget the new meeting time is 7:30 pm!

Disk of the Month

Rick Altman will demonstrate COMPARE, a nifty file compare program produced by PC Magazine. COMPARE is a smart compare program, able to distinguish between text and binary, and also able to recognize patterns of data. Copies will be available for \$1 each or use your "goodie coupon."

Floppy disks for sale

Xidex Precision disks are available for \$6/box. High density floppies are 4 disks for \$5. The catalog and the Disk of the Month will be offered for \$1 a disk. If you wish to purchase disks at the meetings, you will need to present your membership card, so be sure to bring it with you.

Free Ads

Don't forget that as a member you are entitled to free classified ads in PRinT SCreen. Call 326-8605.¶

THE VIEW FROM THE TOP

The PC Info Cruncher

by Ralph Muraca, Club President

All of us are painfully aware of the rapid advance of technology; a computer bought a few years ago is outmoded and considered ready for use as a doorstop. IBM blurbs on the Micro Channel say it so nicely: "From now until well into the '90s, processor speeds are expected to double, storage to triple, and memory capacity to quadruple — every three years."

IBM must really mean it! Why, they even put a delayed-fuse bomb in my

plosion" caused by rapid advance of technology has required my squirreling away papers, magazines, and books for the few bits of information they contain. In 1948 one filing-cabinet drawer stored *all* articles ever published on a topic; in the next two years, four drawers, and every new year brings exponential growth! Though I now make no effort to save all articles, there still are thousands, and more are added every year to my collection! What to do?

A long time ago, I attempted to store information by cutting out articles and coding them with a number penned in one corner, but the result was filing cabinets

full of nondescript codes. A 500- page code index was inadequate, and never did pin-point information; what frustration when something had to be found! The scheme was abandoned; valuable printed materials are no longer razor-bladed, but the piles of books, magazines, and papers grow larger!

Then came the age of the personal computer. In principle, a PC is capable of handling gobs of stored information, but available models had severe limitations—640K main memory, 360K or 1.2MB floppies, and 20 to 300MB hard disks.

The main objective of an information retrieval system for a PC is storage of only

*IBM put a delayed-fuse bomb in my
AT — it's four years old and the
battery now reminds me every day
that it's time to buy a new computer.*

AT—it's four years old this month, and the CMOS-RAM battery now reminds me every day that it's time to buy a new computer, just as new cars are bought every few years (sneaky, eh?). But a new car isn't a giant step of technology, while an advanced computer is!

Keeping up with the "information ex-

the significant parts of printed materials that have been converted to computerese. Magnetic tape has been used for storage of very large amounts of information from the earliest days of computing, and tape transports recently have been adapted for the IBM-AT. Unfortunately, after buying a transport (anybody want it?), it was found too slow and inconvenient; also, it stores less per reel than a Bernoulli box! Multiple banks of 300 to 600MB removable hard-disk packages as used in large systems for storage of information are expensive as well as incompatible with an ordinary PC.

In no way can magnetic tape or disks be used conveniently for storage and retrieval of very large chunks of information with a PC. More pointedly, however, entering data to be stored by retyping printed material on a keyboard is just short of being inconceivable, especially for diagrams and pictures.

At this time, it seems to me that the technology of personal computing has matured enough to handle massive amounts of printed information. Optical encoders are now available to convert black-on-white printing and line drawings into computerese; printed materials inputted via an encoder may be stored along with indexed key words. The IBM-PS/2 Model 80 is designed specifically for multi-tasked information retrieval/storage, and laser printers now can convert stored data into adequate facsimiles of original material.

Optical disks are the only sensible media for storage of massive amounts of information with a PC. The CD-ROM, or optical-disk device, is available in two sizes, a smaller one for PCs and a larger

one for intensive, dedicated work. Because most smaller models only retrieve data, they're useless for the task at hand, but small read/write optical disk systems are available. The larger CD-ROM read/write systems are ideal because they store more information per disk; perhaps they can be cabled onto a PC in the near future.

Once information is stored in CD-ROM, the originals are no longer needed, thus freeing cubic acres of closet and garage space. Two methods are available for retrieval: keyword searches in a separate index or searches for words in stored textual matter. Since CD-ROM disks hold such large quantities of information, swapping a few disks into the PC every so often doesn't seem too much trouble in return for not having to store tons of paper.

New PC systems with the fine resolutions provided by VGA make possible satisfactory on-screen retrieval of stored diagrams that have been reduced to a small size. In the near future, improved scanning devices and laser printers will provide acceptable copies of photographs and printed pictures. When this happens, it'll be easy to justify having a computer just for storage/retrieval of photo albums, documents, and information. Until then, most computers in the home probably are just expensive toys.

Perhaps today's newer personal computers will fulfill my dream of having a PC retrieve large amounts of information collected over many years. Quite evidently, my willingness once again to try a new computer system for this purpose is simply the triumph of hope over experience. ¶

PRTSC POTPOURRI

An Ounce of Prevention

Redwood Chips, November 1988

Is it really worth a pound of cure? The old cliché goes something like that and, in this case, it's more than true. I'm talking about a terrific program that can head off hard disk problems. It's called *SpinRite* by Gibson Research. Maybe another twisted cliché will help here.

There's three things certain in Life: Death, Taxes, and Hard Disk Failures. *SpinRite* does two main things: properly interleave your hard disk for optimum performance, and help to prevent "Prema-

ture Disk Failure." *SpinRite* will tell you what the best interleave is and then low level format your disk to the proper setting without destroying your data. I regularly see data transfer rates improved by an average 100- 400%! Besides this one-time resetting of your interleave, *SpinRite* performs preventative maintenance on your drive. It identifies, diagnoses, and repairs every form of low level format and data damage.

The program scans the disk looking for errors, and locks out the offending

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SPARC NEWS

Use SPARC and Win

A puzzle to gauge your mental flexibility and creativity has been placed on the bulletin board for all members to download. The person who solves the most answers in the shortest amount of time will win a prize to be awarded at the February meeting.

How to play: Download the file PUZZLE. Solve as many of the problems as you can, as quickly as you can. Store your answers in a file named with any 8 characters of your first and/or last name, with the extension .PUZ (for example, BRIDGES.PUZ). Be sure to include your full name in-

side the file. Upload the file to SPARC. The date and time you send the file will be recorded by the bulletin board.

SPARC Info

The bulletin board (SPARC) is available 24 hours/day, 7 days a week. The number is 723-7995. Use the following communication settings: 300, 1200, or 2400 baud; no parity; 8 bits; and 1 stop bit.

If you are having a problem logging onto SPARC, call one of the Sys Ops. The System Operators are:

Ralph Muraca, 365-1659

Beverly Altman, 329-8252

Christopher George, 323-1515

Robert Noyes, 494-0715 ¶

DISCOVERIES

My AT is now a 386

by Rick Altman
(first of a four-part series)

It happened sometime around noon, on a rainy Thursday. The patient was on the table, the surgeon was ready and all of the instruments were rolled out. Ever so gently, the body was opened and the unneeded organ removed.

A scene from *General Hospital*? No, but I might call it a brain transplant, and I was the surgeon. Last week, I successfully turned my AT computer into a 386 by switching motherboards. I decided against buying an entirely new computer for three reasons: 1) All of my existing peripheral components, especially my hard disk, are already 386 caliber; 2) Buying just a 386 motherboard is much cheaper; 3) It was more exciting this way.

While my computer is much faster now, I did not brainwash it just because of speed. My primary impetus for the switch will be the focus of this continuing discussion in my next column. Today, I intend to tell you how I did it...and how I did.

The New Brain

AT and 386 computers share the same physical architecture — the box and the size of the bus are identical, the primary difference being the CPU. Therefore, replacing an AT motherboard with a 386 motherboard is essentially the same as buying a 386 from scratch, provided that your hard disk is in the same league (16-

40 millisecond access time) and your memory chips are no slower than 120 nanosecond.

I purchased my 386 board from Mylex, a company that handles all of its own manufacturing at its plant in Fremont, CA. Playing it somewhat conservatively, I chose the MI386-20, a 20-Megahertz board with 1 megabyte of 100-nanosecond memory. For this, I paid a shade under \$2,000 — a far cry from the price of a motherboard inside of a metal case (otherwise known as a complete system).

The Operation

Because I can't identify every part of a computer, I was careful to note what plugged into where and how. Pulling all of the cards out of the bus was easy (they can go back in any order), but when it came time to disconnect the hard/floppy disk controller, I went right to the stick-on, write-on tape to identify the three cables, which plugs they fit into on the controller and in which direction. Disconnecting the power supply was the most difficult part of the excavation, as would be reconnecting it on the new board.

Once the bus was clear, I removed three little screws, detached a few plastic positioning clips and my computer was brainless. (Yes, I backed up my hard drive before the operation.)

The Mylex board looked like it was of the same dimension, and to my delight

see next page

PC Brain Transplant

from previous page

and amazement, when I prodded it into place, the holes for the screws and the plastic clips lined up precisely. This is too easy, I thought — something's gotta go wrong.

I was right. The two multi-wired cables from the power source would not fit into the socket on the Mylex board. I was careful to keep the black-colored leads facing each other in the middle (otherwise I could blow out my power supply), but they wouldn't connect. Upon close study, I saw that the Mylex board had tiny protrusions on the sockets, keeping the cables from connecting.

I could just clip them off, I thought.

It's a brand new board, I answered — I couldn't do that.

But they don't belong there.

Then why were they put there?

Somebody messed up.

Yeah — you.

When I finished talking to myself, I got my snippers and clipped them off. The cables slipped right in. Whew!

I replaced the three screws and began the task of installing all of my cards on the new board. But before I placed my 2-megabyte expanded memory card on the bus, I pillaged my old AT board of its 1 megabyte of RAM and installed those

chips on the memory board. They were all 120-nanosecond chips — slower than the memory on the motherboard — but that would not be a problem. My applications would be running in the 640k of fast memory on the motherboard. The extra memory is to be used for holding overflow text and program code. Previously, that data was going out to my hard drive, so even slow memory would prove infinitely faster than that.

All of the little plugs for the hard disk light, turbo switch, reset switch, keyboard, et al, were clearly marked and I had no problem reconnecting all of this electronic miscellany. Except for the reset switch — the plug on the new board is in front, but my reset switch was fastened onto the back of the case. Deciding that this was no time for aesthetics, I disconnected the switch, drilled a hole in the 3p3 front panel and fastened it there. Also, there was no place for the battery that my old motherboard needed, but I was promised that the new board wouldn't need one.

It was now time. The controller was returned to the first slot, the floppy and hard drive cables were plugged in and the power cord was reconnected. As I reached for the red switch, the rest of me moved away, just in case it blew up or something.

It didn't. In fact, it very obediently began counting memory. Then it checked

I removed three little screws, detached a few plastic positioning clips and my computer was brainless.

peripherals...Controller OK...ROM Ok...Two floppy drives...No hard drive...640k of RA-...what? No hard drive? Whaddya mean no hard drive??

I couldn't even begin to trouble-shoot. With no experience in building computers and no particular hardware expertise, I ran out of ideas before my first one. I had to break down and call my dealer, ex-SPAUG President Corwin Nichols. This was a major concession for me, because I wanted so much to do the whole thing on my own.

"Corwin, my hard disk won't boot. This lousy motherboard doesn't even know it's there."

"You have to set up the CMOS RAM," he said casually, as if he were telling me to tie my shoelaces.

"How do I do that?"

"Run SETUP"

"How?"

"Press ."

"Huhh?"

Sure enough — this motherboard has its setup and diagnostic programs in ROM. To run them, you press as it begins to boot.

It ran through the usual options of time, date, memory, graphics adapter, and then finally disk drives. It asked me for the number that identified my particular hard disk drive. Hmmm...I remember issuing that number when I set up my original system, and I remember storing that number away for safe keeping. But where? Wait, I remember — the number is in a file. In my DOS directory. On my hard disk. Which I can't access. Gad, that was brilliant.

Luckily, my DOS files were also on floppies and I was able to find my magical

hard drive number. I supplied it to the SETUP program, which in turn relayed it to the CMOS RAM and 33 within seconds, my computer was gliding through the CONFIG and AUTOEXEC files. I did it — my 286 was now a 386. Every program ran correctly, as if nothing had changed. Every program also ran faster — in some cases, much faster.

Post-Operative Review

Was this motherboard worth \$2,000? The question that I field the most is why I didn't just buy an add-on 386 card and insert it into my existing motherboard. I could get all the speed for about half the cost. While I don't quarrel with this logic, I didn't buy this new motherboard for its extra speed; I bought it because of the fundamentally different way that it handles memory. Adding a 386 card to an AT only gives you the speed enhancements, not the memory enhancements.

What are these memory enhancements? Tune in next time. To give you a hint, here is an untouched printout of CHKDSK:

```
33449984 bytes total disk space
 135168 bytes in 54 directories
23375872 bytes in 1533 user files
 9938944 bytes available on disk
```

```
720896 bytes total memory
665520 bytes free ¶
```

MI386-20 Motherboard
\$2,043
Mylex Corp.
47650 Westinghouse Drive
Fremont, CA 94539
(415) 657-7667

Features

Create Superb Charts with Harvard Graphics

by *Becky Bridges,*
PRTSC Editor

If you need superb presentation graphs and charts, Harvard Graphics is the program for you. Whether you need to produce text charts, organization charts, business graphs or free-form art Harvard Graphics can handle it with beauty and grace.

Text charts are useful as overheads or to be included in written reports. You can create title pages, bulleted lists, two- or three-column charts, or free-form text.

Figure 1 gives an example of a bulleted list. As most of you know, filled-in bullets are hard to produce on most word processors. In Harvard Graphics you can include a bullet in any text chart by pressing Ctrl-B. A box pops up from which you can select your preferred bullet type: filled-in circle, box, checkmark, or dash. One special bullet type allows you to have

Harvard Graphics automatically number the items in your list.

Organization charts are a snap to create because Harvard Graphics draws the boxes and lines for you. Pie, line, bar, area, and high-low-close-open are the available business graph types. Figure 2 gives an example of a pie chart created in Harvard Graphics.

Where's the data?

So where does the data come from to produce these nice graphs? If you haven't previously entered the data in another program, you can type the values right into a data table as you are creating the graph.

Harvard Graphics even has calculating power. For example, if you have entered two columns of data, you can easily calculate the total, difference, maximum, minimum, or average of these two series. The functions are very Lotus-like. To add the values in column 1 to those in

column 2 you would type @SUM(#1,#2). Harvard Graphics would quickly list the calculated values in a new column. Functions are also available to calculate the difference between successive values in a column and to calculate the moving average of the values in a series.

If you have already typed your data in Lotus, you can import it into Harvard Graphics in either of two ways. The *Import Lotus Graph* option brings in your Lotus graph along with the data used in the graph; all you have to do is identify the spreadsheet file name and the graph name. If you didn't create a graph in the spreadsheet, you would use the *Import Lotus Data* option. You then specify each range of data, so you must have previously written this information down.

Options, Options

Options, options, who has the options? Harvard Graphics does. Each graph type (especially the business graphs) has so many options I couldn't possibly cover one-tenth of them. When-

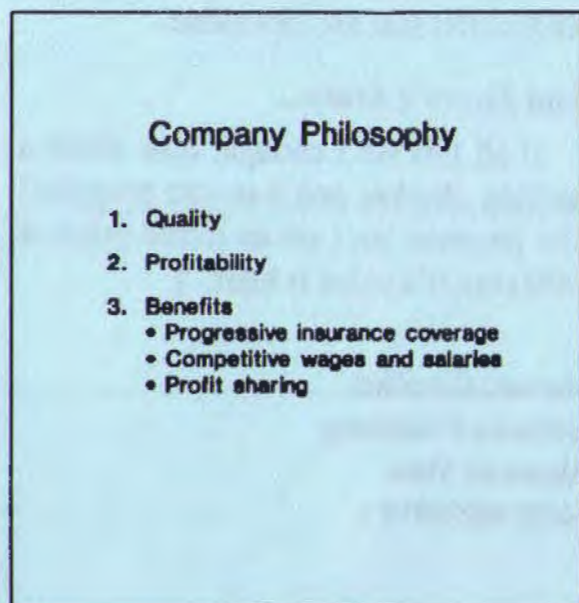


Figure 1

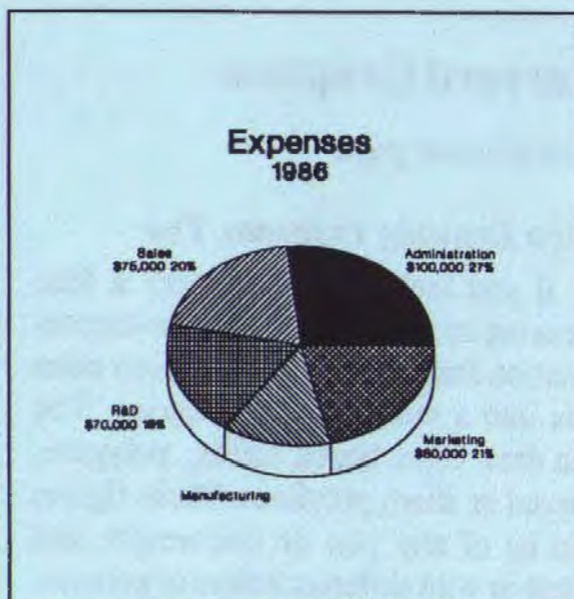


Figure 2

ever you are creating or editing a graph, you can press F5 to change the attribute (bold, italic, underline) of selected text. Function key F7 allows you to change the size and placement (left, right, center) of the line.

F8 tunes you into the options, which could consist of 1 to 5 screen-fulls. Most of the options are self-explanatory, but the help key, F1, can usually help clarify if you are confused.

The proliferation of options allow you to fine-tune each graph to the most minute detail. Let me give you an idea of just a few of the options available for a bar graph. Do you want tick marks on the y-axis? If so, do you want them to the left, right, or on both sides of the axis? Would the bars look better with shadows, in 3-D, overlapped, or stacked? Do you want the legend below the graph or inside the graph? Centered, left or right? Would you like the data points on the graph or in a table below?

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Harvard Graphics

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It's a Drawing Program, Too

If you feel your chart needs a little sprucing up, you can use the Drawing/annotation feature. This menu option takes you into a mini drawing program. You can draw lines, boxes, circles, polygons, curved or sharp polylines. These figures can be of any size or line-weight, and filled-in with different colors or patterns. You can draw arrows and type text to emphasize points in the chart.

Several disks of clip-art are included as well. You can "paste in" maps, buildings, money, people, food, basketball hoops, fancy borders, etc.

Besides annotating your existing charts, the Drawing/Annotation feature allows you to create pictures from scratch. It's useful for creating maps, invitations, or whatever!

Slide Show

You too can be a famous film producer with Harvard Graphics' slide show feature. You can produce a complete desktop presentation which is displayed on a computer screen. You choose which charts to be included in the show, and indicate the default time interval to display each picture.

The special effects are a blast to play around with. The *Wipe* effect sweeps the slide horizontally or vertically off the screen. *Rain* gradually fades the slide on or off the screen from the top down. *Iris* opens out the screen from the center

toward all sides (like a flower blooming...).

Input and Output

Harvard Graphics works well with the keyboard or a mouse (Microsoft Mouse or compatible). Simply run your mouse installation software before loading Harvard Graphics; no special installation is required. The mouse comes in especially handy when using the Drawing/Annotation feature, but the keyboard controls really weren't that awkward.

When printing, you can specify three levels of quality: Draft, Standard, or High. Draft is very poor quality, but fast. High quality is just what it sounds like, but prints slowly (2-3 minutes per page on a HP LaserJet).

The program has a transparent interface with the Hewlett Packard LaserJet. It comes with six generic soft fonts (Executive, Gothic, Sans Serif, Square Serif, Roman, Script) that are downloaded automatically when you print. Using the high quality print, the output is outstanding. I've also seen color graphs printed on the HP PaintJet that are incredible.

And There's More...

If all this isn't enough, how about a spelling checker and a macro program? The program isn't cheap (retail price of \$495) but its value is high. ¶

Harvard Graphics
Software Publishing
Mountain View
(415) 962-8910

Review: Disk Technician

by Bob Noyes

The software package Disk Technician, a product of Prime Solutions, San Diego, offers what every hard drive owner would seem to want: insurance against loss of data. It claims to be able to

do this without the necessity of backing up, formatting and restoring the hard drive. It also claims to be able to check and repair an

unlimited number of floppy disks. Hard drives are limited to physical drives C and D but can contain up to 31 sectors per track, 136 megabytes per MFM drive or 248 megabytes per RLL/ARLL formatted drive.

It does sound almost too good to be true, and usually, when something sounds too good to be true it usually is, especially when it comes to software. However, from my own personal experience I can tell you that I have not had a DOS read or write error in the two years that I have religiously used this program to watch over my Seagate 20 Mb hard drive.

When my previous drive died, I bought my present one, and also a copy of Disk Technician as insurance, after reading a rave review in *PC Magazine*. All I had to lose was the \$69.95 retail price of the software.

Installation is simple, done by answer-

ing the questions printed on the screen and as a part of the process a copy of Diskpark is installed. This parks the hard drive heads after 1 to 15 seconds of non-use, and the period is user adjustable. The parking area is an area set aside on the highest DOS cylinder of the disk as a parking zone and no data is ever written to it. The daily routine takes a few seconds

on my part and three minutes on the part of Disk Technician. My time is the same for the weekly and monthly checks but the actual run time is 1 hour and 5 minutes weekly

and 3 hours for the monthly.

For errors the package retrieves the data into memory and does a high level reformat and then restores the data. If that fails, a low level reformat is done and the data again restored. If that fails, the area is flagged as bad and the data stored elsewhere. Weak areas are remembered and monitored more closely upon succeeding runs.

The big question, does it work? Well I have not had a single uncorrected error since using the package. I have used it to save bad data on floppies with only one failure. I don't know what was wrong with the floppy; I was doing a favor for a friend. But I am in the position of the drunk who was asked why he was throwing shredded newspapers out the bus window. "To keep away the elephants," he replied. But there were no elephants out there. "Effective, isn't it?!" ¶

*Two years with Disk
Technician and not a single
failure...*

PRinT SCreen Potpourri

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areas while moving your data to a safe area. In the process, it "electronically realigns" your disk. SpinRite can prevent your eyes from ever having to see messages like "Sector Not Found," "Data Error Reading Drive C:," "General Failure Reading Drive C:," and many more. Besides the program itself, the package comes with a great head parking utility, and a wealth of information about hard drives in general.

Please note that SpinRite, and other similar utilities, may not work on some "non-standard" drives like Priam's, Toshiba laptops, or drives with partitions larger than 32MB. The non-copy-protected program sells for \$59 and is available by calling (714) 830-2200.

Using 3.5-Inch Disks

by Robert Zant, PCUG of Colorado

Editor's Note: I found this article particularly interesting because it praises a product (Reformatter) invented by our former president, Corwin Nichols.

The 3.5-inch disk drive is the new standard for laptop computers. It is included in machines from IBM, Toshiba, and other manufacturers. The drives can also, however, be used in PC/XT/AT-type computers. The most obvious reason one might want to install a 3.5-inch drive in a PC is to provide for easy transfer of data between a laptop and a desktop.

The 3.5-inch drives are hardware and software compatible with 5.25-inch drives. This means that a 5.25-inch controller board can be used with the smaller

drives and the drives can be used with DOS 2.x and above. If a current 5.25-inch drive is to be replaced or if your disk controller will handle more drives than you currently have installed, you will not have to purchase another disk controller for the 3.5-inch drive. If a controller has to be purchased, an inexpensive 5.25-inch controller and cable will work.

DOS 2.x and above can be used with the 3.5-inch drives, but only DOS 3.2 will format the diskettes for 720K. The earlier versions will format the diskettes at 360K. Fortunately, an alternative to changing to DOS 3.2 does exist. Micro-Tech Exports in Palo Alto supplies a device driver and a formatting program (\$50) that is compatible with DOS 2.x and 3.1. The software, named *Reformatter*, contains a program used with 3.5-inch drives in place of the DOS FORMAT command. All other DOS commands perform as usual. The software works very well although there is a difficulty in configuring it for a system with more than two drives. The current version, 1.07, is designed to work with a 3.5-inch drive as the first or second physical drive. A minor patch is required if the 3.5-inch drive is the third or fourth drive. I found the technical support at MicroTech Exports to be excellent. They were courteous and responsive, and the patch worked.

The installation of the hardware and software is very straight forward. The instructions included with the formatting program were written for a previous, related product. But, if you are familiar with the use of CONFIG.SYS files and device drivers, you will have no difficulty installing the software. Hopefully, the documentation will be updated soon. ¶

The SPAUG Resource Center

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Symphony	Sally See	941-1378

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XT/AT Systems	Van Maulis	966-1306

The Stanford / Palo Alto Users' Group for the IBM PC



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Club Information

Membership	Louise Greer Bolitho 322-3850 \$25/year fee (Students \$10)
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