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InfoWorld

The Newsweekly for Microcomputer Users

March 19, 1984

Volume 6, Issue 12

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THE MINDSET COMPUTER:

GAMBLING ON GREAT GRAPHICS

COMPUTERS OVERRIDE
DISABILITIES

INSIDE APPLE'S
MAC FACTORY

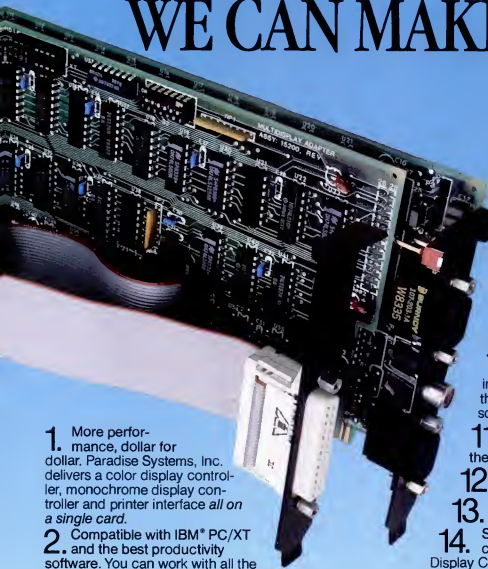
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Roger Badertscher
President, Mindset, Inc.



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InfoWorld

The Newsweekly for Microcomputer Users

Volume 6, Number 12

March 19, 1984



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Computer-doctor businesses are springing up around the country as dealers, manufacturers and third parties compete for shares of the rapidly growing market. **56**



Roger Badertscher, former head of Atari's personal-computer division, has high hopes for his start-up company's new Mindset computer. **20**

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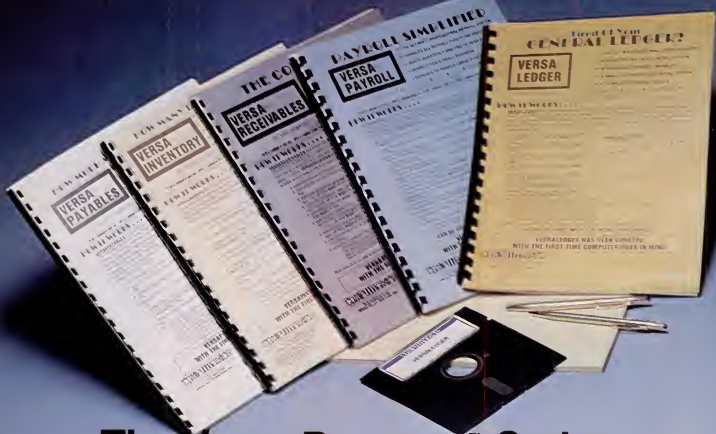
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Worthy pursuits

The article "Professionals turn programmers" in the February 6 issue quotes me on page 84 as stating that "... teaching requires more energy than it's worth, and free-lancing isn't that profitable." I believe that this ascription presents a quite untruthful view of my feelings on both issues.

While teaching certainly does require considerable energy, if I did not consider it "worth it," I should not have pursued that profession for ten years. Were free-lancing not "that profitable," however, I should have forsaken it years ago (I've been free-lancing audiovisual and print media for ten years now) in favor of what my mother still refers to as "a real job" (emphasis hers).

InfoWorld should have more clearly delineated the distinction between programmers and author/artists who happen to program. For many programmers, knowledge of the intricacies of chip architecture and low-level languages are a way of life. For those such as I, programming is a tool — a means to just one more medium by which to get our ideas and techniques across to others.

Finally, the "distributors around the country" to whom I sell my wares consist of Educational Activities, in Baldwin, New York, where Al Harris and Martin Batey have been kind enough to give me a relatively free creative hand, just as long as I don't mind staying just a little bit hungry.

David Alan Herzog
Highland Park, NJ

Let kids compute

After reading your article "Preschool computing: Too much, too soon" (February 20), I felt prompted to respond. Parents and teachers all wish to have children and students that are "well rounded" (whatever that means). To some people it certainly means that children should not study all of the time, should not read too much, should not engage in scientific experimentation to any great extent but should have a passing interest in all of these things and also take time to play ball, swim and have some fun.

Computing has now joined the above much abbreviated list of activities that one must not get "too much" of. This somewhat arbitrary categorization of activities attempts to determine what activities the so-called normal child should enjoy. It leaves little room for the personal interests of the child, however.

Research has been conclusive in studies such as those of mathematically gifted children from the Johns Hopkins University in Baltimore, Maryland, that children,

especially bright children, have a tendency to want to specialize in particular endeavors for a period of time, devoting almost all of their free time to that activity and later moving to a new endeavor.

This tendency toward specialization comes from a desire to be competent and, in fact, even to somewhat master a particular activity. Computing is a perfect example of this. Specialization of this type is natural and, in fact, is a healthy part of growing up for many children.

There is little need to be apprehensive when a child begins to spend more time than usual at any healthy activity, whether it be computers, chemistry, math, art, music or baseball. Certainly children have other responsibilities that they must live up to, such as homework and household chores, but pursuing computers to the ultimate in their spare time has few, if any, hazards attached.

As adults we are more and more becoming specialists in what we do in our careers and in how we spend our free time. This is considered normal and healthy. Why should it be any different for children?

Expose children to all the diverse activities that are available, but let them choose those in which they wish to spend some time specializing and encourage them in these pursuits as much possible. The dangers spoken of in the article, of children becoming addicted to the computer screen and becoming "technical-isolates," are farfetched and have little research basis.

Ronald J. Baillie
Pittsburgh, PA

Mac revolution

I must take issue with the comment of Patrick Stauter of On Line Microcenters that "People who have used Apples will stick to Apples, and people who know IBM will stay with IBM." I have never laid hands on a machine produced by Apple. I have been working eight-plus hours a day on an IBM PC (or compatible) for the last two years. As soon as the Mac has 512K RAM and a Pascal compiler, I'm throwing my PC into the ocean. For Mr. Stauter and all those other people who believe in brand loyalty over good sense I have just these words: "The revolution is on," and I'm betting on the underdog.

P. Adrian Z. Calta
Washington, D.C.

Remember that sinking feeling we all had about our Apple IIs when the IBM PC started to take off? Well, I suspect a funny thing is about happen to a few PC owners.

It has become a fairly safe bet to imagine the demise for any product not related in some way to the IBM PC, such

as the Macintosh (Heard on Tech Street, *InfoWorld*, February 27). Well, I challenge anyone with an interest in the subject to actually try the Mac. As one who recently did, I strongly suspect that one trend is about to peak, and a new one to begin. Whoever becomes the eventual leader will at least have to contend with Apple, judging by its head start and by all of the large software houses rushing to come out with versions for the Macintosh. Indeed, we may be seeing a new bandwagon just starting to roll. I find it a bit refreshing.

H.C. William Anderson
Seattle, WA

I certainly admire the editorial diversity in your February 27 issue. First, you have Tom West of Data General alluding to the "scenario" of IBM dropping MS-DOS. On the next page, John Gantz is fantasizing how Apple took the dive because Mac wasn't "compatible."

I agree with West. To expect a player of Apple's magnitude to base a major product on such a hyped-up feature as MS-DOS is ludicrous and myopic. If MS-DOS has the longevity of CP/M, I will be surprised. In this case, imitation is not only the sincerest form of flattery, it is also the kiss of death. Even Bill Gates, by predicting that half of Microsoft's 1984 revenues will come from the Mac (*InfoWorld*, February 13, page 20) seems to be acknowledging that the IBM PC phenomenon is mostly a marketing fluke that was totally unanticipated and by no means represents the IBM microcomputer entry for the long term. When this unprecedented stroke of luck has run its course, Big Blue will settle down to business-as-usual. Don't expect to see much of MS-DOS at that point.

Meanwhile, Dvorak lobs mortar rounds at "bootlickers" and whines about getting the cold shoulder from Steve Jobs. Keep up the good work!

R.W. Sauer
Durango, CO

I, too, am charmed by the new Macintosh — that is, by what I have read about it. Only one small thing about its iconography disturbs me: the "sizzling bomb" icon that accompanies a program crash. I think this inappropriate; someone in Cupertino either was being cute or was simply stuck for a descriptive visual metaphor for a program that had "bombed." This may make an undesired impression on the sort of unsophisticated user toward whom Apple would like to direct its icon-driven system, a user who may indeed fear that the drastic symbol indicates that damage is about to occur to the computer. My wife suggested that if she were confronted with a bomb on her

monitor screen, she might think it necessary to pull out the power plug.

I did try to think of a good alternative for this necessary symbol. The best I can come up with seems a bit silly too, but it just might work: why not a "flat tire" icon? This icon does not imply danger, nor electrical nor mechanical problems. It suggests that some minor corrective action or assistance, not necessarily repair or a part, may be all that is necessary in order to get going again. (And if it helps any, there is a pun here too, in that a flat tire is indisputably "soft.")

Jeffrey D. Kopp
Bremerton, WA

Contrary to the views of Mr. Dvorak in the February 27 issue and a dealer mentioned in one of your recent articles, "everybody with a brother-in-law at Harvard" probably *won't* get a discounted Macintosh. At least, not if their brother-in-law goes to the University of Michigan. As a student here, I am allowed to purchase only one discounted Apple, and I plan to hold onto it. In addition, a prospective buyer has to sign an agreement stating that he will not resell or lease his computer for at least two years. While this latter condition is harder to enforce, the \$2,000 fine is sure to discourage most people from attempting to make a quick buck.

I believe many irate local Apple dealers are missing the point. Sure, they're going to lose a few sales, but the majority of the students and faculty would not have even considered purchasing a computer if it were not for the price. Besides, in a few months, when third-party hardware and software starts arriving on the scene, these dealers will have more business than they can handle.

Jeff Miller
Ann Arbor, MI

Resurrect Wiz

What do you mean: "This is the last installment of the Wizard of Menlo Park" (February 27)?

This really burns me! What, did the Wiz die? I just got my subscription to *InfoWorld*. First you got rid of the cartoons. Sad, but I guess I can live without cartoons. I guess I can live without the newsprint too — although, I always thought it lent a certain air of currentness to the issue.

But life without the Wiz! This is horrible! What are you, nuts? News is nice and all, but the Wiz was genuinely educational! Really, I could always count on learning something from the Wiz. (Next you'll rotte Dvorak and Clapp on alternating weeks). Now you are headed toward mediocrity! It was always a comfort to

know that the Wiz was out there even if I never mailed him anything.

Bring him back, please.

Dan Fisher
Indiana, PA

In the Wizard of Menlo Park column in the February 27 issue, you wrote that that was the last installment. I hope this is temporary, caused by loss of a key person, and not a budgetary or policy decision.

That column was the one item that separated your magazine from the rest of the pack. Credibility is gained by positive interaction with the public on a highly technical level, and you have just lost a great deal of credibility.

Presenting the facts intelligently takes too much time and leaves your magazine vulnerable to its own accurate/inaccurate statements, it appears to me. I get the impression that you think all the public really cares about is news, reviews and your opinions.

I read good magazines such as *Byte* and *iNcider* with a lot of good information in them. I used to read your magazine, but now I'm not sure if I will continue.

Just because you see yourself as a micro newsweekly doesn't mean you have to pattern yourself after *Newsweek*.

I spend approximately \$30 every month to keep informed from quality magazines. Not buying your weekly will save me \$6 a month, but I'd rather be surprised when the Wiz is resurrected.

Al Mills
Cleveland, OH

Fight sexism

You went too far in the photo caption (February 20, 1984, page 13) that identified the Macintosh development team: "Mary Atkinson (wife of Bill Atkinson...)" The implication of the caption is that man possesses wife; that men rule — and rank — over women; that she has no identity or worth of her own without being linked to him.

Computer professionals and enthusiasts have the distinction and ability to solve many old problems and to blaze new trails into the future. The elimination of sexist comments and allusions in computer literature and circles is one way to help eliminate an old problem and to encourage a new awareness of sexual equality. Let's all try to be more thoughtful in our comments and writings.

Fred L. Conner
Ithaca, NY

Please write to Letters, *InfoWorld*, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025. Letters selected for publication will be edited for length and clarity.

A blind computer user speaks out

BY DAVEED MANDELL

Contributor

I am a blind radio journalist. The sighted woman I live with is a print journalist. We wanted to purchase a computer that was capable of everything from word processing to games. It had to be expandable to accommodate such peripherals as a voice synthesizer and a braille printer. Last April, we settled on the Apple-compatible Basis 108.

At the same time, we looked for appropriate software to allow both of us to interact with the computer. My sighted partner soon became involved with the intricacies of CP/M and Perfect Writer. It took longer for me to get involved.

Was there any software out there that a blind person could use? Harvey Lauer of the Veterans Administration Central Blind Center in Hines, Illinois, suggested two word-processing packages for the Apple. One is called Documents. It is sold by Computer Aids Corporation, a company owned by blind people (but staffed by both sighted and blind workers). The company's entire product line is geared toward visually impaired users. Among its products are an address filer; a scheduler; a powerful data-base manager/forms generator; and Talking Transend, a talking version of the popular Transend 2 terminal program.

The other word-processing package is Braille-Edit, sold by Raised Dot Computing. RDC has produced an impressive and powerful \$300 package, permitting conventional print, speech, and both soft-copy and hard-copy braille output — provided the appropriate devices are attached to the computer.

I soon found out that blind people cannot use most of the thousands of software packages taken for granted by the sighted. After months of phone calls and correspondence, I had to accept the bitter truth: When push comes to shove, despite much lip service about their interest in computers and the handicapped, Apple and other computer manufacturers couldn't care less about assisting blind users.

After all, we're a small market;

Daveed Mandell works at radio station KPFA in Berkeley, California. He wants to establish a computerized braille transcribing service.

consequently, most computer manufacturers, including Apple, have made little or no effort to provide documentation in braille or on tape — or even on computer disk. They haven't provided us with adaptations to their hardware. To add to our frustration, most software — especially protected software — is off limits to blind people since it won't accommodate speech or braille output.

Apple has an extensive community groups program. Yet the company has turned down proposals to help braille transcribing groups to acquire computers. I am forced to ask: Why?

Perhaps most computer buffs out there don't know that it's possible to use a computer as an electronic braille typewriter, given the appropriate software. With a program called Ed-It, developed by a sighted engineer named Robert Stepp, volunteer braille transcribers gain the facility of transcribing via computer. Due to a quirk in the Apple keyboard, a user can press several keys at once; thus, the six-key braille cell and the various dot combinations can be easily preserved on disk and transferred to paper (or cassette to be used with a soft-copy braille device).

The Basis keyboard doesn't allow a user to press several keys at once; but Ed-It developer Stepp told me that he'd consider modifying his program to gain this capability.

All is not lost for blind Basis owners, though. Raised Dot Computing has included a braille translator in Braille-Edit. Anyone who can type text on a regular keyboard can now automatically produce high-quality braille material. As if this weren't enough, one can also translate the braille text back into print. With the proper adaptations to hardware and software, there need be no communication gap between blind and sighted computer users. Of course, if complex text in music or mathematics is required, it must be typed in manually by expert brailleists skilled in these special codes.

I urge blind people, braille transcribers, educators and other interested people to check out the above programs for the blind. Now organizations can provide newsletters in both print and braille. Teachers can type tests and print them in both braille and print. Blind people can produce and proofread documents with ease and confidence. ●

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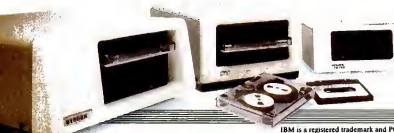


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Late Breaking News

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• **DRI buys educational software firm:** As part of a continuing effort to expand its consumer product line, Digital Research has acquired Owlcat International Corporation, a small educational-software firm based in Chicago. Owlcat, which will function as a division of Digital Research, will be headed by Beth Newburger. The year-old software-development firm recently completed work on a series of software packages designed to help high school students improve their SAT scores (college entrance exams). The initial Digital Research/Owlcat software packages will include a \$249.95 60-hour SAT program that has equivalent versions of the SAT verbal test, basic math test, standard written English exam and a diagnostic pretest. There is also a 15-hour version with just the basic math and verbal tests for \$89.95 and a pretest program for \$19.95. "We were looking for a company that was designing products that make sense," said Ken Harkness of DRI's consumer division. Initial versions of the SAT software will be available for the Apple II Plus, Apple IIe, IBM PC and PCjr computers.

• **UPI picks Zenith:** United Press International said it plans to purchase 6,000 Zenith Z-100 Personal Computers as a central hardware component of a planned broadcast computer system being offered by UPI to radio stations nationwide. The new system, reportedly the first microcomputer-based hardware and software package to be offered by a wire service to its clients, will accept and store news-agency reports in addition to performing billing and trafficking functions for the broadcast industry.

• **IBM unveils multi-user microcomputer:** IBM's Instruments division has announced the IBM 9002, a desktop system based on the 32-bit Motorola 68000 microprocessor. An optional version of Microsoft's Xenix operating system, available from IBM, permits up to four people to use the system simultaneously. Xenix is derived from the Unix operating system developed under license from AT&T. The basic 9002 is priced at \$6,495 for the system unit, display keyboard and standard operating system. A one-time Xenix license charge is an additional \$995. A complete system with Xenix, 10-megabyte hard disk and memory-management card installed is priced at \$15,960.

• **Harvard Business School picks IBM PC:** Harvard Business School said it will require its first-year students to purchase IBM Personal Computers. The computers will be offered at an undisclosed discount price and will be included as part of the student's overall tuition costs.

David Needle, News Editor
This One



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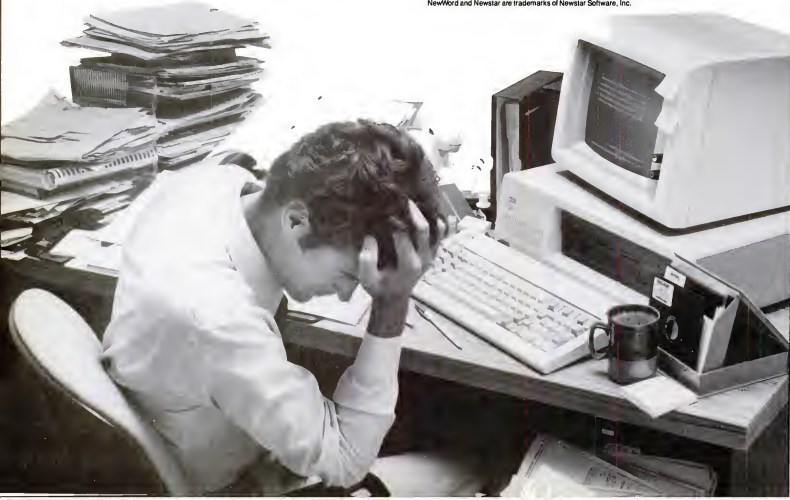
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Utility lets DOS programs run on Unix systems

BY MARGUERITE ZIENTARA
Senior Writer

A new software company has formed that may have the answer to the slow acceptance of the Unix operating system on microcomputers. Uniform Software Systems, to be based in Santa Barbara, California, plans to release a utility software product this fall that will be designed to let MS-DOS application programs, such as WordStar, Lotus 1-2-3 and dBase II, run on Unix-based systems. MS-DOS is the operating system for the IBM PC, PC compatibles and several other 16-bit computers.

The firm is headed by William Agee, former chairman and CEO of Bendix, who served briefly as president of Allied after the merger of those two firms. He is currently chairman of Semper Enterprises, a venture-capital firm in Osterville, Massachusetts.

The product, as yet unnamed and unpriced, will offer DOS users the advantages of Unix's multiuser and multitasking capabilities and its near machine independence. Under the Unix operating system, only minimal modifications are needed to move applications software from one processor and hardware environment to another.

With an installed base of more than 100,000 Unix systems, Uniform expects to eliminate Unix's traditional lack of application software with the addition of MS-DOS applications. "The unique architecture of this product allows the DOS operating system to run as a Unix process, concurrent with other Unix programs," said Uniform's director, Peter Weiner.

Weiner was the founder and CEO of Interactive Systems, the developer of the Unix-based PC/IX operating system that IBM recently announced for its Personal Computer. He is currently a director of Interactive, which he said may become the marketing arm for Uniform's first software package.

Unix's lack of applications software is not universally regarded as a problem, however. "People complain about the lack of application software, with 3,000 packages available for the IBM PC and only a few hundred for Unix," said Peter Marvit, senior analyst at Yates Ventures in Los Altos, California. "But how many of them are really worthwhile? In the Unix world

almost every single one of them is worth looking at."

"We foresee wide acceptance of Uniform's first product," Weiner said. Based on that expected success, Uniform's main focus will be to develop Unix-based vertical applications to serve small- and medium-size businesses. "But I wouldn't be surprised to see large corporations interested in this capability," said Weiner.

Not everyone is so sanguine about Uniform's initial product's future. "It's potentially exciting, but I wouldn't make any sweeping statements that it's going to revolutionize the software industry," said John Kiefer, senior analyst at InfoCorp in Cupertino, California.

"The real question is the future of Unix," he said, noting that a number of new companies, such as Horizon Systems and Quadratron, are writing word-processing and spreadsheet software for Unix.

Agee announced the formation of the company at a New York press conference, where he introduced Weiner and Uni-

form's president and CEO, Peter Wensberg.

Agee took exception to a suggestion made at the press conference that his presence was mainly to attract attention and capital for Uniform. "I'll be giving as much as 20% of my time to Uniform, setting up a broad strategy plan and other business details," he said.

"We feel no need to educate Bill on the software industry or anything else," Weiner said. "His strengths fill in the areas I need help on."

Wensberg was most recently the president of AtariTel, a division of Atari. Prior to his experience at AtariTel, he was an executive vice-president at Polaroid, where he worked for 24 years in various marketing-related positions.

For Weiner this venture can be seen as the culmination of a long love affair with Unix. "In 1973 I went to the Rand Corporation and Unix was then available only to universities," he recalled. "I wanted Unix for the Rand Corporation so I got the first commercial license." ●

Expert-Ease creates expert systems on IBM PC

BY SCOTT MACE
Senior Writer

There are times when you think you need an expert and times when you think you are an expert. In response to both situations, Expert-Ease, the first so-called expert-system creator for microcomputers, was introduced at the recent Softcon exhibition in New Orleans.

Expert systems condense the knowledge of an expert into computer programs that nonexperts can use. For example, expert systems developed on big computer systems are used to diagnose medical problems, troubleshoot engine repair and play the stock market.

Expert-Ease, developed in England and distributed in the U.S. by Expert Systems of New York, costs \$2,000, runs on the IBM PC or PC XT and requires 128K random-access memory and one disk drive — two drives are strongly recommended.

"These systems could reduce reliance on human experts who are in short supply," said Expert Systems CEO Sy Bosworth at a Softcon press conference at which prototype expert systems created by Expert-Ease were displayed.

Expert-Ease's entry screen is divided at the top into cells similar to a spreadsheet with a word-processing window at the bottom. An expert indicates examples of potential problems by entering a mnemonic eight-letter word in each cell. If he wants to elaborate on his eight-letter word, he can open onto the word-processing window below and enter more information.

After he has filled the cells, he gives a command and, within 3½ minutes or less, Expert-Ease creates an expert system that is built on a series of rules that the created system follows in the most logical and efficient manner. Bosworth said users can learn the Expert-Ease commands in

about ten minutes.

The expert system generated by using Expert-Ease can involve up to 250 questions. Each question can have up to 31 possible conditions, or answers. The expert system asks the nonexpert who is using the system multiple-choice questions and avoids asking those questions logically eliminated by previous answers.

Among the demonstration expert systems shown by Expert Systems was a buy-sell program based on a stock-market analyst's own assessment of the market. Another diagnosed a faulty gearbox in a helicopter and recommended that the gearbox be removed for maintenance.

Expert-Ease is merely a tool, however. The human expert must enter all the questions and answers. Bosworth admits that nothing prevents an incompetent expert from creating incompetent expert systems. He said systems are easy to create and change, though. "It allows you

to debug knowledge," he said.

Bosworth said that the artificial intelligence algorithms in Expert-Ease can look at any grid of examples and come up with rules from patterns on the grid. "It's similar to regression analysis."

Expert-Ease was written by Donald Michie, director of the Machine Intelligence Research Unit at the University of Edinburgh in Scotland. Michie consults for U.S. corporations such as IBM and Hughes Aircraft. During World War II he worked on the British team that broke Nazi codes with early computers.

So far, about 60 sites worldwide have bought early versions of Expert-Ease. Jeffrey Perrone, distributor of the program on the West Coast, said a new, faster and easier-to-use version of the program will be released this spring as it goes into wider circulation. The current version of Expert-Ease is slow, partly because it is written in Pascal.

Expert Systems is also planning to sell licenses so that experts can sell the systems they develop with the Expert-Ease software; a price has not been set.

Jeff Milman, president of Expert Systems, cautions that Expert-Ease generates multiple-choice analyses and cannot predict by percentage the likelihood of something happening. Expert-Ease can conclude, however, that there is no solution to a problem.

Bosworth said some of the fear that expert systems will replace human specialists is justified. "Some people may be making mistakes continuously," he said. "Those so-called experts can and should be replaced." He cites doctors whose faulty medical diagnoses cause unnecessary surgery, or who run 20 tests when 14 of the tests are superfluous. "We want to replicate the knowledge of the truly expert, with fewer wrong decisions and wrong moves," Bosworth said. ●

Creators of VisiCalc announce new program

BY DENISE CARUSO

Reporter

The ongoing feud between Software Arts, creator of the popular VisiCalc electronic spreadsheet program, and VisiCorp, its exclusive distributor, flared up again at the Softcon show in New Orleans. Following through on its promise to negate VisiCorp's marketing rights to VisiCalc, Software Arts announced the availability of its own version of VisiCalc Advanced Version, a VisiCalc upgrade for the IBM PC and PC compatibles.

The two companies have been hurling suits and countersuits at each other for six months (*InfoWorld*, March 5). VisiCorp has been marketing VisiCalc since 1979. Software Arts recently decided to break its marketing agreement with VisiCorp after more than a year of dissatisfaction and antagonism between the two companies.

"Our strategy for marketing has to be a bit different," said Bruce Rampe, Software Arts' vice-president for marketing and sales. "VisiCalc is our newest product and at the same time it is our oldest product."

Recently, Software Arts announced its intention to begin immediately marketing VisiCalc.

A Massachusetts court refused to grant VisiCorp a temporary restraining order that would have prevented Software

Arts from using the VisiCalc trademark.

VisiCorp introduced an Apple IIe version of VisiCalc Advanced Version last August, but the Software Arts' upgrade version for the IBM Personal Computer has some additional features, according to Daniel S. Bricklin, chairman of Software Arts and codeveloper of the original VisiCalc.

Upgrades will be available to "anyone with a VisiCalc disk" for \$99.95, said Bruce Rampe. The price will be offered

for a limited time only, probably about two months, he added. VisiCalc owners can send their disks and payment to Software Arts, which will in turn send them a disk containing the upgrade and a reference card.

Some confusion arose concerning which versions would be replaced by Software Arts, since VisiCorp sells other versions of VisiCalc, including VisiCalc Extended Version and a product called VisiCalc IV. Rampe claimed, however, that "anyone who can prove they've purchased VisiCalc in whatever form" is eligible for the upgrade. Software Arts will return upgraded disks to customers "in five working days," he said.

One extra feature of the upgrade from Software Arts is the product's ability to



Daniel Bricklin, Software Arts' chairman and codeveloper of the original VisiCalc

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support Microsoft's mouse. This ability makes VisiCalc one of the lowest priced mouse-supported spreadsheets for the IBM PC. Other features include variable column width, keystroke memory, and a "state of the art" help system, according to Bricklin.

Although neither Rampe nor Bricklin wanted to discuss particulars of the

lawsuit, Rampe said he was convinced that Software Arts would win.

Rampe also wasn't willing to disclose the particulars of the firm's upcoming retail-marketing campaign, including the amount of money the firm intends to spend on advertising, but he said that advertising would be "a significant part" of the company's strategy.

When asked about the possibility, some months down the line, of VisiCorp and Software Arts sharing shelf space with the same product, Rampe said he wasn't sure that situation would arise.

Software Arts, however, wants to keep the trademarked name. "We want 'VisiCalc,'" he said. "That's the name we feel is ours."

Timex says it's leaving the home-computer market

BY PEGGY WATT
Reporter

Timex joined the list of home-computer drop-outs with last month's announcement that it plans to cease production and sales of the Timex/Sinclair 1500 and 2068 color computer. The company plans to continue manufacturing computers and peripherals for other companies.

Calling the home-computer market "risky and volatile," analysts at Timex have recommended that the company put its energies and resources into its other divisions, said C. Michael Jacobi, vice-president of marketing and sales. The decision was announced at this time to give fair notice to wholesale buyers who are currently preparing catalogs, Jacobi said. The timing of production termination

also relates to depletion in inventory following Christmas sales, he added.

When the Timex/Sinclair 1000 was launched in 1982 as the first home computer priced at less than \$100, its novelty and low price captured consumer attention. At one time, the T/S 1000 accounted for 28% of home-market sales. As a result of competition from the likes of Commodore and Texas Instruments (another home-computer dropout) Timex was forced to sell its more advanced T/S 1500 and 2068 models at reduced prices in order to keep the company in the home-computer market.

The withdrawal of both Texas Instruments and Mattel from the market helped convince the company of the dangers of the industry. "You read about the turmoil in the industry every day," Jacobi said. "The possibilities of other entrances, of

continued price wars, creates a risky environment and risky investment."

Manufacturing at Timex has slowed, and once the company has used its remaining inventory of components, it will cease production. Jacobi estimated that the shutdown would take place within four months.

A spokesperson for Sinclair Research (Timex's European marketing agent), said the company was disappointed that Timex was leaving the home-computer market, but that Timex's withdrawal will not affect Sinclair's own operations. The market instability cited by Timex as reason for its retreat is not a problem overseas as in Sinclair's \$500 price range, according to the spokesperson.

Sinclair still plans to go ahead with direct mail sales of its new personal/professional QL computer in the fall. The \$500 32-bit QL was planned as a separate venture from Timex and was announced earlier this year in London. Timex, which manufactures Sinclair products at a plant in Dundee, Scotland, will continue to operate as Sinclair's largest manufacturing supplier.

U.S. Customs cracks down on computer-toting travelers

BY PEGGY WATT
Reporter

Citizens and residents of the U.S. traveling abroad with personal computers are being advised to register their machines with U.S. Customs before departing from the country. At this time registration is not mandatory, but bypassing the procedure may cause delays and result in the confiscation of travelers' personal computers when they return to the U.S.

According to congressional sources, the crackdown on travelers with computers is a part of Operation Exodus, the Reagan administration's attempt to prevent foreign powers (in particular the Soviet Union), from learning about U.S. computer technology that could have

military applications. Small personal computers and other portable high-tech items are presenting a new challenge to Operation Exodus, with Customs officials taking a close look at the easily transportable technology leaving the country.

The office of representative Ed Zschau (R-California) reports that the congressman has received several inquiries from Silicon Valley constituents, who are concerned about restrictions in traveling with their portables. "Customs has reported a number of successes [preventing technology leaks] with Operation Exodus, and that's great," says Jim LeMunyon, an aide to Zschau. "But we wonder if Customs can't conduct its business in a way that wouldn't create difficulties for businesspeople traveling with personal computers."

Customs officials recommend that travelers register their computers with a U.S. Customs office several days or hours before leaving the country. The customs agent records the computer's serial number for identification upon the owner's return to the U.S. If a traveler doesn't have time to register before departure, he may be able to protect himself by carrying a copy of the sales receipt. The receipt provides U.S. Customs with proof of ownership and eliminates any suspicion that the computer was purchased abroad, thus being subject to duty taxes.

"There is no firm policy yet," says Sue Eckert, a staff person for the House Foreign Affairs Committee. She did indicate that whatever specific ruling evolves will fall under the Export Administration Act.

A technology leakage to other nations won't necessarily be stopped by Customs seizing computers owned by U.S. citizens. "Personal computers can be purchased at any store. If Soviet agents wanted to buy one, they could do so in this country," says Eckert.

Louisiana legislation would punish software pirates

BY JIM BARTIMO
Senior Writer

Louisiana politics briefly took the spotlight at Softcon in New Orleans when Louisiana Secretary of State James H. Brown announced pending legislation designed to prevent the unauthorized duplication and distribution of computer software. If passed, the bill will make Louisiana the first state to have such a law. State officials hope the law will make Louisiana more attractive to high-tech companies.

Brown, speaking at a press conference sponsored by Vault Corporation, a soft-

ware protection company, said that the Software License Enforcement Act will be introduced in the current legislative session by two Democrats, State Senator William Atkins and Representative Al Ater. Under the proposed law, a user would automatically agree to accept the terms of an enclosed licensing agreement by purchasing or opening a software package. By becoming a licensee of the software, a user then could be punished for any copyright infringement.

"This bill is intended to strengthen significantly the ability of software publishers and distributors to enforce their rights under trade secret and copyright

laws," Brown said in conjunction with a joint statement from the legislators. "This bill strikes a balance between the legitimate interests of the software industry in preventing piracy and the legitimate interests of the customers who acquire copies of software pursuant to license agreements."

Vault Corporation chairman Krag Brotby said his company helped write most of the bill for Brown and the legislators, and that the announcement was timed to coincide with Softcon coming to New Orleans. Vault, of Westlake, California, markets the Prolok Software Protection System to software developers who want to protect their software from being copied. Prolok is used by many software developers, including Ashton-Tate and Informatics, said Brotby. The Louisiana legislation is needed, he said, because software protection schemes can always be broken. ●

Start-up firm announces windowing package for PCjr

BY KATHY CHIN
Reporter

Trillian, a Los Gatos, California, software start-up, has announced it will be offering the first windowing package for the new IBM PCjr this April. Unveiled at Softcon in New Orleans, VisuALL is a program designed to simplify the use of existing software on the market.

Instead of memorizing keyboard com-

mands, users can select from an on-screen window of options with a mouse or with designated arrow keys. Software developers are calling VisuALL a "shell" product that functions as a kind of accessory program for existing off-the-shell software.

Trillian's president Peter Redford said the firm will be shipping a VisuALL shell for the IBM Personal Editor for the PCjr that will sell for between \$50 to \$70. "We

have developed a window system that will function within the boundaries of PCjr's more limited memory," said Redford. The Trillion offering does not integrate multiple programs, but makes individual applications easier to use.

"This program eliminates the user's dependence on lengthy manuals, which are more of a hindrance than an aid," Redford said. "Our windows let people tell the computer what to do in plain English, rather than in computer languages."

Users who wish to customize their own IBM PC applications can purchase the VisuALL PC-DOS shell for \$99.95. Redford claims that users can create shells for any software that operates on the IBM PC and its look-alikes. ●

Radio Shack introduces disk drive for Model 100

BY SCOTT MACE
Senior Writer

Radio Shack has introduced a \$799 5¼-inch single-disk drive for its Model 100 portable.

Included with the drive is space for an optional second floppy-disk drive, which costs \$240. The drive box also includes connections to link the Model 100 to a computer monitor and/or television set.

The 5¼-inch single-sided disk drive stores 184K of information on one floppy. According to Radio Shack spokesperson Ed Juge, the disk format is incompatible with other TRS-80 disk formats, such as

those for the Color Computer or Model 4.

Unlike the lap-size Model 100, the Model 100 disk drive is not portable. It is about as long and wide as the 100, but is approximately three times the portable's height. The Model 100 itself can store up to 32K in its nonvolatile random-access memory. Previously the only additional storage available for the 100 was through a separate cassette tape recorder.

The disk drive attaches through a cable that plugs into the bottom of the Model 100. The plug fits into the slot reserved for ROM (read-only memory) modules located behind a door on the bottom of the machine. Juge says that when users buy

the drive, they must remove the ROM module door and replace it with one designed to accept the disk-drive cable.

The video-interface section of the drive includes a built-in RF modulator for connecting the computer to a television. A computer/television switch box is included with the drive. Monitors or televisions will display 25 lines of copy on the screen.

When connected, the disk drive automatically loads special software into the Model 100 that links the drive to the computer through the built-in Basic language. A Model 100 must have a minimum of 16K RAM to use the drive.

NEC, which manufactures a lap-size computer similar to the Radio Shack product, plans to introduce a disk-drive unit for its machine this June. Unlike the 5¼-inch Radio Shack unit, NEC's model will have a CMOS battery-powered, 3½-inch double-density drive. The price of the NEC drive has not been set. ●

People

New Orleans is full of interesting sights, but few were more interesting than the sight of Apple's chairman, **Steven Jobs**, intently engaged in conversation with LSD veteran and recent computer-convert **Timothy Leary**, in a hospitality suite at Softcon. Jobs was there to cut software deals for the Macintosh, and Leary's attendance was in connection with XOR Corporation, a Minnetonka, Minnesota, software firm. Leary is working on his design of a 24-module "brain game" that he believes will help people change the way they think and live. Leary's presence attracted the attention of both Jobs and Apple cofounder **Stephen Wozniak**, who visited Leary's suite at separate times for a demonstration. XOR officials, who seemed to be accustomed to the film-industry style of doing business, did a Hollywood blitz on Jobs. They were trying to sell him the rights to their brain game and two other XOR products — but rumor has it the negotiations were somewhat less than cordial and we won't be seeing Leary's game on the Macintosh.



Tom Snyder sings "Run for the Money."

Tom Snyder had party goers doing double takes at the Scarborough Systems bash at Softcon. Not only did he show off packages of his latest game (entitled Run for the Money) to be marketed by Scarborough, but Snyder also showed off his talents as Tom Snyder, CBS recording artist, by doing a couple of full-tilt versions of his latest song called — you guessed it — "Run for the Money." (Snyder also created the popular games Snooper Troops and the Search Series.) Rock wasn't the only musical genre represented: Scarborough hired the Southern University Marching Band to put on a great Mardi Gras-style show, and a blues and jazz band filled in between Snyder's renditions of "Run for the Money."

Charlie Chaplin may have been cute, but **Albert Einstein** was smart as well — and he is as immediately recognizable as



Steven Jobs and Timothy Leary discuss "brain games" at Softcon.

Chaplin's Little Tramp character. So the good doctor has recently been adopted by Armor Systems as a symbol for the Florida company. "Einstein had a unique formula with $E=MC$ squared," said **Neil Peiman**, vice-president of sales for Armor, "and we think we have one too." Einstein is really actor **Mike Basile**. His makeup for Softcon was done by former Disney artist **Bruce Miller**, who spends an initial four hours transforming Basile into the tousethaired professor. Because of the heat in the Superdome, Miller had to do touch ups every 45 minutes.



Mike Basile poses as Albert Einstein.

"It really grabs you, doesn't it?" said **Nick Barnett**, marketing director for

Psycomp, of the poster that can be seen between Barnett and a show goer. And we must admit, yes, it is a grabber. Psycomp sells self-help software that relates to four different areas of psychology. The poster advertises a program called Treating Sexual Problems that is supposed to treat just what the poster says it will treat. It's an "interactive" ten-session program which, according to the literature, "clarifies frequently-held misconceptions and introduces corrective measures to overcome the problems."



Nick Barnett discusses Psycomp software.

This issue of InfoWorld is the debut of our People page. We'll be running it every other week with pictures and, we hope, somewhat quirky and unusual stories about people in the burgeoning microcomputer industry. We welcome contributions to People. Ideally, we would like a black and white 8 x 10-inch photograph to accompany your anecdote. You won't get any money, but you'll get your name on the page — and you'll have our undying appreciation. What more could you want?

— Denise Caruso, People editor.



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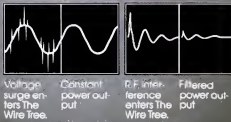
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The Mindset Computer

Gambling on great graphics

BY SCOTT MACE

Senior Writer

The last thing the personal-computer industry needs right now is another IBM PC-compatible system, right?

Mindset, a new start-up company based in Sunnyvale, California, hopes consumers will think the answer to that question is no. The firm is betting that the superior graphics capability of its Mindset micro will make it the surprise personal-computer success of the year.

Mindset offers an appealing combination of advanced graphics resolution and speed, and it runs a large number of disk-based software for the IBM PC without any modifications. The basic Mindset computer, with 64K random-access memory (RAM) and two cartridge slots, will sell for \$1,099 when shipments begin this April. For an additional \$699 (\$1,798

total) you can upgrade to a 128K RAM system with one 360K double-density disk drive; or for an additional \$1,299 (\$2,398 total) you can have a 256K RAM system with two drives.

The Mindset uses an 80186 microprocessor, the same processor used in most of the newer MS-DOS machines (such as the Tandy Model 2000). The 80186 is a faster, more advanced processor than the Intel 8088 found in the IBM PC and many PC compatibles.

The Model 2000 is probably Mindset's most direct competitor in terms of graphics. The Tandy machine, which like the Mindset has a separate graphics processor chip, can drive eight colors versus Mindset's two. Even with the extra colors the Model 2000 matches Mindset's high resolution — a crisp 640 × 200 pixels. But the Mindset is lighter in weight than the Model 2000 desktop system and

is somewhat transportable. More importantly, the 2000 is not disk compatible with the IBM PC while the Mindset largely is.

What separates the Mindset computer from the rest of the PC-compatible bunch is two custom graphics coprocessors produced with VLSI (very large-scale integration) technology. One of these chips has more than 25,000 transistors on it, which puts it in the range of many central or main microprocessors for personal-computer systems.

One of the two coprocessors increases the speed with which the Mindset computer can display graphics on a color monitor, and the other one allows Mindset to display more bits (or pixels) on that screen than any other MS-DOS computer.

When using an optional high-resolution monitor, Mindset can generate 640 × 400 pixels of two possible colors. Mindset

displays 320×200 pixels in up to 16 colors at one time in the next highest mode.

Mindset's president, Roger Badertscher, says this resolution makes the Mindset computer attractive to two emerging markets — users of "windowing" software and dedicated-graphics software.

"We thought graphics would be the next major step," Badertscher says. "The visual interface is very important, and we wanted to make sure we had the machine to do that phenomenally well."

Mindset's primary strategy is to support Microsoft's Windows (*InfoWorld*, November 21) and to make Windows run faster than anybody else's version of the window manager.

Since the final versions of Windows have not yet been released, it's difficult to say whether the Mindset machine will run Windows faster than other machines. The only software running under Windows that has been widely disseminated is the demonstration program displayed by Microsoft at last November's Comdex show.

But according to Badertscher, the two graphics coprocessors will allow the Mindset computer to run Windows and other graphics-intensive software "many times faster" than the IBM PC and other PC compatibles.

The two coprocessors sit on the 80186's processor bus, a sort of main highway through which all instructions to and from the computer's central processing unit must pass. When software requires something to be done on the screen, it has the coprocessors take over the bus for a fraction of a second and perform the complex arithmetic necessary to generate graphics. Then the 80186 resumes control of the bus.

All graphics on the Mindset are bit mapped. The graphics coprocessors control an individual pixel's color and status (on or off). Badertscher calls one of the chips a "hardware accelerator." "It gets out, addresses all the pixels and does all that pixel arithmetic," he says. "It runs like a \$50,000 computer in terms of doing that arithmetic."

The other graphics chip processes the video display itself. Its job is to control the computer's frame buffer, a section of memory that contains the video signal on its way to the monitor.

"We looked at how companies like Microsoft are going to write future software," Badertscher says. "[We looked at] how they are going to do Windows." The result was a graphics accelerator in hardware. Badertscher compares it to the 8087, a chip developed by Intel to do one thing — perform floating-point arithmetic very quickly.

Graphics coprocessors aren't new. The most famous one is the NEC 7220 that is now being incorporated into many IBM PC-compatible machines to enhance graphics. But the 7220, a version of which is manufactured under license from NEC by Intel, didn't make it into the Mindset machine.

"It draws lines and circles very well," Badertscher says. "But if you take something where you have a couple of windows, and you want to move one down and reformat the screen, the 7220 is real slow. It does not address at all the fundamental mathematics of graphics, or how people are writing software." He says that people trying to write bit-mapped windowing or icon-based software for other machines are bumping up against the limits of the 7220.

The Mindset graphics coprocessors are the result of a year-long VLSI design project. Mindset designers worked with VLSI Technology of San Jose, California, a company that specializes in giving designers tools that cut the development time of new chips. "Three years ago, it took three years to do a VLSI device," Badertscher says. "We thought we could do it with our people and the latest tools in 12 months."

Although the company is working hardest in the areas of productivity applications and windowing, it will also push hard for a new generation of graphics software for professionals.

At the release of the computer, Mindset will have three graphics packages under its label. The low-end product, Designer, will sell for \$99. Developed by Datasoft, in Milpitas, California, Designer uses the optional Mindset joystick (\$40) and/or a mouse (approximately \$150) to create drawings. Designer includes two levels of zoom for detail work.

At the middle range is Four Point Graphics Plus by IMSI of San Rafael, California. This \$249 package will let users create graphics for slide presentations, and they can control slide sequences with the keyboard or a mouse.

The high-end graphics product for Mindset is a \$399 package called Lumena



When using an optional high-resolution monitor, the Mindset computer can generate 640×400 pixels of two possible colors, and in the next highest mode it displays 320×200 pixels in up to 16 colors. Several graphics packages will be available under its label.

PHOTOS BY MICHAEL CAMPBELL/HORRIZONS

that was developed by Time Arts of Glen Ellen, California. Lumena is a renamed version of Easel, an IBM PC program that gives artists full control of high-resolution graphics (*InfoWorld*, December 5). Badertscher says that Lumena creates professional graphics heretofore only available on \$50,000 graphics machines.

At a later date Mindset will have two add-on programs — Lumena Font and Lumena Animation — for creating fonts of type and animated sequences while using Lumena.

Badertscher says these new sophisticated color-graphics programs will be useful for artists, industrial designers, logo designers, space planners, architects and interior designers.

Advertising agencies and people doing storyboards will also use this software. "Right now these people either take a sheet of paper and they draw, or they go hook into some expensive machine," Badertscher says. "A lot of people work by drawing with pictures and fonts."

Badertscher likens this market to the large number of people who worked with financial-planning models. When VisiCalc,

the first electronic spreadsheet program, came along, it benefited the personal-computer business. Mindset hopes to have an impact on the graphics applications of computers in much the same way.

Mindset is eyeing other markets as well. The computer's sophisticated graphics and advanced sound capabilities will appeal to educators, and, as befits a company with several former Atari employees, Mindset will have some startling new game software. One new game, *Viper*, from Synapse Software, is a tour de force for color graphics and cartoon-style animation.

The appearance of the Mindset computer is striking. Its white components are low and small. The main unit contains two cartridge slots in front and three slots for plug-in modules in the back (unlike that for IBM machines, the add-on hardware is in modules, not on cards). On top of this sits one of the two plug-in expansion units. The main unit with keyboard weighs 15 pounds. With the expansion unit, Mindset weighs only 20 pounds and is somewhat transportable (although its component design makes it awkward to move around).

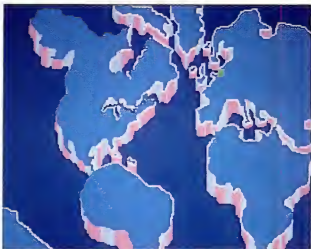
Mindset will initially offer five different hardware modules. There's a \$200, 300-baud direct-connect modem; a \$500 300/1200-baud direct-connect modem (which is the only module that uses two slots); a \$100 RS-232 serial interface module; and a \$100 Centronics printer module. The fifth add-on is a stereo-sound module (also available for about \$100) that doubles the Mindset's four music or six voice channels to a total of eight or 12. The extra channels allow the computer to produce stereo output. The Mindset has no internal sound speaker.

Mindset will sell two different communications programs to work with the optional modems. Telecom is a \$79 cartridge that plugs into the front and drives either mode. The \$99 Telecom+ program comes on a floppy disk and includes extra telecommunications functions. Both programs use color-coded prompts and help files to simplify communications. As the MacTerminal program for the Macintosh represents a mouse-based attempt at ease of use, Mindset's Telcom is an attempt to use color to do the same thing.

Mindset's sophisticated graphics made it difficult, if not impossible, for the company to make its machine as compatible with the IBM PC as other PC clones on the market. But Mindset's software chief, Bruce Irvine, says he is satisfied that the Mindset runs the best selling IBM PC software and that it runs all bit-mapped PC

software better than IBM does. Irvine says the company has tested and validated 60 IBM PC programs (see below) that run on the Mindset with no modifications.

The Mindset generates bit-mapped graphics only. The IBM PC has another way of generating video images that is character based. Much IBM PC software, such as Lotus 1-2-3, uses character-based



The Mindset displays a 3-D map.

MICHAEL CAMPBELL/HORIZONS

graphics rather than bit mapping. To run 1-2-3, according to Irvine, the Mindset has to emulate IBM's character mode via some "elegant and high-performance algorithms." At one point, Microsoft's Bill Gates became involved, helping Mindset decide how to emulate the character graphics without degrading the performance of the IBM software. "We had to live up to the earlier standard," Badertscher says. Irvine says Mindset runs the IBM PC character-based software without any degradation.

Eventually, Mindset officials decided that they already had most of the desirable software included, so they froze the operating system's read-only memory (ROM) and thus locked out perhaps 20% of the total IBM PC-software base. Programs such as Microsoft's Flight Simulator, for example, will not run on the Mindset computer.

A number of packages for the Mindset machine are under development by third-party software companies. Among these are The Writer, a Hayden Software word

processor that uses Mindset's graphics; Deep Sea Danger, an underwater graphics adventure from HES for children; and a chess/checkers/Othello combination package from Odesta. Spinnaker Software also recently announced that it will support the Mindset computer. Of course, when Microsoft Windows — and the wide range of applications under development for it — becomes available this spring, Mindset's software base should grow dramatically.

For Mindset Corporation to succeed, however, it has to establish marketing, advertising and sales organizations and such essential items as a strong dealer network. It also has to overcome its status as the latecomer, and IBM's status as the big bully on the block.

In addition to Microsoft's support, Badertscher says Mindset has a close relationship with Intel, which participated in the early discussion about the machine's graphics technology. He adds that Mindset does not expect the current shortage of 80186 chips to present a problem, though he admits that supplies of several different computer components are worth watching with a careful eye.

A much more serious problem would develop if the rumors about IBM abandoning MS-DOS and switching to a proprietary operating system were to prove true. Badertscher places no faith in such rumors — as of yet.

At a lunch a few months back, Mindset engineer Louie Kirway received a fortune cookie message that's still around the office. "Get your mind set — confidence will lead you on," the fortune read. ●

Out of the box

The following is a partial list of software for the IBM PC that Mindset says will run — straight out of the box — on the Mindset computer.

Ashton Tate's dBase II and Friday!
BPI accounting software
Cdex training software for Lotus 1-2-3
Condor 3 data-base manager
Continental's Home
Accountant Plus
Early Games learning software
Forth from FIG
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Micropro's Star series
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VisiCorp's VisiCalc and VisiCalc2 (but NOT the VisiOn series)

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Clapp-Trapp

Computer talk



BY DOUG CLAPP
Contributing Editor

Kevin Goldstein and I are having dinner in L.A. And arguing. After taking our order, the waitress says, "Excuse me. Are you computer people? I couldn't help overhearing your conversation earlier."

We admit it.

She then asks for advice. She wants to buy her child a computer, but she's not sure which one to buy. We ask her a number of intelligent questions and finally ask how much she wants to spend. "Well, gee, for sure not over a hundred dollars," she says, then waits for our reply.

The anecdote above is just one of many:

The young man is a top programmer. He was, and is, an ace at mathematics. He's also an ardent environmentalist, a lover of wild things and a liberal Democrat. He's saddened at the division between liberal-art types and science types. "Hey, I listen to music, I read books, I can appreciate art. Why don't they try to appreciate what I do? There's a lot of beauty in math."

The editor is a punk-rock musician in his spare time and an accomplished basic programmer. "Why don't you write about the fact that computers aren't good for anything?"

Pause.

"They're not?" I ask.

"Well, nothing important," the editor answers.

It's the last year for Applefest. Next year it's going to be an Apple/IBM fest. The Apple stalwart is trying to salvage some pride. "But notice which name is first," she says. "For now, anyway," is the reply.

This is not the way programming is explained in college. "It's really, really simple," the programmer says. "These guys hold the screen stuff, and this guy — just one byte, actually — points to these other guys, and *those* guys have all the disk stuff that, you know, is just like hanging around. Neat, huh?"

It sounds like total nonsense, but, for some strange reason, it makes sense. Later, you realize that you understand a tricky programming feat for the first time. These guys?

Don Knuth, the Obi-Won Kenobi of computer science, is visiting a computer company. He's just received a software demo. He's floored. Afterwards, he says, "I used to believe that the best programming was done in the university environment, not in private industry. Now, I think it's the other way around."

The freeware author pleasantly puts aside the question of how much he's made from his program. At the computer companies, it's bad form to inquire about salaries, possibly the only remaining conversational taboo. When the subject is broached, people blush and change the subject.

The man is a sociologist, a former colleague of Alfred Kinsey, an expert on sex and relationships. The talk has veered into computers, and I'm trying to veer it somewhere, anywhere, else. While I patiently answer questions, the man is silent. Soon, I realize that he's taken a dislike to me. I'm a "one of them," an antihuman byte-brain. The talk finally shifts to Buddhism, and I regain his graces, but not without a lingering suspicion.

The woman who answers the phone is stonewalling. You're trying to reach the marketing director, with no success. Here's the problem: you don't know the person's name. If you know the name, you get through. If you don't, you don't. "Company policy," she says. It didn't help that you said, "I'm not with a company" when asked the inevitable, "What company are you with?" The frustration is incredible. Is this how the Japanese do things? Pity the user, again.

It's evening in Los Gatos, California,

and everyone is partying. Everthing's great. The conversation moves to housing prices, which are astronomical in Silicon Valley. Someone says, "What about the store clerks and the guys that pump gas? Where do they live?" Silence. The thought hasn't occurred to them, and they have no answers.

The male flight attendant, it turns out, owns three computers and does contract programming in C. The man in the seat next to you manufactures 100-megabyte disk drives. The woman at the hotel's front desk is learning dBase in her spare time. The family physician takes you aside and asks for advice about 1-2-3 macros. And you start to wonder what life is like in Fiji.

The banker has come to the users' group meeting for help. He's having trouble generating reports from his database program. The questions begin, and users are intent on pinpointing, then solving, the problem. What's he trying to do? He's trying, he says, to keep track of mortgage foreclosures. Without the computer, he couldn't handle nearly as many, he says. Oh.

My friend is a welder. I've just shown him my newest computer. He's interested. He says, "So you get the computer. Then you've got to buy programs, right? And they're how much? Ten, twenty bucks each?"

The computer-store salesman is angry. "Why do they keep coming out with new stuff? I haven't learned how to work the stuff we've got now! How am I supposed to sell this stuff? Do you think it's fun looking like an idiot?"

If you look closely at the top of the Intel building, you'll notice a TV camera sweeping the parking lot, hour after hour, day and night. Inside, there is surely a person whose job it is to watch a parking lot, hour after hour. ●

Clapp-Trapp is moving. Starting next issue, Clapp-Trapp will be moving from the News section of InfoWorld into the Using Micras section. Doug will continue to focus on consumer-oriented issues of interest to personal-computer users.



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News Briefs

Mandatory Macintoshes at school? Drexel University has declared that a personal computer is a required educational tool for every one of its 1,870 incoming freshmen. Apple Computer will supply more than 2,000 of its Macintosh micros to the university, and Drexel will, in turn, sell the Macs to students at the discounted price of \$1,000.

Drexel was one of the first universities in the nation to announce that freshmen in all disciplines would be required to have access to a personal computer. Students studying liberal arts, design and nutrition — as well as engineering, science and business — will have to become competent at using computers. The ability to use computers is "increasingly essential for the well-educated individual," says Drexel President William Hagerty.

Students will not be encouraged to carry their micros to class, but to take their diskettes to university facilities developed for this program. After graduation, students can take their Macintoshes home for keeps.

A Taiwan copy that's legal: Not all made-in-Taiwan computers are illegal copies of the Apple II Plus. Romar Computer Systems of Woodland Hills, California, distributes the Romar II, a legal Apple-compatible computer manufactured in Taiwan and approved for entry and sale in the United States by the U.S. Customs Service. The \$695 computer is a 6502-based micro with 64K of random-access memory and a typewriter-like keyboard with numeric keypad. It comes with a Z80 card that allows users to operate CP/M at no extra cost.

"The Romar is Apple compatible, not a clone or a copy," says Hal Smith, chief executive officer of Romar. "It has been designed to work with Apple programs and accessories without infringing on Apple's proprietary circuitry or read-only memories (ROMs). To accomplish this legal milestone, Romar engineers had to break new ground in computer design, which is a much more expensive way to enter the business than merely copying an existing system," he says.

On-line lottery launched: Washington state's year-old lottery entered the computer age with the recent addition of an on-line numbers game that paid out a total



A resident bets on the Washington lottery.

of \$693,270 to 8,564 lucky bettors in their first month of operation, according to Christine Yorozu of the state lottery commission.

Lottery agents punch in the three-digit bets on Cyber 18 computers connected by dedicated telephone lines to a central computer in Olympia, Washington, maintained by Control Data Corporation. Players can place bets six days a week (Sundays and Christmas are excluded) at about 500 convenience stores and other businesses. The state lottery commission expects another 1,600 to 2,000 terminals to be installed before the end of the year. Daily drawings award winnings of between 50¢ and \$25,000, depending on the odds when the bet was placed.

Washington is the first western state and the fourteenth state in the country (as well as the District of Columbia) to launch an on-line game, Yorozu said.

Software that rates other software: The National Science Foundation has awarded a \$120,000 grant to a scientist at Brandeis University to develop a computer program that can measure the efficiency of other computer programs. Jacques Cohen, professor of computer science, will direct a team developing a program to analyze and evaluate the speed and accuracy of other software by using the computer itself.

"There is an endless choice of computer programs to do specific tasks, but a program which can analyze these programs — finding strengths, weaknesses and, above all, efficiency — has never been developed," Cohen says. The new program is expected to eliminate the need to actually run computer programs to test their efficiency. "Theoreticians have been trying to analyze programs to determine

efficiency through mathematical reasoning, but their conclusions are, at best, estimates," according to Cohen. His software should "give the user a true picture of each program's efficiency on any given computer."

Focusing on the micro market: InfoCorp, a computer-industry market-analysis firm in Cupertino, California, has announced a syndicated service that will provide computer makers with videotapes of focus-group sessions on the latest trends and whims of the computer market. ConsumerVision is supposed to keep marketing, sales and engineering departments in touch with the realities of the marketplace. Focus groups are expected to give computer and peripheral makers insight into the "paradoxes that surround the people who buy and use computers," according to the company. The service will also look at those who influence computer buys: MIS directors, managers and computer retailers.

Topics for the first year of the service include: mobile computers, the opportunity for non-IBM microcomputers in Fortune 1000 businesses, microcomputers as office workstations and what kinds of advertising campaigns for hardware and software are effective.

Get-well messages in the Help menu? Hallmark Cards has become a dealer of RealWorld accounting software, which the greeting-card company is selling to its franchised card stores as part of a program to automate its network of 12,000 franchises. The General Ledger, Accounts Payable and Payroll packages run on the IBM Personal Computer and PC XT. Computer Data Corporation of Kansas City, Missouri, is providing Hallmark with the software and will provide seminars and product support. The RealWorld programs run on 8-, 16- and 32-bit microcomputers and run on many operating systems.

Attention photo bugs: In addition to publishing all the microcomputer news fit to print, InfoWorld would like to improve the appearance of this section with interesting, if not arresting, photos. We'd especially like candid shots of some of the movers and shakers in the microcomputer biz. Photo credits will be given. Send black-and-white prints to InfoWorld, attention Tom Shea, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.

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Computers give independence to the disabled

Micros may give new meaning to the word 'disabled' — or eliminate the need for the distinction

BY PEGGY WATT
Reporter

It makes no difference to a computer if its programmer is a paraplegic sitting in a wheelchair, a quadriplegic tapping on the keyboard with a stick held between his teeth or a person reading a screen with fingers instead of eyes. In fact, microcomputers may give new meaning to the word *disabled* — or eliminate the need for the distinction.

The disabled are finding that they aren't necessarily at a disadvantage when it comes to working with computers. Because computer access can be facilitated by modifications to hardware and software, such as a lower typing table or an accessory that produces braille printouts, many physical disabilities can be circumvented. The result is more independence, and in some cases, new jobs for the disabled.

The career opportunities in computer programming for the disabled were realized early by the Center for Independent Living in Berkeley, California, which for nine years has operated an intensive training course that has placed 92% of its graduates.

Students may be blind, deaf, quadriplegic, paraplegic, mentally or emotionally disturbed or coping with a combination of disabilities that are immaterial or surmountable at the terminal. A few low tables are available for wheelchair-bound students, said Joan Breves, director of the training program. Blind students use the Optacon, an attachment that prints the terminal readout in braille. "Some of them are very fast at it," she says. Deaf



Students Ed Kliss (foreground) and Dave Smith at The Center for Independent Living.

students get a hand in class from Joe Quinn, a sign-language interpreter, and from notetakers like Rebecca Haddock, who received a tuition waiver in return for her services. Modems and speakerphones allow students to keep up with the class if they are unable to make it to the classroom.

The job-placement assistance is a big boon, says Ed Kliss of Berkeley, who is confined to a wheelchair and looking

forward to a programming internship this spring. He couldn't find work with his architectural degree, but is confident he'll find a programming job in the Bay Area.

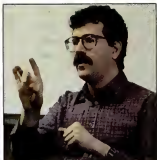
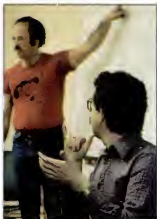
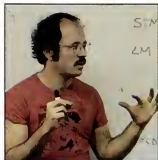
"There are probably 150 people working now who wouldn't have been without this class," Kliss says. "I was trying to get into a field that is difficult for an able-bodied person to get into. Here, it's incredible. They really open it up and give you the opportunity to be worth something."

The course is tough. Students learn Basic, Cobol and assembly language, and must pass review boards conducted by panels of professionals, some of them graduates of the school. Don Lively of Santa Rosa, California, also paraplegic, had almost finished an associate's degree in programming when he entered the Berkeley school, and found he still had plenty to learn. "It gives you a cold slap in the face of what they're looking for," he says. He finds the hands-on experience most practical. "Some of us practically live here in the lab."

Sam Vaughan said the rehabilitation counselor warned her the course was grueling. "But grueling is probably an understatement," she says. Still, she found the school a welcome alternative to retraining for a new field after she lost her hearing several years ago. It also made her more aware of the usefulness of computers in everyday life. Vaughn says she would like to see more micros linked to TTYs (teletypewriters that allow the deaf to type messages over the telephone).

The center is one of 27 across the country that are sponsored by IBM and

ERRY STOIL



Guest instructor Joe Pratt and sign-language interpreter Joe Quinn work together to teach assembly at the Center for Independent Living in Berkeley, California.

state rehabilitation departments. IBM became interested after a salesman who had lost the use of his limbs was successfully retrained as a programmer. IBM remains a strong supporter of the schools, providing equipment and access to its mainframes, offering internships and hiring graduates. "Most of us never think

its product line includes talking Apple computers; software packages including word processing; data-base management; a mailing list; a calendar; and Braille Out, which produces printouts in braille. The company's manuals, tutorial documentation and sales literature are recorded on cassette tapes.

The development of adaptive devices may not keep up with the growth of computer technology, thereby leaving the handicapped even further behind.

about this other world until some accident happens," says Norman C. Hammond, a member of the four-person IBM Rehabilitation Training Programs Department.

"There are a lot of people out there whose bodies are handicapped but whose minds are very sharp, and given the chance for training, they would be able to do something."

In addition to career centers, a number of companies are developing adaptive devices for disabled users. Computer Aids, of Fort Wayne, Indiana, is owned by blind users and is exclusively devoted to meeting the needs of blind computer users.

Computer Aids founder Bill Grimm says he built his first "Talking Apple" for his own use and then discovered that many other sightless people were unable to find computer equipment that they could use. At first he made a sideline of marketing the device that causes the computer to speak each character as the key is depressed. A year ago, he went into the business full-time and developed a company with a majority of blind stockholders.

The company has grown to six employees, with installations all over the world.

Computer Aids' aim is to provide affordable aids for the growing market of blind computer users, Grimm says. "We could develop the most fantastic gizmo or widget in the world, but if nobody could afford it, who could use it?" He believes that the market for the blind is overlooked by many researchers and developers. "But there's a lot of tools the sighted world has that the blind market doesn't, because nobody has tailored them to the blind," he explains. Companies like his are gaining a larger pool of resources as more blind people enter the field, Grimm says. "The technology has opened many doors. The bottom line is giving a person a tool to allow him to be independent. We're not doing this because we found a niche in the market. We know what the needs are."

Among the company's projects is a cooperative effort with Telesensory Systems of Mountain View, California. The Talking Transend allows visually impaired computer users to use electronic mail by blending Transend 2 (an electronic com-

munications package for the Apple II and Apple IIe), a Transend modem and an ECHO II speech-synthesizer board to create a talking word processor. With the equipment in place, each character is spoken through the speech synthesizer so that the user can verify the input.

Multiple-key commands can be difficult for the user with impaired motor skills, and the problem has been tackled on several fronts. Keyloc, a free program written by John Black of Bethesda, Maryland, solves the problem on IBM PCs and compatibles by converting momentary-action keys to alternate-action keys, which are identifiable by a tone sequence. The program can be downloaded from CompuServe and is available to all who can benefit from it. It is also available from the Silicon Valley Computer Society at P.O. Box 60506, Sunnyvale, CA 94088.

Medical Equipment Distributors of Maywood, Illinois, manufactures interfaces that allow the severely handicapped to control keyboard functions via two switches and Morse code. The switches can be activated by slight movement, breath or pounding, says Jan Little, executive vice-president. She says it is particularly beneficial for cerebral palsy victims, who often have very limited control of movement. Related equipment allows the disabled user to spell out words on a screen by choosing letters with a nod or exhalation. "The new electronics is one of the best things that has happened for the disabled individual," Little says.

Despite the recent increase in the numbers of adaptive devices for the disabled, there is still plenty of room in the development field according to David Holladay. Holladay founded Raised Dot Computing in his Lewisburg, Massachusetts, home three years ago and has seen it grow into a full-time venture for himself and his wife, Caryn Navy. As a result of

Navy's blindness, their main interest is in adaptive devices for the sight-impaired. Holladay and Navy concentrate on software development, interfacing traditional tools for the handicapped with computers and promoting information exchange among people who use adaptive devices. "There has been an increase in interest by companies in using adaptive devices for handicapped employees,"

Holladay says. "But I'm not seeing a lot of programmers working in this area."

He worries that development of adaptive devices may not keep up with the growth of computer technology, thereby leaving the handicapped even further behind. "Too many rehabilitation centers are staffed by counselors who don't know RAM from a floppy disk," he says.



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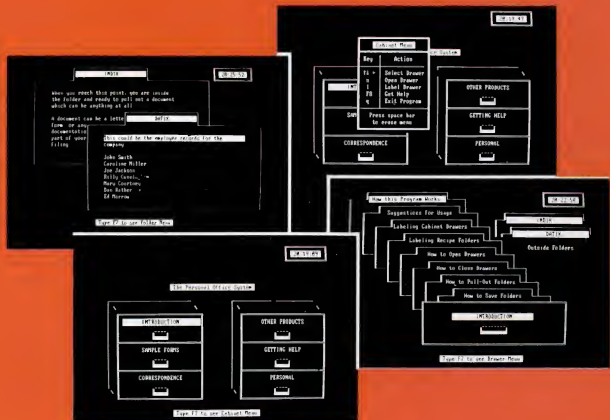
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Micros break silence for deaf editor

BY DENISE CARUSO

Reporter

Henry Kisor's instrument of liberation was not a sword nor even the mightier pen.

It was a modem that was connected to his first microcomputer. Because of it — after years of deafness — he was finally able to “hear” the language of another human being. It transformed his eyes into his ears.

Kisor's liberation began in 1982, during the halcyon days of Osborne Computer Corporation. He had decided to invest in the tiny-screen portable, because “just like every other journalist, I wanted to do a little free-lancing and work at home when I wanted to.”

Kisor, a 20-year veteran of the newspaper business, works for the *Chicago Sun-Times* as both book editor and computer columnist. Writing the computer column is a new occupation that resulted from his fascination with a newly discovered world. The Osborne provided him with a workstation, and he soon purchased a modem to send articles from home to the *Sun-Times'* Atex system.

As book editor, Kisor rarely did interviews. When he did interview people, the obvious problems relating to his deafness arose. Telephone interviews, the cornerstone activity of any busy journalist's life, were impossible without an interpreter. And although Kisor can speak fairly clearly and is an excellent lip reader, his in-person interviews were always somewhat questionable.

Then Kisor bought the Osborne 1 and heard about a writer named Burke Campbell. As a publicity stunt at a certain trade show, Burke, in one sitting, wrote a science-fiction book on an Apple computer and sent the book out over The Source so that it was instantly readable by subscribers.

Kisor himself had recently subscribed to the *The Source* and figured he could interview Campbell via the communications network.

The words, “Henry, this is Burke Campbell,” appeared on Kisor's computer screen, breaking Kisor's longtime isolation of silence.

Kisor says it's unfortunate that microcomputers aren't more widely utilized by the deaf community. “There's a bulletin-board system [BBS] for the deaf in Washington D.C., but so far very few deaf people have computers. The biggest reason is money, but also, a majority of them are born deaf and have never learned enough language to be confident with spoken or written language,” says Kisor. His deafness was gradual, thus his command of English is excellent. “But it would be a wonderful way to teach language. Teaching language on a computer is dynamic, it is language being creative. Deaf people could be more responsive to this because it's interactive.”

Kisor says another problem is the TDD (Telecommunications Devices for the Deaf) telephone system. “Many deaf people don't even have TDD, and those who do can't use it to communicate with their computers because it uses Baudot code, and computers use ASCII, and the two codes don't communicate to each other. Also, only the deaf have the TDDs, since they aren't of value to anyone else, so they don't help cross-communication between the deaf and the hearing. It's worthing for social interfacing.”

But micros and telecommunications have certainly helped Kisor to “reach out and touch someone.” He now subscribes to



Henry Kisor of the *Chicago Sun-Times*

between 45 and 50 electronic bulletin boards and telecommunication services. In fact, the bulletin boards got him started on his computer column.

“I used to send out help messages about my Osborne, and within two or three hours someone would send me the answer. The bulletin boards are a big part of my life now,” says Kisor. “I've made friends I would never have made otherwise. I ask for opinions and anecdotes for my computer column, and I get a lot of them. Bulletin boards, to a deaf person, are a wonderful way to plug into the party line of human interaction.”

Kisor no longer works frequently on the Osborne — “I do when I can get it away from my wife,” he says — but now uses a TRS-80 Model 100 and a Compaq. And the modem didn't turn out to be the interviewing tool he thought it was, though the potential is still there. Kisor says literary people generally use computers for writing not for communications.

“Not many authors have modems yet. Writers are slow to adapt to new technology, and they don't perceive the need, although I don't see why novelists couldn't send chapters of their books to their agents or editors for instant feedback. But most writers don't even know what modems are.”

Kisor's familiarity with modems and various BBSs eventually got him interested in writing the *Sun-Times* computer column, called “Personal Computers,” which he's been doing on his own time for months. Hoping for recompense, Kisor recently decided to syndicate this column and has already sold it to the Los Angeles *Herald-Examiner* and the Orlando, Florida, *Sentinel*. Kisor's dedication to his trade and his hobby must be wearying for the man who figures he's the only deaf newspaperperson in the United States, but he doesn't seem to mind. “It's all an education,” he says, “and every day I learn something new.” ●

Events: March 19 - 25

MON

19

Blacksburg, VA: A Microcomputer Seminar and Trade Show, being held March 19-21, will focus on how a microcomputer can be used by all members of a family, particularly a farm family. General sessions on telecommunications and data-base management will be offered along with special sessions for agriculture, business and home uses. Contact: Adult Registrar, (703) 961-6247. Location: Virginia Tech's Donaldson Brown Center for Continuing Education. Admission: \$30 for the first family member, \$15 for each additional member.

Phoenix, AZ: The Third Annual Phoenix Conference on Computers and Communications will focus on the "Challenge of Change" March 19-21. Three tutorials on such topics as computer-aided design and local-area networks will be offered on March 19. A variety of papers on the main theme of change will be presented during the following two days. Contact: Susan Brewer, Honeywell, (602) 862-4371. Location: Adams Hilton Hotel. Admission: \$260 for IEEE members for the full conference; \$340 for nonmembers; \$160 for IEEE members for two days only, excluding tutorials; \$220 for nonmembers. Reduced rates available for students.

WED

21

New York, NY: Representatives from The Source and Newsnet will be among the speakers at the American Society for Information Science's Spring Information Seminar, entitled Micro Update — 1984. The seminar will focus on consumer-information services, applications for information management, software for libraries and information centers and using data bases. In addition, a microcomputer exposition and cocktail reception will feature the latest personal and small-

business computers. Contact: Carol Tschudi, New York Power Authority, (914) 681-6363. Location: Roosevelt Hotel. Admission: \$75 including full luncheon and wine.

New York, NY: The New York IBM Personal Computer Users' Group, a New York City-based group for users of IBM PCs and compatibles, will discuss local-area networks at their monthly meeting. Contact: (212) 533-NYPC. Location: Call for meeting place. Time: 6:30 P.M.

San Francisco, CA: Steve Wozniak, co-founder of Apple Computer, and Dr. Henry Tropp, a leading authority on computing, will be the guest speakers this night as part of a lecture series that will run each Wednesday through April 4. This series is being held in conjunction with the national Chips and Changes exhibition that is premiering at the Exploratorium till mid-May. Contact: Linda Dackerman, (415) 563-7337. Location: Palace of Fine Arts Theatre, 3 Lyon Street. Time: 7:30 P.M. Admission: \$1, free for Exploratorium members.

THUR

22



Bill Gates, CEO of Microsoft Corporation

San Francisco, CA: Bill Gates, CEO of Microsoft, will be the keynote speaker at the Ninth West Coast Computer Faire being held March 22-25. The Faire will

feature forums and regular conference sessions by other industry pioneers and leaders. Visitors will be able to try out new products at 300 company exhibits. Contact: Computer Faire, West Coast Office, (415) 364-4294. Location: Civic Auditorium and Brooks Hall. Admission: \$20 for all four days, \$12 per day.

Los Angeles, CA: A conference entitled Video Games: The New Creative Frontier will feature some of the industry's top creators including Chris Crawford, manager of Game Design Research at Atari; Joyce Hakansson, president of Joyce Hakansson Associates; and Bill von Meister, president of Control Video. They, and other speakers, will address the future of the video-game industry and the creative elements that make certain games successful. Contact: University of California Los Angeles Extension, (213) 825-9971 or (213) 825-9981. Location: Ambassador Hotel, 3400 Wilshire Blvd. Time: 8:00 A.M. - 5:00 P.M. Admission: \$185 general public, \$150 special student fee.

FRI

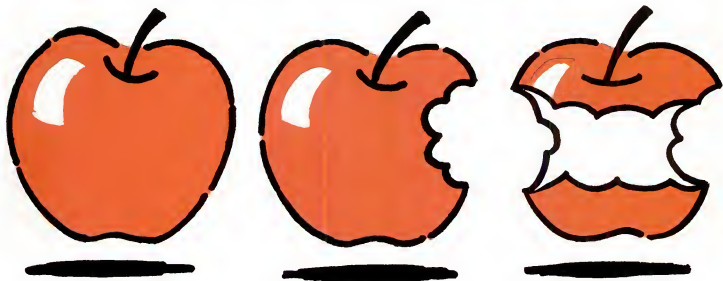
23

Cleveland, OH: Frederick Way III, from Case Institute of Technology, will give an address entitled "Computer Users and Misuses: A Prospective for the 80s" at the 1984 Computer Law Institute sponsored by the Bar Association of Greater Cleveland. Other topics to be covered include proprietary rights in software, software-licensing agreements and financial and tax considerations related to the acquisition of software and hardware. Contact: Carole Falcone, (216) 696-3525. Location: Stouffer's Inn on the Square. Admission: \$135.

This calendar offers free publicity for micro-computer events including users' group agendas. Nonprofit and educational organizations are encouraged to contribute. Please allow four to five weeks advance notice. Contact Barbara Gerk, Events Editor, InfoWorld, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.

Check with contacts listed this week for any schedule changes that might have been made.

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Lap models are getting loaded

The number of programs for notebook-size machines is on the rise

BY JIM BARTIMO
Senior Writer

Probably no one would have predicted that such a weighty after-market would spring up, but software for portable notebook-size computers is available in increasing quantity. Almost everything, from a data base to a typing lesson, now can be put onto these lap computers available from Radio Shack, NEC and Epson.

The Radio Shack Model 100, for instance, can run 8 application programs offered by Tandy and at least 15 more from third-party vendors. Among the packages Tandy offers are an investment-analysis tool, a statistics package, an electronic-calculator package, a graphics plotter, a Basic language tutor, an executive calendar and a space-alien game. Offered on cassette tape for loading via a tape recorder, this software is offered in addition to the word-processing, scheduling and Basic utilities resident in the Model 100's read-only memory (ROM).

One company that has invested heavily in the Model 100's success is Portable Computer Support Group (PCSG) of Dallas, Texas. This firm's Businesspak+ software features six separate applications. Write+ is a word processor capable of advanced formatting; Expsn+ is an 18 x 18 cell spreadsheet; Graph+ allows the printing of pie, bar and line charts; Telex+ is an enhanced communication package; and Put+ and Sort+ work together as a data base.

These applications are available on larger machines, and PCSG has had to make some adaptations to put them on a machine the size of the Model 100. The Businesspak+ software takes up only 3K to 5.5K of random-access memory (RAM) on the Model 100's limited memory and costs \$89.95 for all six functions. PCSG also markets some of its packages for the NEC 8200 series of lap computers and makes a package that will allow access to files on a remote IBM Personal Computer.

PCSG's Disk+ is one of two packages on the market that allow users to call their IBM while they are on the road. Once a modem connection is made, the Model 100 can display and manipulate files loaded into the IBM as well as upload more files.

The other package that performs this

function is Remote Control, developed by Sigea Systems for Kensington Microwave. Sigea president Harry Brawley believes that such packages will become popular for their ability to act as a supplement to the user's main computer, rather than as solo packages.

"Nobody in his right mind is going to do serious editing on the Model 100," Brawley said. "You have to upload it to a

their word processor at home once they're on the road."

Gottheil also noted that Lotus's new product, Symphony — which requires 320K RAM and enhances 1-2-3 by adding word processing, communications and an open-ended architecture — will also fit into the new breed of portables. Lotus could not reveal the name of the portable's manufacturer with which it is working due



At least 23 programs are available for the Radio Shack Model 100 lap-size computer.

bigger machine first. Most people who own a Model 100 also own a desktop system."

Noting that the Model 100 is about to be upgraded to the Model 200, Brawley believes a disk drive will eventually become available for the Radio Shack machine. PCSG said it is considering putting all of its software on disk for both the Radio Shack and NEC computers.

Small software houses are not the only businesses that believe portable computers will grow into value-added, bigger machines. Lotus Development Corporation and Software Arts are both planning to put their memory-hungry packages (1-2-3 and VisiCalc respectively) on as-yet unannounced portables.

"Integrated software such as 1-2-3 is the perfect product for the portable market," said Ezra Gottheil, manager of technical communications for Lotus. "People don't want to realize they've forgotten

to a nondisclosure agreement.

Software Arts — which is still battling VisiCorp for the right to VisiCalc — plans to put the spreadsheet on a similar, if not identical, machine to that referred to by Lotus. "Just as we had to be secretive about the Macintosh, we can't talk about the portable under development now," said Tracy Licklider, chief operating officer for Software Arts.

But Licklider gave some indications of what the next generation of machines will be like. In addition to having 256K RAM and IBM PC compatibility, the new portables will improve on today's screen size, sluggish CMOS processors, slow modems and a lack of removable storage media. "All five of these points will be addressed by machines coming out in the next year," Licklider said.

While the machines Licklider describes are similar to the GRID Systems briefcase-size Compass computer, the Compass

requires an AC outlet for any serious computing. "You need to break the power cord [to have a truly portable computer]," Gotthel said.

The super portables wait in the wings as NEC continues to develop software for the 8200 series lap computer, both internally and in conjunction with outside developers. Like the Model 100, the NEC

and salespeople, usually for under \$100.

Vertical applications are an obvious niche for a dedicated portable — witness Convergent Technologies' Workslate. The Workslate will perform spreadsheet analysis applications sometimes tailored specifically for the user by Convergent. The company is also rumored to be working on a dedicated word-processing portable

vertical applications, the HX-20 has been sorely lacking in common utilities. The initial word processor offered with the HX-20 was only upgraded with the release of Ski Writer in the past year, and it was only in the past few months that a communications package called EponLink was added. Prior to EponLink, communication with other computers was impossible. A spreadsheet, EponCalc, was also recently added to the HX-20.

Although a blackjack game is available from Epon, five games developed for the HX-20 by Neosoft of Arlington Heights, Illinois, and sold to Epon have yet to surface on the machine.

In fact, game software is sorely lacking for portables. Radio Shack, Epon and NEC all offer token game play, but no real challenges are found — perhaps owing to the portables' small screen.

There is one application almost all portables feature. With the minor hardware addition of a bar-code wand, software allows fast input of bar-coded information. Bar-code readers are especially useful in retailing markets where inventory can be easily tracked with a portable machine. For instance, a news dealer could keep track of this magazine's sale by passing a bar code wand over the code in the lower left hand corner of the cover. ●

Game software for portables is sorely lacking. Radio Shack, Epon and NEC all offer token game play, but no real challenges are found.

machine features resident word processing, communications and Basic, but it also runs some 45 additional packages on cassette tape. Included in the NEC packages are a tax planner, a data base, a time-management package and a financial analysis package. Packages from third-party vendors, such as PortaSoft Corporation of San Francisco, offer vertical applications for construction companies

which will be called Wordslate.

A machine that may have otherwise been destined to abject failure may be salvaged by the vertical applications market. The Epon HX-20, the first lap computer, can run independently developed software for calculating everything from flight data for pilots to construction bids for swimming-pool contractors.

While it features a handful of these

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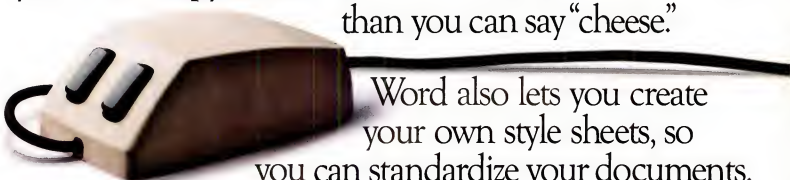
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MICROSOFT
The High Performance Software

Review: Cut & Paste

BY MARTY PETERSEN

Contributor

Cut & Paste, a \$50 program from Electronic Arts, is hyped as being a remarkably simple word processor for the Apple II. Its publishers would have you believe it is also a simply remarkable word processor. We think it is simply mediocre, performing just adequately, and not nearly as good a buy as some other low-cost word-processing programs.

Although with Cut & Paste you are able to use several types of formatting for your printed text, you can't make enough adjustments to give you the document you want. While this removal of options may make the program easier to learn, we don't think it will be worth the sacrifice in the long run.

The program does perform a passable job of taking care of the text you enter. The product features automatic word wrap, and you can also move in the entire left margin of a part of your text, which the program authors refer to as Block Indenting. Here is where you will encounter one of the program's annoying limitations: You can indent — and for that matter tab — only in increments of five spaces. You also cannot indent both the left and right margins at the same time.

You activate various functions within the program by selecting them from a "scrolling" menu bar displayed at the bottom of the screen. Only two main menus are used throughout the program. One permits you to select a function relating to the text. The other has choices relating to storing and retrieving documents.

The scrolling-menu idea is rather nice; it permits owners of Apples with either 40-column or 80-column screens to use the same structure to operate the program. Depending on the size of your screen, as many of the menu choices that will fit are displayed; those that don't fit can be reached by "scrolling" the menu sideways using the arrow keys. When you have placed the cursor on the menu item you want, you press Return to activate the selection.

As its name implies, primarily this program cuts and pastes text; that is, it allows you to take a section of your work and either pick it up and move it to another

point in the document or delete it. The Cut & Paste method for doing so is very simple — after you learn it — but not as straightforward as you are lead to believe. It certainly will take you longer than the 90 seconds its producers say it takes to figure out that there are *two* methods to cut and paste. Both methods require you to mark the text to be cut or moved by anchoring one boundary and moving the cursor with the arrow keys to highlight the rest of the text. Then you can choose to press Escape to activate the scrolling

menu and then select "cut," or you can simply press Control-C directly without going to the scrolling menu.

The material that is cut disappears from the screen and is stored temporarily in a special area of memory (a buffer). If you desire to paste this material somewhere else in the text, you move the cursor to the desired insertion by pressing the arrow keys, then either pressing Control-P or going to the scrolling menu and selecting "paste." If you subsequently cut another part of your work, the previously cut material stored in the buffer will be wiped clean.

It would have been nice for Electronic Arts to have used the icons (scissors and paste pot) it has used well in some of its other programs. In addition, many users will undoubtedly confuse the Control-C "cut" command with the more standard use of Control-C, which is to bail out or abort a program.

Printing is where you will find most of Cut & Paste's other limitations. The program only works if the printer-interface card is in slot No. 1. Only those combinations of cards and printers tested by the publisher can be used. There are no options within the program to tell it which of these combinations you have, or which characteristics of the combinations you want to use. We could not use any printer features such as underlining, boldface print or any printer-control characters (except for adding or not adding a line feed after a carriage return).


When printing, you do have the option of setting margins and paper sizes in inches, a nice touch for those who don't think of margins in terms of characters or page lengths in terms of lines. Also nice is Cut & Paste's ability to handle widows, those single lines at the bottom or top of a page. They are automatically eliminated as the document is printed.

Headings on a page are limited to one line, centered and no more than 38 characters. You can number the pages, beginning with any page number you specify, but you can't change where the number will appear. There is no justification, other than left-justification. You cannot align the right margin or center text, and there is no way of underlining.

The documentation has little straight talk on how to use the program. There is no index, making it difficult to find

InfoWorld
Report Card

Cut & Paste



	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Summary: Although this is a \$50 home word processor, not expected to do everything, Cut & Paste does not give you enough options when formatting your text. If you plan to do anything more involved than letters or other tasks normally delegated to a typewriter, there are much better products in the same price class.

Product details: List price, \$50. Available for Apple II Plus or IIe running DOS 3.3. Requires 48K random-access memory; one disk drive; supported printer and interface card; 80-column card optional. Published by Electronic Arts, 2755 Campus Drive, San Mateo, CA 94403; (415) 571-7171.

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information about printers and interface cards, how to connect them or how to adjust the paper so that the top and bottom margins come out even. The documentation just doesn't give you what you need, unless it happens to be the philosophy of the package and the life history of its authors.

The document disk, which includes some canned documents you can call up as form letters and change, can be copied; but

you cannot copy the program disk. The product is warranted for 90 days, during which time defective merchandise will be replaced without charge. Beyond that a defective disk will be replaced for \$7.50. The implication of the terms of the warranty is that you can only replace a defective disk, not purchase a backup disk.

The ads for Cut & Paste proclaim: "If you can learn to use this word processor in 90 seconds, can it really be any good?" We

echo the publisher's sentiments. True, this is only a \$50 program. However, we have tested other home word processors with similar price tags whose features are superior to those of Cut & Paste. Cut & Paste is little more than a glorified typewriter that can knock out a memo or a letter to Mom, but cannot accomplish much serious work that involves even a moderate degree of customized formatting. ●

Review: Knoware

BY ALAN J. FRIDLUND

Contributor

Knoware is one of the most imaginative, motivationally sound introductory tutorials on the market for the IBM PC. It is a delightful initiation to the IBM PC for those who are computer-shy or otherwise resistant to computers.

Its debut has been accompanied by splashy ads and a trumpeting of the people involved in the venture: Archie J. McGill, who left as president of AT&T's Advanced Information Division to join the company; Thomas B. Towers, former marketing vice-president for VisiCorp; and the program's authors, two professors in MIT's Alfred P. Sloan School of Management, John J. Donovan and Stuart E. Madnick. Happily, all this hoopla is not a front: Knoware delivers.

Knoware is not like other tutorials, which spend their time inundating you with technical information. It doesn't give you much knowledge of, or practice with,

standard PC-DOS commands. It doesn't tell you what a RAM chip or a disk drive is. And it won't teach you how to program. For this information you will need to go elsewhere.

Then why the fuss? Knoware is for you if you don't know *anything* about computers and probably don't want to learn anything about them—but do want to use them for specific applications in your profession. As such, if you use Knoware you will not gain much "computer literacy," but you will probably lose your fear of computers.

The Knoware tutorial comes on three single-sided (160K) diskettes. There is no manual, but there is a four-page foldout sheet showing you how to insert the Knoware diskette in the left-hand drive and turn on the PC. Knoware requires an IBM PC or PC XT with at least 128K of random-access memory (RAM), DOS 1.1 or a more recent version and a monitor attached to the IBM Color Graphic Adapter. The latter requirement may be a severe liability, since most business-

oriented PCs are purchased with the IBM Monochrome Display. The Knoware package notes this requirement only in fine print; it should be more prominently displayed on the package.

Knoware will strike you as more of an adventure than a tutorial. This is the adventure: You start as a clerk in the Knoware company. In order to be promot-

InfoWorld Report Card

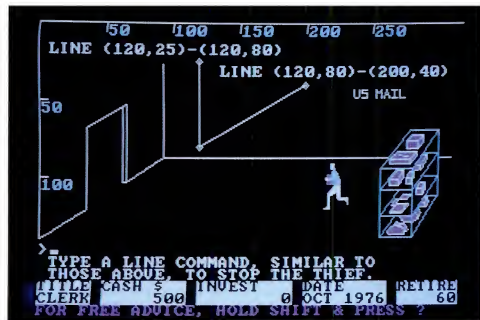
Knoware



	Poor	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Summary: An educational and training program aimed at reducing computer phobia, Knoware is simply one of the best such products you could buy. It would be improved, though, if its well-conceived training were accompanied by documentation that gave you a better idea of how to apply your knowledge when you're through.

Product details: List price, \$95. Available for the IBM PC running PC-DOS 1.1 or a more recent version; Apple II Plus or IIe running DOS. Requires 128K RAM, color graphics adapter (for IBM); 64K RAM (Apple); one disk drive. Published by Knoware, Inc., 301 Vassar Street, Cambridge, MA 02139; (617) 576-3825.



Knoware uses an adventure-game approach in its tutorial program for the IBM PC.

ed within the company, you have to pass muster on tasks that are, lo and behold, similar to common computer applications. By the time you have become chairman of the board, you have familiarized yourself with the PC keyboard; written a Basic graphics command; written a Basic arithmetic statement; solved a problem on a VisiCalc-like spreadsheet; corrected a

**Knoware is not
like other tutorials,
which spend their
time inundating
you with technical
information.**

letter using a WordStar-like word processor; and created and retrieved records on a dBase II-like data-base program.

Extra functions enable you to make pie and line graphs, compute your "bio-

**BEFORE BEGINNING, WE WOULD LIKE
TO REVIEW FOUR KEYS ON THE COMPUTER
KEYBOARD.**

**FIND AND PRESS THE ENTER KEY.
(THE KEY POSITION SHOWN BLINKING ABOVE)**

Knoware's keyboard orientation: the correct key is in red.

rhythm" and calculate an IRA account. Further, you can invoke the Knoware applications independently when you have mastered the game and want additional practice.

As the diskette is booted, you are treated to a colorful and musical introduction that shows birds flying over the Knoware logo. Superb graphics (including your name in dancing letters) greet you with each promotion. The keyboard orientation and specific applications follow.

As you are promoted, you can invest your salary and cash bonuses in the stock market. The program keeps a running account of your investment successes.

The beauty of the learning approach taken by Knoware is that success is guaranteed. The program prompts you to make the correct response, and if you make errors, the program guides you around them. Professors Madnick and Donovan exist as consultants with the game — when you ask for them with the

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Question Mark key, they give you varying levels of advice as you require it. The use of "corporate promotions" and "cash bonuses" as rewards for success guarantees that you'll be motivated and excited by the adventure.

Crucial to any tutorial intended for the computer novice is the program's error-trapping. If you're new to computers, causing a program to fail is a crushing experience. You'll have no such worries here: the error handling in Knoware is matchless.

For example, in the spreadsheet program (Knowcalc), you are asked to change your "April salary." If you try to type a change in the wrong cell, the program prompts you in bright type to "Press right arrow key" to locate the cursor properly.

Knoware screens your keyboard input

**Knoware screens
your keyboard
input exceedingly
well. We could
not cause the
program to fail.**

exceedingly well. We could not cause the program to fail or otherwise defeat its error handling.

Should you have any difficulties with the program, the manufacturer provides telephone support; since the program ran flawlessly, we had no need to contact Knoware.

Knoware falls short in one area — once you have finished the adventure, you are literally left "nowhere." This is a severe documentation problem. If you're a computer novice, you'll want to know that the skills that you have learned have direct application. Knoware should include a booklet you can read after you finish the adventure (perhaps called *Getting Somewhere after Knoware?*), one that tells you about available word processors, spreadsheets and so on. It could be self-paced and self-reinforcing, like the program. At the very least, the program or documentation should include references for further reading.

This lack of follow-through should not detract from the important contribution of the Knoware program. It is, very simply, the best tool for reducing computer-phobia you can buy. ●

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Your local authorized IBM PCjr dealer proudly invites you to see this bright little addition to the family. For the store nearest you, just call 1-800-IBM-PCJR. In Alaska and Hawaii, 1-800-447-0890.



Capsules

Every week, we present a summary of significant software products we have reviewed over the past months, including the date our full review appeared. The list will be updated periodically to reflect the rapid change in the software industry.

Atari Logo (Atari) — Despite its speed and certain error-handling problems, this is a solid example of the popular educational programming language. (1/23/84)

Atari Writer (Atari) — Adequate for casual word processing, but you can't use this to write documents longer than 20K or display more than 38 characters across. (11/14/83)

BPI General Ledger (BPI Systems) — A comprehensive accounting package, it covers all the financial bases, but speed, documentation and support are problems. (2/20/84)

BPS Business Graphics (BPS) — Business users who need a variety of graph-making abilities at the office can't go wrong with this business package. (10/31/83)

Condor 3 (Condor Computer) — Data-base management is less flexible and slower than dBase II and almost as expensive. But English commands and copious help make it a choice for novices. (2/20/84)

DB Master (Stoneware) — In response to user feedback, the latest versions of this data-base-management system are more flexible and easier to operate, especially in the area of report generation. (12/26/83)

DR Logo (Digital Research) — An excellent example of this educational programming language. Colorful and easy to learn, it should tempt those who have never used a computer. (2/13/84)

Friday! (Ashton-Tate) — An easy-to-use file-management and reporting program suffers from a lack of speed due to a design suited to both 8- and 16-bit machines. (10/31/83)

KnowledgeMan (Micro Data Base Systems) — A relational database manager based on IBM's mainframe Structured Query Language, the program is suitable only for experienced users. The documentation is a big drawback. (2/6/84)

Knoware (Knoware) — Intuitively designed and visually attractive training program aimed at reducing computerphobia for professionals. One of the best such packages. (3/19/84)

Lotus 1-2-3 (Lotus Development) — The first integrated package is a super spreadsheet with speed, power and graphing and data-management functions. Deservedly king of the hill. (1/30/84)

Magic Desk I (Commodore) — An attempt at placing an icon-based integrated system on a low-cost machine, only one of the several functions is now implemented. It is only passable at creating documents. (2/13/84)

Offix (Emerging Technology Consultants) — Integrating electronic filing cabinets with limited word processing, this visual program is an adequate low-cost file manager that has some practical limitations. (3/12/84)

PFS:Write (Software Publishing) — Simple-to-use, inexpensive word processing not cluttered by seldom-used features. (11/14/83)

Power-Base (GMS Systems) — A complete, effective, easy-to-use data-base system that you can use productively in a short time. (3/12/84)

R-base 4000 (Microrim) — A relational data base with its roots in minicomputers, it comes out remarkably well on micros. It is fast, flexible and combines ease for the novice with power for the expert. (12/26/83)

SuperCalc3 (Sorcim) — Integrated software that turns a first-rate spreadsheet into an impressive collection of modules including color graphics and data management. (1/23/84)

SuperWriter (Sorcim) — This word-processing program excels at helping you create complicated document formats and includes a spelling checker. It has great error handling. (2/27/84)

TKISolver (Software Arts) — Version 1.2 alleviates problems found in previous versions of this equation-solving tool. It is much faster and its Help facility is a better learning tool. (1/23/84)

Visi On (VisiCorp) — The long-awaited applications environment

measures up, with good visual interaction, rapid transfer of data and good ease of use. For large spreadsheets, though, it can be slow. (3/12/84)

Word (Microsoft) — A genuine step toward creating software for tomorrow's hardware. We have some philosophical differences with the tile-window interface, but it formats documents any way you could possibly want. (12/12/83)

Word Vision (Bruce and James) — One of the few low-cost word processors with all the bells and whistles. The publisher has taken great pains to make it easy to use. (12/19/83)

Responses

Software standards

With all the talk of standards for hardware, there is not enough concern for software standards and the user.

The standardization by the industry of menus, the access to commands and saving reports or data to disk would help most of us who have to spend excessive amounts of time reading the owner's manual to learn the basics. After spending five minutes with a new piece of software, I refuse to go any farther if I cannot get a reasonable working relationship going without the manual. For instance, PFS: File uses Control-C to accept the first menu screen. This is different from most other packages where the Return key does the trick. Why not a standard?

David Stover
Littleton, CO

Author, Author

Why do you consistently leave out a significant piece of information about each program reviewed: the name of the author(s)? In fairness to you, I understand that in some instances the publisher neglects to put this information in the packaging. In all but the most extensive team efforts, this should not be tolerated. A book publisher would never release a product without an author's name!

David Balsam
Berkeley, CA

InfoWorld welcomes comments about its software reviews from both readers and software publishers. Please address your correspondence to the Technical Editor, InfoWorld, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.

Electronic Antics

Oil hunt on the IBM



BY SCOTT MACE
Senior Writer

For one reason or another, the best-selling games for the IBM Personal Computer have been adventure games, especially Zork and others from Infocom. They are text-based and don't require a color graphics card or monitor.

A vast, untapped area of game software for the PC is simulation software. The PC and its compatibles have enough memory and graphics capability to create some memorable simulated worlds. Like adventure games, they would be interactive and complex, but they could also include color graphics and sound.

So far, I've only looked at one simulation game for the IBM that really fills the bill, but the game is so imposing and complex that it took me months to get around to really playing it.

The game is Oil Barons by Epyx, and while it has a number of flaws, it offers an interesting peek at what's possible. It requires a PC with 64K, color and advanced Basic. (According to a spokesperson for Epyx, a version for the Commodore 64 was shipped in February.)

The first thing different about Oil Barons is the game box. It's huge, the size of most bookshelf-style board games. This makes sense, because Oil Barons is a hybrid, part board game and part computer game. A playing board and hundreds of playing pieces, some representing oil derricks and others representing ownership markers, are included along with the instructions and two game diskettes.

The Oil Barons board, which consists of six interlocking sections, measures 30 x 20 inches when assembled. It's a grid measuring 50 by 40 with 2,000 squares total, much too large to fit on the PC screen.

Each of the 2,000 squares on the grid has a photograph on it, representing one of

12 possible terrain types, such as desert, plains, ice pack, ocean, coastline, mountains, jungle and city.

The object of this game, for one to eight players, is to explore and drill for oil all across this vast map. Games can last anywhere from 1 to 30,000 turns. You can play the shortest games in two hours and the longest games can last months or — possibly — years.

The computer's job is to generate an oil field underneath the map, which is different every game. The computer then assigns four starting parcels (a parcel is a grouped number of squares) to each player and conducts the financial transactions of the game. It also assigns more parcels as the game progresses.

Players are on the honor system to keep track of their holdings. As with all board games, the potential for cheating exists in Oil Barons. Nothing prevents you from drilling on someone else's property and withdrawing oil — nothing, that is, except your knowledge that the property is previously owned.

Dependence on a board creates other problems. Any player, in anger or clumsiness, can scatter the playing pieces, making reconstruction of the board difficult. Fortunately, the program produces a computer representation of the board, which all players can survey to check which holes are producing oil and which are dry holes. Also, each square need only be surveyed once, and this special computer map will note which ones have been surveyed but not drilled. But it's best for everyone to take notes on what they've surveyed and which parcels they own.

Let's assume you are all honest, careful souls who can coexist with these conditions. Another handicap with Oil Barons is that it's slower than molasses. The program, designed and written in Basic by Tom Glass, includes two disks, one for start-up and one for use during game play. There are lots of messages to "stand by" as the program moves from one activity to another. Patience is a virtue here.

Once you get into Oil Barons, it's fascinating. The chances of hitting oil are slim. Luck is a big factor, just as in the real world.

Oil Barons includes a reasonable simulation of the exploration process. If a player chooses to survey a parcel, the screen clears, and a graphic representa-

tion of the square's terrain appears. Trucks or boats drop explosive charges and survey cables. After a short countdown, the charges explode, and the game evaluates the simulated readings from the earth. Players then get a number representing the probability that oil is in that square.

If a player chooses to drill, he pays an amount of money (as with surveying) and a derrick appears. The player can drill to 25,000 feet or less. If the well is a dry hole, the player gets a message such as, "You hit Kryptonite!" or "At the maximum depth you hit caveman bones!"

If the drill is successful, that well begins producing income for the player. The player can also survey another parcel during the same turn, but squares adjacent to the well may not contain oil.

Naturally, it costs more to drill at sea or in the jungle than it does in the desert. Unlucky players can go into debt and end up paying hefty interest charges to the bank each turn.

Another hazard is the possible environmental damage done by oil exploration. The act of surveying a forest requires building an access road or cutting down timber. After exploration, the computer asks the player if he wants to replant the cut area, always at some stiff cost. If the player refuses, he risks incurring the wrath of the government or environmental groups, which can file for damages.

If a player's oil company is sued, that player has several (mostly humorous) choices. He can choose from a range of lawyers, from "expensive but good" to defending himself, which is "risky." Once while playing, my company was sued, and I gambled on a public defender (who worked for free). Amazingly I got a not-guilty verdict from the jury.

You can also try to bribe the judge, but you run the risk of an investigation for bribery if you do that.

Each round also has a point where players are paid the royalties from their active wells, with a check typed out on the screen and suitable sound effects.

Oil Barons is intriguing despite its slow speed and dependence on the game board. There are nine different options of game play, including some versions that shorten the playing time. The winner of the game, not surprisingly, is the one with the most money. ●

New Programs

Protect your dBase II files: A package dubbed dSecur is said to be able to provide multiple levels of protection for dBase II programs. Only two program statements need to be added at the beginning of a dBase program in order to implement the protection scheme.

A name and password are assigned to any authorized user, who must provide them when trying to run the programs or certain functions of the programs. If an operator attempts to perform a prohibited function, the computer will refuse to do so and will exit from dBase II.

The dSecur program runs on the IBM PC. The \$100 purchase price also buys you documentation, installation instructions and hot-line support. Microclear, 342 Madison Avenue, New York, NY 10017; (212) 867-0481.

Model 100 protection for wire transmission: Secure is an assembly-language program for the Radio Shack Model 100 that prevents unauthorized use of the machine, encrypts and decrypts files and allows the user to eliminate the display of sensitive file names.

Secure can require the entry of a password in order to operate the machine. Another keyword can be used to encrypt data files before they are transmitted to another site. Thus, a user will need to know both the machine's password and the special keyword in order to access scrambled files. The encrypted files are still in ASCII form and can be sent through conventional modem lines.

The program requires 821 bytes and costs \$39.95. Secure Systems, P.O. Box 30, Blue Bell, PA 19022; (215) 567-7600.

Hardisk Accounting enhanced: The Hardisk Accounting software from Great Plains has been enhanced in version 3.0. It is composed of modules for General Ledger with Financial Reporting and Budgeting, Accounts Receivable, Accounts Payable, Payroll and Inventory Management with Point of Sale Invoicing.

More than 90 improvements and 15 additions have been made to the programs, according to the firm. New manuals, with pages indexed to screen displays, are also part of the enhanced package.

The products are available for IBM PC, PC XT, Compaq, Corona, Columbia,

Eagle, Apple IIe, Apple III, Texas Instruments Professional and Wang Professional computers. A companion program, Rapid Transfer, can transfer accounting data from the modules directly to spreadsheet programs such as Lotus 1-2-3, VisiCalc and Multiplan.

Great Plains Software, 1701 S.W. 38th Street, Fargo, ND 58103; (701) 281-0550.

Information in a nutshell: Leading Edge has released the Nutshell Information Manager, a package the publisher claims will bridge the gap between simple filing systems and complex data-base-management systems.

Available for the Leading Edge PC or the IBM PC and compatibles, the Nutshell program is supported by visual instructions provided by a learning disk. Menu choices are visible at all times and can be remembered by the program to permit easy resumption of interrupted tasks.

Fields can be "virtually unlimited," the firm says, allowing more complete records to be kept. Every word is indexed, and any word can be found by using its first two letters. The company calls this technique prefix matching. Word-processing-style functions such as word wrap, insert, overstrike and delete make entering data easy.

Files may be sorted in any order and are cross-indexed. Figures and formulas may be entered, calculated and automatically recalculated when a new number of consequence is added to the file.

Leading Edge Products, 55 Providence Highway, Norwood, MA 02062; (617) 769-8770.

Have your Pick on the PC XT: The Pick operating system, long available on certain minicomputers, will be unveiled in an IBM PC XT version by Pick Systems. The system will provide multiple-user capability with virtual-memory management for the machine.

The product is basically designed as a "data-base operating system," incorporating a high-level programming language to create data-base-management systems and provide high-speed, direct-memory access to any desired information. The \$495 version of the product will be able to share the XT's hard-disk drive with any other operating system, which means use

of the Pick system need not displace other operations on the IBM PC.

Pick Systems, 17911 D Skypark Circle, Irvine, CA 92714; (714) 261-7425.

It's mailed in pictures: The ITSoftware series now has two additional family members that are designed to transfer documents and create business graphics. The IBM PC-compatible program set now consists of ten programs for everything from word processing to filing.

ShowIT provides the user with the ability to generate pie charts, bar charts and graphs. In addition, three-dimensional pie charts, pyramid charts and slide-show preparation are also facilitated by the program. When combined with the database-manager KeepIT, ShowIT can be used to create interactive training modules.

MailIT is a document-transfer program that provides communications between IBM PC users or between host mainframes and micros. Password control and mail-list services are also provided. ShowIT and MailIT are priced at \$250 for single copies; MailIT is available at a discount when more than one copy is ordered at a time.

ITSoftware, P.O. Box 2392, Princeton, NJ 08540; (609) 799-7500.

What's in a name: It seems the People's choice programs — Joe's Writer, Fred's Filer and Jack's Calc — have proven a bit too generic for publisher Creative Software. The company has announced it is changing the recently announced monikers to, respectively, Creative Writer, Creative Filer and Creative Calc.

"While the series got a fantastic reception at CES, people didn't seem to like the names," said Elliott Dahan, vice-president of marketing.

The newly titled products, which otherwise remain the same, are available for the Commodore 64, IBM PC and PCjr at \$49.95 each.

Creative Software, 230 East Caribbean Drive, Sunnyvale, CA 94089; (408) 745-1655.

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— Compiled by Christine McGeever

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BUSINESS IS BOOMING FOR COMPUTER-REPAIR SHOPS

Companies ranging from major corporations to television-repair shops are realizing there is a gold mine in fixing computers.

BY KATHY CHIN
Reporter

For years a broken microcomputer had to be returned to a dealer or manufacturer for repair. Now the business of repair is becoming so big that owners can call a computer doctor to make a house call, diagnose the problem and put a technical bandage on the problem right away.

Microcomputer repair shops that are primarily geared toward businesses are cropping up across the country. The high-priced repair services are being offered by companies ranging from major corporations that hope to corner a new market to television-repair shops that realize there's a gold mine in fixing computers. "It's a myth that computers don't break," says Earl Humphreys, president of Computer Doctor in New York City. "Users may abuse the machines, or the machines may be defective."

By the end of 1984, third-party computer-repair businesses, not counting dealers and manufacturers, will earn \$951 million annually, according to International Data Corporation (IDC) in Framingham, Massachusetts. The market will be worth \$2.4 billion by the end of 1988, reports the research firm.

Traditional mainframe fix-it shops that have been in the game for years are now mending micros. "We know there's pressure and that we can't afford to rest on our laurels," says John Puccini, manager of new products and services for Sorbus Systems of Frazer, Pennsylvania, a concern that has repaired computers since

1959. Sorbus started servicing personal computers three years ago.

"The opening in the market was obvious, but we didn't know who the users were, where they were or how to reach

the small-computer stores is the potential to use the Xerox name to attract large corporate-service customers.

Honeywell has taken a different approach in entering the repair market. It

'It's a myth that computers don't break. Users may abuse the machines, or the machines may be defective,' says the president of one repair service.

them. But we wanted to quickly enter the market," says Puccini.

By the end of 1984, Sorbus figures to rake in over \$150 million in total earnings, 5% of which will be related to micro repairs. Puccini predicts that percentage will double as people use their computers more often and as more micros continue to invade homes and offices.

Well-known vendors such as Bell and Howell, Xerox, Western Union and ITT are all taking a stab at the business. Each expects to use quality instead of price as the cornerstone of its marketing. By last November, Xerox had signed up 2,500 independent retail shops under its Americare service program. Under the program, Xerox technicians will heal the ailing machines, relieving the burden of computer-store employees who need to be better salespeople rather than expert technicians. Xerox claims the benefit to

has allied itself with Coleco as the official service representative for the Adam home computer. And by April the corporation will have established 35 repair centers across the country. "Our primary thrust will be in the office, data-processing and telecommunications market," says Dick McDermott, director of marketing and sales for Honeywell.

The home market will not be pursued by these centers, he stresses, adding that the Coleco deal is not representative of the firm's plans. "It was a primary opportunity for us to implement our service-center strategy. The combination just happened to fit. We were capable of offering the type of service they needed."

It's not all wine and roses for repair providers, despite the seemingly unlimited market. Ron Schugan, an analyst at IDC, estimates a shakeout in the repair industry could occur within two years. Because of

that possibility, some entrepreneurs are setting up computer-repair franchises that will offer a smorgasbord of services at more affordable prices than their corporate brethren. These franchisers are aggressively competing for customers by offering on-site repair, annual maintenance agreements and overnight service.

"When I first investigated this market, I could not believe what a void there was," says Humphreys. "Most dealers are good at sales, but service is nasty business. To the product dealer, it's an evil." Specialty stores view computer repair as more of an obligation, rather than a service, he says.

Computer Doctor's two-year efforts in computer repair have been so successful that the firm is expected to make its initial public offering of stock within a month. Humphreys, who has spent a decade in the office-products industry, says that micros should be treated no differently than telephones and copiers. "The computer is no longer a 'hackers' product. Now it's a business tool."

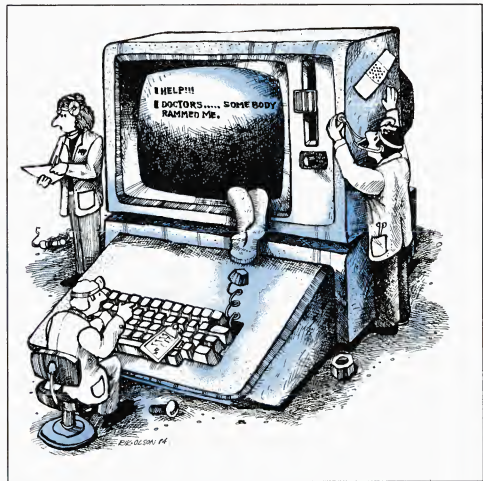
Computer Doctor's prices are slightly lower than those charged by manufacturers, but the services are not cheap. Costs are generally less at third-party sites such as Computer Doctor because less expensive labor is available, Humphrey says.

Computer Doctor aims at individual customers and small businesses. The firm lures customers by offering attractive on-site repair support. To Humphreys, it's an obvious advantage. "Not too many bring their telephone or copier in to the shop to have it repaired. Anyone who doesn't want to offer on-site repair will just be fighting the market."

Computer Doctor provides carry-in service as well as on-site. Those who prefer to carry computers or printers into the Computer Doctor's offices are guaranteed overnight repair of their machines.

compete with IBM in the Fortune 1000 territory. IBM supports only its own machines, though, so Serviceland's strategy is to provide tune-ups and overhauls for

obtaining parts harder for single-shop owners. "The little guy consists of only the one- or two-man operation. The small dealer just does not have the resources or



IBM PCs, Apples, Radio Shack/Tandy machines and Corona PCs. "We estimate we can capture 5% of the market. Only 5% — that's all we're asking for," says Harmon.

"We want to combine two things,"

the contacts compared to the big guy."

Small repair shops are already having trouble. Not only do these firms have to offer competitive services and prices, but they must also keep up with changes in technology. "Training these people is an immense problem," says Puccini of Sorbus. And although a company may boast service for a wide range of computers, it may still be difficult to keep enough spare parts on hand.

The common thread linking big and little operations is the concept of maintenance contracts. "Everyone's going to try to sell you a contract," says Schugan. "Most of the companies live on contracts."

Mention maintenance contracts to computer-repair reps, and they'll rattle off figures faster than they can say their own names. Each service company offers a different contract with a price that's dependent on the type and the number of computers and peripherals owned. There are monthly fees, biannual and annual fees. A monthly contract with Sorbus to service the IBM PC costs \$30. Prices of contracts are coming down, says Puccini. "For \$30, a couple of years ago, all you could get

The intimate relationship between the neighborhood computer-repair store and the computer owner may not survive the onslaught of chain stores.

Serviceland, which opened last August in Tazana, California, has already embarked on the franchise warpath. By the end of the year, president George Harmon hopes to open 82 sites in 17 states. Like Computer Doctor, the firm offers on-site repair and carry-in services. But unlike the New York company, Serviceland is geared toward Fortune 1000 corporations.

The firm is well aware that it must

says Ken Patrick, vice-president of finance, "the professionalism of the corporate-service approach and the personal touch of 'Ma and Pa' stores."

The intimate relationship between today's neighborhood computer-repair store and the individual owner may not survive the onslaught of chains and behemoth conglomerates. Schugan points out that a lack of resources makes

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Printer Port	YES	OPTIONAL	YES	OPTIONAL
Communication Port	YES	OPTIONAL	YES	YES
MS™/DOS/BASIC®	YES	OPTIONAL	YES	OPTIONAL
System Expansion Slot	YES	YES	YES	YES
Typical System Price	\$2995	\$3843	\$4995	\$5754

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Note that TeleVideo's ergonomic superiority over IBM extends from fully sculptured keys and a comfortable palm rest to a 14-inch, no glare screen that tilts at a touch.

THE BEST MICROCHIPS.

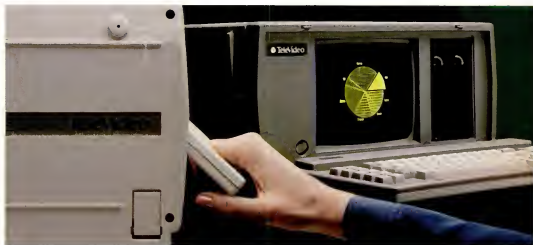
What is perhaps most impressive about the TeleVideo IBM PC Compatible can be found deep within its circuitry. We use the same 8088 central processing unit that runs an IBM PC. But we also employ new

VLSI (Very Large Scale Integration) microchips that are designed and built exclusively for TeleVideo.

These interface more efficiently with the powerful 8088 and yield numerous benefits.

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Fewer circuit boards to cool also allowed us to eliminate the noisy, irritating fan IBM and most other



THE BEST PORTABLE FOR THE BEST PRICE.

Features	TPCII	COMPAQ
High Capacity Storage	Yes	No
2nd Disk Drive	Yes	Optional
Quiet Operation	Yes	No
Ergonomic Display	Yes	No
Communication Port	Yes	Optional
International Power Supply	Yes	No
MS [®] DOS 2.11	Yes	No
Typical System Price	\$2995	\$3710

PCs force you to put up with. And TeleVideo compatibles accept any IBM hardware options without modification.

THE BEST LINE.

But the Tele-PC is only one element of the TeleVideo IBM PC Compatible line.

The TeleVideo XT is the best hardware for users of popular IBM XT software who would appreciate an extra 10 megabytes of storage capacity along with the advantages listed on the preceding chart.

As the chart above demonstrates, our portable IBM compatible computer, the TPC II, is far and away better hard-

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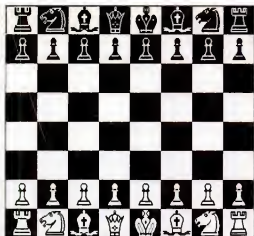
Our compatibles are available at participating ComputerLand and Entré (call 800-HI-ENTRE) dealers or you may call 800-538-8725 for the dealer nearest you. CA408-745-7760

Before you invest, make a few simple comparisons. You'll find that TeleVideo—not IBM or COMPAQ—has the best hardware for the best software. At the best price.

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serviced for a month would be a dumb terminal."

ServiceLand offers 6-month and 12-month contracts. The annual contract prices are usually between 5% and 10% of the system's list cost. The price includes unlimited on-site repair.

The benefit of an agreement is that it provides savings in the long run, say vendors. To hire an independent technician may cost a business \$60 to \$100 per hour. On-Line, a repair service in San Jose, California, charges its customers at least \$75 an hour if the serviceperson goes to a business site or to someone's home, and the client must pay for a minimum of two hours labor. If users bring the computer into the shop for repair, costs run \$60 an hour for labor and parts. The turnaround time is anywhere from three to five working days.

Disk failure, printer failure and operator errors are the three major reasons for service calls. "Sometimes a customer just messes around with a unit or spills something on it," says Mike Killingsworth of On-Line. "There are a million things that could go wrong." Printers are, by far, the hardest to repair. A typical printer repair may cost as much as \$140 to fix at On-Line.

Although maintenance contracts are popular among businesses, individuals are more likely to bring their systems into a shop for repairs. The prices for walk-in service for these customers will be lower at franchise or independent stores than they would be at manufacturers or dealers.

Despite the growth in the computer-repair industry, users with home computers purchased for less than \$1,000 will find obtaining service difficult. Most repair stores fix IBM, Apple, Kaypro and Radio Shack systems. People who own Timex/Sinclair machines or Commodore 64s will have a harder time reaching a serviceperson. "These are disposable computers," says Schugan. "People who find out the repair costs would have a hard time swallowing the service rates."

For many, it simply will not be worthwhile to pay more for repairs than for the machine itself. Even repair dealers tell customers to buy another unit. Humphreys of Computer Doctor says, "We get a significant number of calls wanting service for \$300 computers. We even recommend to them to throw it away, but they still want it repaired. We're watching the home market like a hawk."

And so are other repair operations. "The home market will hit in the next few years," says Puccini of Sorbus. "It's all dependent on the application. Once communications and information services make computers a necessity for the home, then it will be necessary to offer repairs." ●

Review: Compaq Plus

BY STEPHEN SATCHEL

Contributor

Need the power of an IBM PC — and lots of disk storage — when you're on the road? If so, the Compaq Plus is for you. With its 10-megabyte, built-in hard disk, you can collect and process enormous amounts of information on the spot.

Because our review of the original Compaq portable (November 7, 1983) is generally applicable to the Compaq Plus, this review will concentrate on the performance and benefits of the 10-megabyte Winchester drive. We base our perceptions and opinions on over 200 hours of usage during more than 300 miles of travel over Illinois' winter-damaged roads. The Compaq Plus sat on desks, coffee tables, drafting tables, restaurant tables, workbenches and, on one occasion, a chair! Throughout this ordeal, the machine worked flawlessly.

The original Compaq was designed to resemble the IBM PC as much as possible. The Plus does not mimic the IBM PC XT as closely. Though the latter two computers' disk drives differ extensively, the Plus' software allows it to run IBM's PC-DOS 2.00 without problems. This means that most programs written for the XT — except those that are tailored specifically for the internal circuitry of the IBM machine — should run without a hitch.

You're not necessarily going to find your favorite package running on the Compaq Plus, however. We attempted to run Context Management System's MBA, a spreadsheet system that runs under UCSD Pascal, on the machine. (We must stress that Context makes *no* claims that its package will run successfully using a Compaq Plus hard disk.) It almost worked, but we could not get the data-management facility to function properly. We also contacted several companies that provide operating systems for the IBM PC XT about compatibility with the Compaq Plus. The most common response was: "Of course we talk to the hardware directly!" The moral? Try before you buy. You should not have problems with software that runs from floppies; you need to check only those that require a dedicated portion of the hard disk.

The heart of the Compaq Plus is an Intel 8088 microprocessor, with MS-DOS

2.02 as the operating system. The machine comes with one floppy-disk drive, one hard-disk drive, either 128K or 256K of random-access memory (RAM), green-phosphor/monitor, RGB (red-green-blue) and composite video outputs for a true color monitor or RF (radio frequency) modulator and a Centronics parallel printer port. Unlike the XT, no asynchronous communications port is provided with the Compaq Plus. A light-pen interface is

supplied, but it requires an external monitor, and the phosphor used in the built-in monitor will not permit a light pen to work properly. Two open board slots are provided for add-ons.

The only differences between the Plus and the original appear to be the addition of the hard drive, the controller for the drive and new ROM (read-only memory). In fact, Compaq offers an upgrade kit for owners of the original machine, which contains just the above-mentioned items.

Setting up the hardware was as easy a process as you will find with any personal computer. Just remove the computer from the box, plug it in and turn it on! There is no special set-up, no restraining pins or screws to remove, no program required to "park" the hard disk and no opening the machine.

Formatting the hard disk and loading the operating system onto it was simple, but took about an hour to complete. Then we spent four hours filling up and structuring the hard disk from three boxes of floppy diskettes.

The improvement in the speed of data transfer realized with the hard disk was about the level we would have expected. Otherwise, we noticed no significant changes in processing speed between the two Compaqs.

One particular item, the power supply, shows Compaq's attention to detail. If the electricity should falter, the power supply will cut off current to the circuitry for 10 to 15 seconds before it returns. This protects the Compaq from power surges.


For users that run repackaged software, the documentation is adequate. The excellent setup information comes with many pictures. General operating instructions are good.

There is one welcome change from the original documentation: the operations manual now describes how to install additional memory and cards into the machine. It also shows where to install the 8087 coprocessor.

For users who wish to develop their own software, however, the documentation leaves much to be desired. The MS-DOS manual is sketchy and gives very few examples. The Basic manual is just as sketchy. If you are serious about developing software, then we recommend you get IBM's DOS 2.0 package as the IBM manuals are much more complete.

InfoWorld
Report Card

Compaq Plus



	Poor	Fair	Good	Excellent
Setup	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Documentation	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Serviceability	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Summary: The Compaq Plus has the power of the IBM PC XT and can run most of the same software. It is an excellent, convenient machine that is designed for professional use. The Winchester disk makes this product a must for the busy executive on the go.

Product details: List price, \$4,995. Includes 128K RAM (expandable to 256K); one 5¼-inch disk drive; 10-megabyte hard-disk drive; 9-inch, 25-lines × 80-columns integral display; detachable keyboard; parallel port (Centronics interface); composite and RGB video outputs; MS-DOS 2.02 operating system. Manufactured by Compaq Computer Corporation, 20333 FM149, Houston, TX 77070; (713) 370-7040.

For a portable machine, on-line documentation is a must. It's too much to ask a user to carry a briefcase full of manuals in addition to 30 pounds of machine. Neither Microsoft nor Compaq currently provide anything similar to CP/M's Help facility. In the original version of the Compaq, with only 640K of on-line storage available, this is understandable. When you have ten

**If the Compaq Plus
should break,
don't try to work
on it yourself.**

megabytes there is simply no excuse. The quick reference cards provided by Compaq help, but details and restrictions are found only in the manuals.

If the machine breaks, don't try to work on it yourself. Service information is simply not available. Compaq believes service should be left to the dealer.

We are quite enamored with the Compaq's hard disk. We do not have the same feeling about backup to floppy disks.



Setting up the Compaq Plus is as easy a process as you will find with any personal computer.

Never mind that IBM uses the same method — we would like to see a connector for an optional external tape cartridge drive for archival backup. This same connector could also be used to connect additional external hard drives.

Despite Compaq's neglect of our wish

list, we are impressed with the Compaq Plus. It has performed as well or better than its nonmobile Big Blue brother. The hard drive has successfully survived a long series of moderate shocks with no complaints. If you add your own serial card, this is one dynamite machine. ●

Review: NEC PC-8201

BY SERGIO MELLO-GRAND
Contributor

In the year 1983 we saw personal computers shrink to the size of the smallest notebook computers — battery-operated machines weighing four to five pounds and measuring approximately $11 \times 8 \times 2$ inches. *InfoWorld* recognized industry ingenuity by awarding Product of the Year distinction to the Radio Shack Model 100, one of those notebook computers.

In the same league is another product from Nippon Electric Corporation (NEC), a Japanese computer heavyweight. Although both the Model 100 and the NEC entry, the NEC PC-8201, are both manufactured by Kyocera, the machines are not copycats. True, they have some similarities, but there are differences worth mentioning to anyone thinking about investing in a notebook computer. The sleek 8201 has some features that compare quite favorably with the Radio Shack entry.

The external design of the NEC PC-8201 is similar to that of the Radio Shack

Model 100. Its width and depth are almost identical (approximately 12×8.5 inches); NEC's unit is a little higher (2.5 inches versus 2.2 inches). The latter unit is slanted so that the user has a better view of the liquid-crystal display (LCD) screen.

There are some interesting differences in keyboard designs. The Radio Shack

keyboard's design is the more natural access to the four arrow keys, which are positioned in a crosslike arrow pad rather than in a line of four small keys as on the Model 100.

In addition to these, and the ordinary alphanumeric keys, the PC-8201's keyboard includes several special keys, including the traditional Esc, Tab, Ctrl, Caps, Shift, Delete/Backspace and Return (or Enter). A less-ordinary Paste/Ins key, which is very useful in text editing, and an even less-common Grph key that doubles

The sleek NEC PC-8201 has some features that compare quite favorably with the Radio Shack Model 100.

Model 100 has a row of eight small function keys whereas the NE PC-8201 offers only five of them. Each key of the NEC machine can assume a new function when pressed along with the Shift key, so NEC is claiming that the PC-8201 has ten function keys. NEC's programs use the complete range of ten "virtual keys" (five direct and five shifted).

A definite advantage of the PC-8201

the ordinary keys for graphics characters, are also included.

The LCD display has a resolution of 240×62 dots, which provides eight lines of 40 characters each. The Model 100 has a similar display resolution.

Both units use the 80C85 8-bit microprocessor, a CMOS version of the popular Intel 8085, as a central processing unit. They also both use CMOS random-

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access memories (RAMs), read-only memories (ROMs) and peripheral chips. Despite using similar internal architectures, the two systems are not equivalent from the standpoints of performance and expandability. The NEC PC-8201 is, overall, more expandable and powerful than the Model 100. The Radio Shack system, however, has an integral modem that the NEC does not have.

The PC-8201 has internal memory that can be expanded to 64K RAM, uses RAM cartridges for additional memory and includes 32K of ROM with Basic, operating system, text-editor and telecommunications programs. In order to access this ample memory, the NEC system uses a bank-switching approach that divides memory into 32K banks.

Through a command shown in the main menu, a user can easily select a new bank to work with. Because the RAM cartridge is itself equivalent to a bank, a user can se-

lect it as a working memory with a single keystroke.

The RAM cartridge design is clever because it gives compact, *portable* mass-memory to the machine. If you are running out of memory, you can simply plug in another RAM cartridge and immediately have more memory at hand, postponing the eventual need to move your data or programs to a larger system or to store them in a slow and less-secure audiotape cassette.

Each RAM cartridge includes its own backup lithium battery, which provides enough power to allow it to be unplugged from the main unit for up to six months. To make sure that you don't accidentally erase a cartridge on which you have stored valuable data or programs, you can even use a protect switch that NEC has wisely put on each cartridge.

Although generally wonderful, the RAM cartridge idea has a significant drawback — price. Each cartridge costs almost \$400. We hope that with the rapid spread of CMOS technology this price will go down, thereby making the RAM cartridges a more popular feature.

Besides its more expandable main memory, the NEC PC-8201 has no significant hardware advantages over the Radio Shack Model 100. Both systems have a serial (RS-232) and a parallel (Centronics-type) port for the connection of communication devices and printers. Both include a cassette-recorder interface that allows you to store programs and data on regular tape recorders and load them back. Both also offer a bar-code-reader interface, which is particularly useful in

many retail and industrial applications of these portable computers.

Although the Radio Shack computer has a modular phone jack for connection to communications lines, the NEC offers only a serial I/O port for modem connection. An external modem is available for less than \$100. A third serial I/O port (multiplexed with the other two) is also available on the back of the PC-8201.

From the performance standpoint, the NEC again shows a certain advantage over the Model 100. Although the two systems use the same microprocessor, in Basic the NEC clearly outperforms the Radio Shack. It runs almost twice as fast as the Model 100 with some programs. This is mostly due to a difference in Basic operation. Both systems offer a Microsoft Basic but Radio Shack has opted for double-precision arithmetic as standard, whereas NEC has chosen single precision as the default mode. Even with single-precision arithmetic, the Radio Shack still won't perform as fast as the NEC. Other programs, though — especially those written in assembly language — work about the same on both machines.

In addition to Basic, the PC-8201's ROM includes two application packages (versus five for the Radio Shack 100). These packages are a text editor and a telecommunications program. The text editor (Text) is substantially similar to the 100's. Text offers most of the basic features of a traditional text editor, such as full-screen editing and cursor-keys aid and automatic wrap. You can also select a word, a sentence or even an entire document (if you have enough main

InfoWorld Report Card

NEC PC-8201



	Poor	Fair	Good	Excellent
Setup	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Serviceability	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Summary: The NEC PC-8201 is a lap-size portable very similar in circuitry — and quality — to the Radio Shack Model 100. Though it has no internal modem and fewer programs in ROM, it comes with more memory and can be easily expanded beyond the capabilities of the Radio Shack unit. Its Basic programs operate faster as well.

Product details: List price, \$799. Includes 8085 CMOS processor; 16K RAM; 32K ROM; serial port; parallel port; cassette port; 8 line by 40 character LCD screen; software. Manufactured by Nippon Electric Corporation, 532 Broad Hollow Road, Melville, NY 11747; (312) 228-5900.



The NEC PC-8201 computer has internal memory expandable to 64K RAM.

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HARDWARE

memory) and cut or copy it to a "paste buffer." You can then paste the content of the buffer in another part of the current document or even in a different document (in the same memory bank).

The telecommunications program Telcom allows you to define a broad range of transmission options such as baud rate (from 75 to 19,200 bits per second),

three manuals: a beginner's guide, a guide to the cassette-based software and a Basic programming guide. They are reasonably well done, though not perfect. They have some misspellings and a few sentences look as if they were literally translated from Japanese. But they will tell you what you need to know.

Servicing the machine should be a little

The NEC PC-8201 is one of the best contenders in the notebook-computer arena; an alternative to the Model 100.

parity, word length (6, 7 or 8 bit), stop bit and control parameters.

You can easily overcome a lack of further applications in ROM by loading in memory application programs stored on a cassette (called the Personal Application Kit) that NEC provides free of charge with the basic unit. The Personal Application Kit cassette includes 25 programs for six business applications, six utilities, two games and a music program.

Documentation for the unit consists of

more difficult than servicing the Model 100, simply because Radio Shack has many more outlets in the U.S. than does NEC.

Overall, the NEC PC-8201 is one of the best contenders in the notebook-computer arena. Its competitive price and better add-in and cartridge-memory expandability make it a good alternative to the popular Radio Shack Model 100, especially for users who are oriented towards Basic programming.

Capsules

Every week we present a summary of significant hardware products we have reviewed over the past months, including the date our full review appeared. The list will be updated periodically to reflect the rapid change in the computer industry.



Ace 1200 (Franklin) — Improvements over the Ace 1000 still leave this almost Apple-compatible machine a bit short of the mark. Documentation is only adequate for plug-and-play types. (12/26/83).



Compaq Plus (Compaq) — The original IBM PC-compatible transportable now has a built-in hard disk. It works as solidly as the original. (3/19/84).



Dragon (Tano Microcomputer Products) — Despite a toy-store appearance, this low-cost home computer has a lot of muscle. Its major drawback is an ill-designed keyboard. (1/30/84).



HP-150 (Hewlett-Packard) — This machine proves there are intelligent alternatives to the IBM hoopla. With an innovative touch screen and a lot more, this one gives you a solid name and

byte for the buck. (3/12/84)



Kaypro 10 (Kaypro) — A transportable, rock-solid computer with a 10-megabyte hard disk built in. A terrific bargain for what this CP/M machine gives you. (10/31/83).



NEC 8201 (Nippon Electric) — A worthy competitor to the Tandy Model 100, this lap-size portable is more expandable, but has less built-in software. (3/19/84).



Premium Softcard IIe (Microsoft) — Expands an Apple system with a Z80 coprocessor, 80-column display circuitry and 64K additional RAM. (2/6/84).



Speechmaster (Tecmar) — A board that, along with its companion software package, uses some of the latest available technology to generate speech, if you're willing to experiment. (IBM PC; 2/27/84).



Spark Jet JP 101 (Olivetti) — Ink-jet technology is coming but it isn't here. Poor print quality and hard-to-

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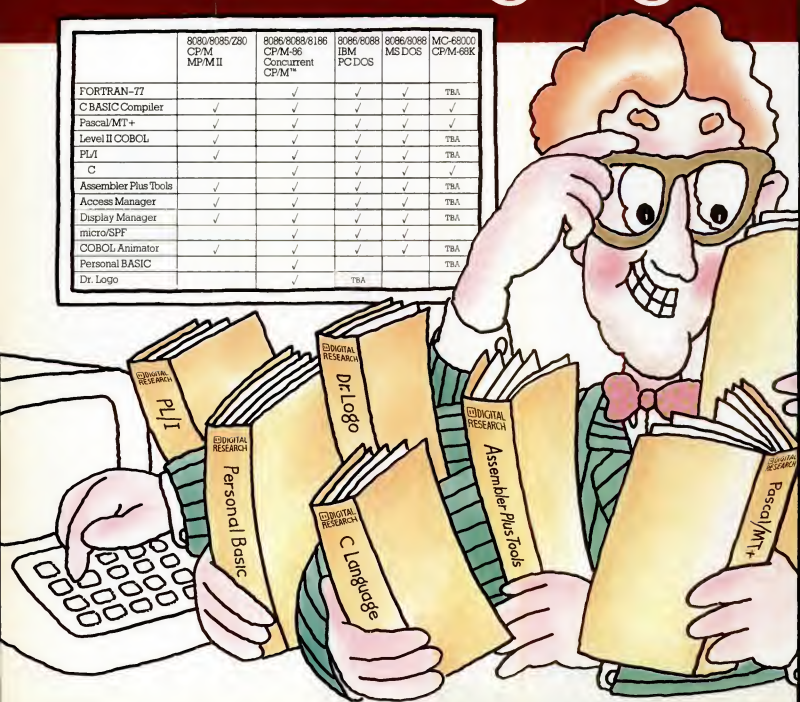
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find parts point to other printers in the same price range. (12/19/83).

 **Spirit-80 (Mannesmann Tally)** — Low-cost dot-matrix printing with good special features such as dot-addressable graphics. (11/14/83).


 **Teletex TTX-1014 (Teletex)** — If you can manage the horrible documentation, you'll get a great letter-quality printer cheap. (12/5/83).


 **TI-855 (Texas Instruments)** — Hybrid printing gives both fast draft and numerous letter-quality fonts, supplied as ROM cartridges. A solid performer, a reasonable price. (12/5/83).


 **TI Professional (Texas Instruments)** — Can anyone go one better than IBM? You bet! Superior graphics, an excellent keyboard and IBM compatibility. (12/19/83).


 **Timex 2068 Color Computer** (Timex) — Excellent home computer comparing well with more expensive computers. This microcomputer is attrac-

tive for beginners as well as programmers. (12/19/83)

 **Toshiba P1350 (Toshiba)** — This three-in-one dot-matrix printer is usually fast and gives excellent print quality. It's documentation is incomplete and inadequate, though, and you may have trouble reaching some of the printer's switches. (2/6/84).

 **Transtar 130S (Transtar)** — For a reasonable price you can get yourself a well-made, letter-quality printer. Best suited to low or moderate usage. (1/30/84).

 **TRS-80 Model 4P (Tandy/Radio Shack)** — The company's first transportable is an outstanding machine at an excellent price; a better Model 4 in a smaller case. (11/21/83).

 **Zenith Z-100 (Zenith)** — Dual-processors make this machine worth its high price tag. It runs CP/M and MS-DOS programs, and its high-resolution screen and great keyboard gain it high marks. (11/7/83).

Responses

Satisfaction survey

My firm wants to publish a study of microcomputer users' experiences with computer-hardware manufacturers and vendors. The purpose of the study is to give microcomputer buyers information about vendors and manufacturers that can not be obtained just by talking with acquaintances and reading reviews. We would like to include the following points in our study:

1. The make and model of the computers, any installed options, the vendor and the date of purchase.
2. How much the computer is used and for what.
3. Reliability. Has it ever broken down? If so, what went wrong, and what was your experience in having it repaired?
4. How well is this computer suited to your needs? What is good about it? What is bad?
5. How useful the vendor was in helping you to evaluate your hardware needs.

Although all kinds of responses are needed, it is vital to obtain a large number of reports from people who have had positive experiences. Anecdotes will be helpful. If you want to write about your adventures with more than one computer,

please put them on separate pages. Ask your friends to contribute their experiences, too. Please write to Abaire Data Services, P.O. Box 29157, Richmond, VA 23229. Thank you.

Archie L. Abaire, Jr., President
Abaire Data Services
Richmond, VA

On Apple slots

Your review of the Microsoft Premium Softcard IIe (February 6) twice mentions that the Softcard IIe is placed in slot 0 of the Apple IIe. There is no slot 0 in an Apple IIe. Perhaps you are referring to the auxiliary slot, which is not slot 0. I hope that you will be a bit more alert for such discrepancies in the future.

S.D. Scott
Longwood, FL

Discuss feeders

Your generally excellent reviews of printers would be improved if you would report on performance with both the tractor-feed and the friction-feed mechanisms. I own the Daisywriter 2000 and the Mannesmann Tally 160L. You gave both

printers very favorable reviews, and for good reason, since both are quality printers. But the Daisywriter tractor feed is terrible. With the tractor, the type seems to be climbing and descending invisible hills — a minor annoyance for double-spaced text, but a real embarrassment with single-spaced letters. The Tally 160L is great with the tractor, but the friction feed works well only if the operator is *very* careful in inserting the paper. I would have bought the Tally 160L anyway, but I regret my choice of the Daisywriter.

*Michael J. McIntyre
Ann Arbor, MI*

Review ethics

While I enjoy and generally respect your publication, there is one thing I find very questionable — you appear to rely on the manufacturers to provide you with hardware for your reviews. The issue isn't whether or not you pay for the hardware (do you?), but rather, whether you can be sure that you are reviewing the same product that is produced for the consumer. I can imagine the extra care spent on every machine that is carefully sent to *InfoWorld* for review. I can also imagine the different view the public would have of *Consumer Reports* magazine if it only tested tuna, razor blades or automobiles that were provided directly by the manufacturers.

*Lawrence Matasar
Portland, OR*

Reader Matasar is correct in assuming that we acquire hardware for review directly from the manufacturers. The software that we review we also obtain directly from the publisher. The hardware is loaned to us free of charge for a definite period of time, after which we return it.

However, Matasar is incorrect in assuming that extra care is taken with the machines sent to us. We insist that our review models be production versions; in addition, we inspect the computers, as do our reviewers, to ensure that they are the correct models.

It might interest readers to note that, in the past four months, no fewer than five full computer systems from major manufacturers have been delivered to us for review — in nonoperating order. When reviewing full systems, such problems seem to be the rule rather than the exception. — Editors

InfoWorld welcomes comments about its hardware reviews from both readers and manufacturers. Please address your correspondence to the Technical Editor, InfoWorld, 1060 Marsh Road, Suite C-200, Menlo Park, CA 94025.

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New Products



ET Computer, ET Computer Systems

ET, but not from outer space: Yes, there is an ET Computer, from ET Computer Systems in San Diego, California. The ET-2010 is a two-piece CPM 2.2 machine priced at \$1,349.

It sports a Z80A microprocessor running at 4MHz and 64K of random-access memory (RAM), which is expandable to one megabyte. Also included is a built-in, 9-inch green-phosphor screen that displays 24 lines by 80 characters. A parallel, Centronics-style port as well as an RS-232 serial port are included along with a 76-key keyboard and a numeric keypad.

Software that comes with the system includes ETPM II, an enhanced version of the CPM 2.2 operating system; a business Basic language; NewWord word-processing software; and accounting software including a spreadsheet, general ledger, accounts receivable, accounts payable and payroll with job costing. A 10-megabyte hard disk is optional.

ET Computer Systems, 8161 Broadway, Lemon Grove, CA 92045.

Amber ambience: Change that tired green phosphor to amber with a replacement CRT picture tube for your TeleVideo, Kaypro or DEC computer. The replacement tubes, available in both 9-inch and 12-inch sizes, will fit more than 20 computers and terminals, according to the manufacturer.

The tubes have high-contrast, anti-glare faceplates, lead-strontium impregnated glass and European Amber phosphor. The new tubes are mechanically and electrically compatible with the respective tubes they will replace and can be installed by the owner. Priced at \$99.95, the tubes come with a 30-day, money-back guarantee and a full-year warranty.

Langley-St.Clair Instrumentation Sys-

tems, 132 West 24th Street, New York, NY 10011; (212) 989-6876.

Professional word-processing keyboard for IBM PC: A replacement keyboard for the IBM Personal Computer is designed for the word-processing professional. Only 15-inches wide (four inches narrower than the IBM original), the Colby Key-2 keyboard is compact enough to sit comfortably in the lap. A thin-wall, die-cast magnesium frame is rugged but lighter in weight than the plastic original. The Shift keys are located in the traditional positions, and four additional cursor keys at the upper left are active at all times, which facilitates spreadsheet work. List price is \$259.



Colby Key-2 Keyboard, Colby Computer

Colby Computer, 849 Independence Avenue, Mountain View, CA 94043; (415) 968-1410.

Triple threat: A single board that will add a clock, game port and printer interface to the IBM PC and PC XT has been packaged on a very small card, according to the manufacturer.

The Cygnus card, which measures $5\frac{1}{2} \times 4\frac{1}{4}$ inches will fit into the short slots of the XT. The real-time clock and calendar keep track of the date and time and have a removable lithium battery with a 12-year shelf life for backup power. The Whattime support software supplied with the system supplies the time and date for the IBM's system clock. The game-controller port will allow connection of a joystick and is fully compatible with IBM's game adapter. It will support the use of any device that could be connected to the adapter.

The board is available in two versions, one for parallel-printer connection and one for serial-printer connection. The serial version of the board will also allow you to connect a modem or other serial device.

The parallel version is priced at \$199 and the serial version at \$299.

Titan Technologies, 310 West Ann Street, Ann Arbor, MI 48104; (313) 662-8542.

Typewriters to computer printers: With the SuperCord II from Cord, an ordinary electric typewriter can become a printer for such computers as the IBM PC and compatibles; the Apple II family; the Atari 800; the Commodore 8032 PET, 64 and VIC 20; and the TRS-80.

The SuperCord II contains a 4K memory buffer, which enables the electric typewriter to print at approximately 110 baud even with data coming faster from the computer's port. With the cord turned off, the electric typewriter functions normally.

The SuperCord II is available in a variety of versions to facilitate its connection with RS-232 serial ports, IEEE-488 bus or Centronics-type parallel ports.

Cord Ltd., 1548 Brookhollow Drive, Santa Ana, CA 92705; (213) 595-4446.

Disks and peripherals for the Macintosh: Davong Systems will ship a series of add-on hard-disk drives for Apple's recently announced Macintosh computer by the end of the first quarter of 1984. The capacities of the drives will range from 5 to 32 megabytes. Mac Disk will be shipped with all the necessary cabling, adapters and instructions.

Scheduled for a later introduction will be a 28-megabyte streaming cartridge tape drive that will provide efficient backup capabilities for the hard disks.

The company is also planning to incorporate many of the functions of its MultiLink local-area network, first developed for the IBM PC, into a product known as Mac Link. That product will allow as many as 255 Macintosh computers to be hooked together and make use of the same hard-disk drive, as well as to communicate directly with each other.

Davong Systems, 217 Humboldt Court, Sunnyvale, CA 94089; (408) 734-4900.

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—Compiled by Christine McGeever

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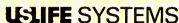
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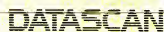


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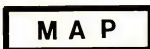


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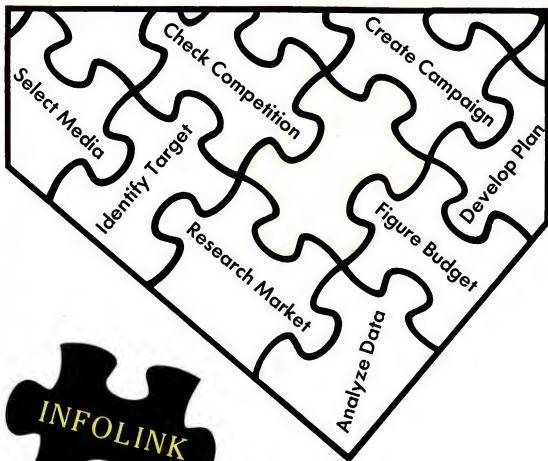
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Above: Macintosh computers are tested for quality during a 24-hour burn-in cycle. Top right: A tote stacker, a crane-like vehicle used to deliver parts to workstations. Bottom right: Circuits are taken by a machine from reels and automatically inserted on printed circuit boards.



PHOTOS BY MICHAEL GARY/PACIFIC HORIZONS

The Macintosh Factory

BY KATHY CHIN
Reporter

When the founders of Apple Computer began "manufacturing" the first Apples in a garage back in 1976, they set a production target of 50 units a month. Today, Apple says it can produce up to a million units a year of its latest computer, the highly touted Macintosh. To help reach that goal Apple built a 160,000 square-foot computer-manufacturing facility in Fremont, California.

"We've spent over \$20 million to build the [personal-computer] industry's first automated plant . . . we'll be producing up to one Mac every 27 seconds by March," said Steven Jobs, cofounder and chairman of the Cupertino, California, company, in an interview two months ago.

To date the factory has only been able to reach Job's speedy production goal on an irregular basis. Still, the Apple employees connected with the project maintain a high degree of enthusiasm and many outside observers say they're impressed with what the firm's accomplished so far.

"Apple has the premiere automated microcomputer factory," says an analyst

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The analog and logic boards produced at Apple's Macintosh factory will pass by the stations of seven assembly workers on their way to completion.

at Creative Strategies in San Jose, California. But another industry observer who monitors factory automation criticizes the press for lauding the factory, which she says offers little new in equipment that hasn't already been installed in other manufacturing plants. "It's an exciting move for computer companies," says Susan McGarry, senior market analyst at The Yankee Group in Boston. "But it's not as revolutionary as everyone makes it. It came along only because computer firms are feeling pressure from offshore competitors. The automobile makers felt that pressure first."

"We have great respect for Japanese manufacturing," says John Sculley, Apple's president. "We've decided to be a major player in manufacturing technology. In three years we want to be as good as the Japanese."

Although Apple's state-of-the-art factory may be a first for personal-computer manufacturing, some of the equipment is already in use at automobile plants such as Chrysler's.

"Now high-tech is adopting techniques that have existed in 'smoke-stack' America," says Rob Howie, of The Yankee Group. But whereas factory automation is

often implemented to save on labor costs, Apple officials insist that their efforts are not focused on replacing workers, but on ensuring that the computer is absolutely perfect when it rolls off the assembly line.

"Unlike the Lisa, the Macintosh is treated as a high-volume product," says George Irwin, one of the engineers who planned the factory from the ground up. "We expect to sell millions, so we have to produce them quickly."

Quickly is an understatement. It takes 26 minutes to build one machine. Precisely every 27 seconds, a pristine, \$2,495 Macintosh rolls off an assembly line ready to be boxed and delivered to distributors nationwide. At Apple's Dallas factory, an Apple IIe comes off conveyor belts every six minutes and takes far longer than the Macintosh to build.

Irwin says he hopes to crack the 27-second record and is shooting for a Mac every 13 seconds.

To remain competitive with computer manufacturing in Japan, Macintosh was built with eight major components that fit together in a simple fashion. "Before Japan comes up to speed with computers, we want to stay ahead of the game," says Irwin.

In order to keep production on schedule, the assembly workers have less than 22 seconds to complete tasks such as adjusting the chips on the analog boards or checking the housing for scratches.

When an overhead carrier is installed, sometime this month, it will travel along the red tracks suspended from the ceiling to deliver parts to each employee's workstation. "If any employee has to reach further than 30 inches for a part, we haven't done our job," says Irwin, explaining the thinking behind the assembly-line design.

When engineers sketched plans for the site, they designed the assembly lines in such a way that very few hands would actually touch or lift the computer parts. "We believe the less human intervention, the higher the product quality," says production manager Sam Khoo.

An automatic guidance vehicle system (AGVS) — a three-foot high vehicle — roams from one station to another delivering keyboards, circuit boards and other components that make up the 20-pound, 32-bit computer. When the electronic

Polaroid eye scans the storeroom and sees a tray that needs to be transferred, it will send a signal to the AGVS microprocessor that will then cause the entire vehicle to move. The factory has five of these \$30,000 machines. Although highly expensive, Koo says the electronic devices save on manual-labor costs and result in a



Top: George Irwin, one of the original factory engineers, shows off stacks of new Macintosh computers and proudly displays his shirt with the IBM logo. It stands for 1 built Macs. Bottom: Observers have compared the Fremont, California plant to a Lego block factory. The 160,000 square-foot manufacturing facility cost Apple more than \$20 million and is designed to keep the company competitive with computer manufacturing in Japan. Apple's goal is to produce one Macintosh every 27 seconds at the plant.

higher output.

Over in the printed circuit board assembly area, each analog board automatically slides out onto the assembly line, eliminating the need for the operator to lift it off the rack by hand. Auto-insertion machines mount circuits and modules on the analog and logic boards. When a defect

occurs, the machine will stop. That's when human intervention plays a part: It takes a human operator to align a skewed circuit or to replace a defective part.

A tote staker is yet another automated delivery device. The narrow, yellow, crane-like vehicle slides along a track, placing 50-pound totes full of parts into preselected chutes that are stacked 18 levels high and 110 chutes across. During any given time, there are at least 4,000 totes in the racks. This automatic delivery system minimizes the need to carry the trays over to the various workstations.

At the Mac factory, the process of burn-in, a procedure for testing chip components, receives more stringent attention than at other personal-computer manufacturing facilities, says a plant official. Two assembly lines of Macintosh components are tested for quality by being turned on and off every hour during a 24-hour burn-in cycle. (A Macintosh controls the flow of parts down the two lines.)

"Other companies turn the computer on and just let their computers sit there. We cause more stress to the components by turning it off and on. This way the defective components will appear right away," says Khoo. The goal here is to achieve less than a 3% mortality rate. That goal has already been attained, according to Khoo.

In addition to selling the Macs it manufactures at the Fremont site, Apple also plans to use some of them in plant operations. Currently, there are approximately 120 Apple IIes and Apple IIIs that double as terminals, feeding accounting and inventory data into two DEC PDP 11/70 minicomputers. In the near future, Apple plans to use the Macs to handle those tasks and to control testing procedures as well.

A visitor has no trouble identifying the Fremont site as a factory, but it's an Apple-style factory. Red pipes that resemble the chaos of Los Angeles freeways, yellow stairs and blue assembly lines that seem to meander on for miles make the country's most sophisticated personal-computer factory look as though it were constructed with giant Lego blocks.

Apple architects deliberately designed the plant with the vivid hues not only to match those found on the Apple logo, but also to eliminate the drabness usually inherent in manufacturing facilities.

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THE INDUSTRY

The majority of the site's 68 employees perform assembly tasks. Along the assembly line, 20-year-old Stacy Sorensen must carefully align the cathode ray tube with the front piece of the housing. At the end of the Macintosh line, where two conveyor belts merge into one, an elderly woman's sole responsibility is to polish the Apple.

How do these employees feel about their assembly-line jobs?

"Well, it's just assembly work, but the morale is high here," says 20-year-old Tawnda Spilde. "You couldn't work at a better place."

Another worker, Sue Taylor, adds, "The people are nice and helpful, and you learn a lot."

Learning is another goal at the assembly plant. Because employees become so specialized at their jobs, plant bosses encourage workers to move to other tasks to learn new jobs. Every six weeks, operators are given the option to rotate into another area to acquire new skills, whether it be testing power-supply boards or operating a new piece of equipment. This emphasis on cross-training means that Apple will be in a position to move workers around without having to do a lot of retraining. Apple hopes this strategy will help it to avoid the problems of high turnover that are inevitable at many assembly plants.

As a result of the recent hoopla surrounding the product, employees feel proud to be associated with the Mac. All of the factory employees were invited to the January stockholders meeting and a company-wide bash held at the posh St. Francis Hotel in San Francisco.

"When I think about the product, it still gives me a good feeling," says Irwin. But even as Irwin looks back fondly at how the factory got to where it is today, he realizes that it still has significant hurdles to clear. Currently, the assembly site is up to only 70% of production speed, for example, and production output was sharply reduced during a recent three-day period when a defect was discovered in some of the CRTs. Another problem delaying full production is that delivery of some of the equipment that was ordered for the plant has been delayed. The warehouse, for example, is waiting for overdue machines that will pick up the computers, lower them gingerly into cardboard boxes, place packing foam on top, close down the boxtops and tape the cartons.

Irwin downplays the problems and delays and points to them as confirmation of Apple's commitment to producing a quality consumer product. The CRT

problem has been fixed, Irwin says, and production is moving forward again. The plant recently went from running one shift a day to two, and Irwin hopes to have a third shift running soon.

Although he calls the Fremont location, "automation in the purest sense," he admits that in a couple of years the factory will be considered obsolete. But Irwin claims that giant computer manufacturers such as Hewlett-Packard and IBM are ten years behind Apple in factory automation.

"The factory will never be completed," sighs Irwin. "There will always be a way



Above: Tote trays begin their travels at the small-parts site. Below: Vehicles such as the yellow automated guidance vehicle system (lower left) deliver necessary parts to operators.

to make it faster and better."

The Fremont site was selected last April and opened for operation last June. Irwin was one of the two original engineers who worked on the project when it was scheduled for operation in Dallas. When the site was transferred to Fremont, he commuted from his Texas home to California for nearly a year. While manufacturing the mysterious product, workers were constantly reminded not to divulge the secret. Management informed the staff, "If anyone asks you what you're working on just say, 'It's going to be great.'"

"My mother still doesn't know I work here," says Irwin.

Q&A: Chris Rutkowski

BY TOM SHEA
Reporter

Chris Rutkowski is the 35-year-old president of Rising Star Industries, a Torrance, California, research-and-development company that is presently conducting projects in the areas of antipollution, physics, political systems — and software. In the personal-computer industry, Rising Star is best known as the developer of the Valdocs “operating environment” for Epson’s QX-10 computer.

Like his idol, the late R. Buckminster Fuller, Rutkowski is a futurist and a man of many diverse pursuits. The motto of his 50-person company is “Only the impossible is worth doing.”

What exactly is your firm’s relationship with Epson?

We have a close association with Epson, but we’re a separate entity. They have a minority interest in Rising Star, and we do work for them on a contract basis.

InfoWorld had a QX-10 for a while with your Valdocs operating system. We had a hard time making it work right, and it got low review marks (July 11, 1983). What’s the story with Valdocs?

The review copy that we provided to *InfoWorld* was a prefinal beta-test copy. It had some known disaster-level bugs in it. Those bugs haven’t been there since that time. The evolution of the Valdocs software is continuing.

Ever since we first began to develop it, Valdocs [which stands for *valuable documents*] was supposed to be a three-phase development program. The first phase was simply to prove that the HASCI interface [Human Applications Standard Computer Interface] could be made to work so that programs would be easy to use. The theory was that we could come out with a computer that any average, nonbrain-damaged individual should be able to *guess* how to use.

It was supposed to be a manual-less system. And it would not have a big Help file either, because that’s no help to the user. It should be self-instructing. Version 1 was to prove that it could be done; it was put together by six people over a few months, so there were very few man-years of development time. Even so, it proved



Chris Rutkowski, Rising Star Industries

the interface. The overwhelming majority have found it satisfactory. The point of version 2 is to have done it right. We’re almost finished with version 2. It will be released some time this spring. I don’t want to predict just when, because Epson will decide when to release it.

Some people have called Valdocs slow and inflexible. How do you respond to that?

Slow compared to what? The first version does a number of functions that no other machine at any price does at all. It has a cross-indexed filing system. With every other word processor, you have to store a file as some strange name, like LETTER.DOC. In Valdocs, you can file it as “Letter to Joe Hurly on November 23 concerning his order for widgets.” And later you can go into the index and pull it out any number of ways — letter, Hurley, widgets, orders. Valdocs cross-indexes everything against everything.

We heard that Stewart Brand, publisher of the *Whole Earth Software Catalog*, called the QX-10 “a fascist machine . . .”

This is nonsense. The QX-10 is probably the most flexible machine ever produced. Brand’s statement is so stupid it would require a 200-page response. I’ll turn him on to the housewife in Duluth who has no trouble using it. Left-brained people with vast computer experience

have had the most trouble with Valdocs.

How do you compare the QX-10 with the Macintosh?

Some of us are referring to the Macintosh as a Valdocs clone. A mouse stinks for word processing, though. Apple made a serious error — thinking that pointing is dependent on the mouse. The mouse is not the best way of pointing. For graphics a mouse is good, but not for word processing. I would say the QX-10 will outdo the Mac in some ways.

So how’s the QX-10 selling?

Pretty damn good. I don’t have the exact figures, but I heard there are between 40,000 and 60,000 out there in the field. I’m not trying to impress the computer scientists out there. I’m trying to impress their mothers.

Do you think you’ve missed the boat by not writing software for the 8088, now that everybody’s hopped on the IBM standard?

No. I may be Polish, but I’m not just off the boat. I’ve been around in this industry a long time, and my predictions are so accurate they’re scary. This is the first Z80 machine that’s been properly implemented. There is not yet an 8088 properly implemented.

You said there were three phases to the development of Valdocs. What’s phase three?

Phase three is to complete the circle of applications originally conceived in the HASCI concept. The idea is to complete a particular computer-science model. The goal is that 90% of the average users will never need any other software. The software environment will be so complete that most people will be able to do anything. We expect to complete that way before the end of the year.

Did you say earlier that your work in computer software is the way you finance your other research projects?

Yes, that’s really what the research is here for. It’s hard to get government grants to study these other things, like political systems and alternative ways to generate energy. We’re making our money on computers and using that to explore other concepts. ●

Heard on Tech Street

Stocks run topsy-turvy



BY JOHN GANTZ
Contributing Editor

The stock market is, after all, remarkably consistent. It reacts badly to good news and badly to bad news and badly to no news." — Alan Abelson, *Barron's*, February 20, 1984.

Pity the widows and orphans and all the others with their equity in the blue-tiled coffers of the 30 companies that make up the Dow Jones Industrials. Their equity lost 9% of its market value in the first six weeks of 1984.

The fact that those people are represented by the savviest of money managers, mutual-fund portfolio directors and pension-fund captains makes their losses no less acute.

As someone who watches the high-tech scene, though, I must admit a certain sick fascination with the carnage.

It was those institutional money men who pulled out of high tech en masse last summer and fall — they had to wait a year after the 1982 bull market began to get the capital-gains tax break — and wiped out the nice thing we had going here in personal-computer stocks.

The fact that personal-computer stock prices were overly inflated — well, this is the age of electronic blips, isn't it? Don't techies deserve higher valuations than fast-food outfits, steel companies and automakers?

Now the same thing is happening in the "high-quality" issues — the institutional sell-off has resulted in too few dollars chasing too many stocks — even in the rarified atmosphere of the Dow Jones

John Gantz is editor of the Tech Street Journal, an executive newsletter on high-tech stock market and business performance. The newsletter is published by Technology Financial Services, which is registered with the SEC. The opinions expressed herein are those of the writer, not necessarily of InfoWorld.

Industrial club. The drop is a double whammy, given that the strength of the economy continues to surprise everyone.

I'd feel more guilty about taking pleasure in the pain of others if I didn't know:

- The smaller, over-the-counter-type issues that comprise most of the personal-computer-related stocks have heavy institutional holdings.

- The institutions run as a herd. Even those whose nature would incline them to hang in for the long term must run with the pack — wild market swings defy fundamentals.

So, when the institutions got nervous over the high price/earnings (P/E) multiples and initial public-offering valuations of last summer, they beat feet. High tech was the first to be abandoned, personal computers the first within high tech. Once one cashed in, it was almost foreordained that they all would cash in.

The migration went from technology stocks traded over the counter to technology stocks traded on the New York Stock Exchange and then to nontechnology stocks, keeping the Dow alive through the first week in January. But then, as the transmogrification from wheeler-dealer to Milquetoast ran its course, the institutions began drawing down their equities and stockpiling cash.

Although high-tech stocks led the Dow's crash by five months or so, they haven't been immune to the general market condition. They went down while the Dow was going up in 1983; they went down even more when the Dow started to drop in 1984.

Looking at the 30 personal-computer-related stocks we charted in the February 6 edition of this column, we find that, as of

Sector	Number of Companies	% Off 1984*
DOW	30	- 8.8%
IBM	1	-10.0%
Personal Computer firms:	32	-10.2%
Systems	13	- 1.8%
Software	4	- 8.8%
Distribution	6	-14.8%
Peripherals	9	-17.2%

*January 2 to February 17, 1984

February 17, 23 hit new lows in 1984. And three of those that didn't were Altos Computer, Vector Graphic and Computer Devices, all of which had scraped bottom in 1983. Apple Computer and Lotus Development are the only two of those companies that we charted that have gained ground since January 2.

The table below gives a breakdown of the market falloff.

Some of the most badly hit stocks were

Badly hit stocks include those of Compaq, Tandon and MiniScribe.

Commodore International, Compaq, Fortune Systems, Tandy, Victor Technologies, Wicat, Ashton-Tate, MiniScribe and Tandon.

The biggest 52-week fall from grace was that of the systems suppliers — the sum of their 52-week highs is almost four times that of the 52-week lows. But the most spectacular decline of 1984 has been that of the disk suppliers, whose trip southward leaves the nine-company group trading at a spot 7% above the bottom of the 52-week high-low spread.

Most market watchers agree that the market is near bottom and that a bull phase will commence sometime soon — within, say, from one week to two years.

The question then is, will it happen FIFO or LIFO? Will high tech lead the way as it did in 1982 (First In, First Out) or will the institutions simply retrace their investing steps (Last In, First Out) and buy into high tech last?

At any rate, this could be the time to buy. Some solid companies are trading at ridiculously low price/earnings multiples; first-quarter sales and earnings look good for high tech in aggregate; and there is (contrary to the signals from Wall Street) still demand for personal-computer products.

All it takes to take advantage of current market conditions are money, a contrarian viewpoint and nerve.

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With CITATION you can store and retrieve information in your choice of three screen formats: name/address of person or company, book reference, or journal/magazine citation. Besides appropriate predefined fields, each of these formats allows up to 6 keywords and ten 80-character lines of “free text” to use as you like.

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Software Report Card

Citation

	Hour	Fair	Good	Excellent
Performance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Ease of Use	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Error Handling	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

“I seldom find myself with only positive things to say about a product, but Citation is a notable exception.”

InfoWorld 8/82²

this information — it is directly and quickly accessible in several ways.

First, you can browse through a database on any subject (keyword). That is, you can name any subject, and your database will instantly appear to consist only of items related to that subject.

And you can browse for specific names, or book or magazine titles. Or authors. Or ZIP codes.

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But powerful functions alone are not enough. To be truly useful a program must be so simple to operate that you never hesitate to use it when you need it. You'll find CITATION really measures up. For example:

- Unlike most database systems, CITATION is always ready to use. You don't design screens or reports or learn special commands.

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- CITATION is menu-driven with many one-stroke commands and help messages, making the manual almost unnecessary.

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Interface Age 8/83³

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Inside Track

Spotting real trends



BY JOHN C. DVORAK
Consulting Editor

User-friendly Dept. I've had a couple of people suggest that I set up Dvorak's Delphi Group (DDG) to take a more national look at trends. Both Neil Larson and Pete Simmons suggested that I establish a network of industry leaders who have enough different perspectives that if shared might help everyone see the forest instead of the trees.

To take part you'll be asked to provide either an audio tape or a transcript elucidating your opinions on a particular issue. By working as a nationwide group, I think we can determine which trends are real and which are dead ends.

I would appreciate hearing from those who feel that they can contribute something. You know who you are!

Here's how it works. Either members of the group or I will pose a question. Members of the group will express first-thought analysis. (These things are best not mulled over.) I'll edit and publish the best observations in this column.

Send your responses to the following two questions directly to me: John C. Dvorak, 704 Solano Avenue, Albany CA 94706. Send either a letter or a cassette (microcassette is OK).

This week's two queries are: 1. Will pointing devices become popular? (Comment on the mouse, KoalaPad, light pen and touch-sensitive screen — trend, drawback or fad?) 2. Why have the IBM PC and the Apple II both been successful? (What do they have in common and why aren't other machines with the same features as popular?)

Comment on either or both questions if you want to take part in this session. Write (or speak up) as soon as possible so I can meet a tight deadline. If you want to participate in a future session, send me a

brief résumé. Since I don't want to waste column space asking questions every few weeks, I will do the Delphi directly with the participants in the future. So if you think you can help, send me that brief résumé and I'll put you in the group for future issues.

Let's guide trends rather than flounder among them.

A Threat to Education Dept. While computers will provide new opportunities in the field of education with both computer-assisted instruction plus self-paced learning, it seems as though we can forever kiss off the concept of the term paper or any outside writing projects for that matter.

With the advent of the cheap modem, kids with a computer can easily form a nationwide network of paper swappers. And with a word processor, they can customize reports and papers effortlessly. This will surely take place on the college level in the near future.

For years, certain fraternities provided raw papers for rewrites to their members. Any attempts to police this activity once it becomes computerized will be a lost cause.

The major implications are that the already low standards for writers will deteriorate.

Curiously, nobody except *InfoWorld's* John Barry, the good-grammar watchdog, will notice.

By the way, Barry has produced a book with super cartoonist Rich Tennant called *The Unofficial I Hate Computers Book*. It's published by Hayden and is the first genuinely funny computer book that I've seen. Look for it at your local bookstore.

Since IBM just announced its new portable, Compaq is scrambling to make sure it doesn't get killed by a fickle public choosing the IBM over the Compaq. So Compaq is bringing out a line of machines in order to provide a range of equipment.

It wants to be the only alternative to the IBM PC. Its strategy reminds me of the joke about the two campers. At some point in their adventure as the two guys entered grizzly bear country one of them stopped to put on some track shoes.

"What are you doing that for?" asked his pal.

"In case of grizzlies," was the reply.

"Hey, you know you can't outrun a grizzly."

The first camper looked up and, while tying the knot said, "I don't have to outrun the bear, I just have to outrun you!"

So if IBM is the grizzly (an appropriate metaphor), then Compaq is the high-speed camper. By the way, credit for the joke must go to Tim Berry of Creative Strategies.

So Compaq will come out with both a regular desktop and a lap machine. It's possible that the lap machine may be a joint venture with Lotus Development Corporation.

Lotus, I'm told, may be bringing out a dedicated lap computer that will run 1-2-3 as well as additional word-processing and communications programs.

There will sure be a lot of machines to outrun. The contenders include the Corona, the new TeleVideo series, the Columbia and a dozen others.

A new entrant is OSM. It builds a IBM PC look-alike that really looks like a PC. It tries to put most of the circuits on bus cards. The machine is designed with more slots than a regular PC, but externally it is identical.

A Must Utility Dept. I've always liked good utilities — those programs that do little chores and functions for you. My newest favorite is *Crossdata*. It allows you to transfer files from various 8-bit CP/M disks and the IBM CP/M-86 disks to PC-DOS or MS-DOS.

With this package you can do things such as move a file from an Osborne double-density to an HP-125 disk. It costs \$99, and it's available from Award Software, 236 North Santa Cruz Avenue, Los Gatos, CA 95030; (408) 395-2773.

I should note that the program is also programmable and you can enter weird or oddball disk formats in order to read and write the disks.

This is a must program for those of you with different computers.

Big-time manufacturers should note that Award also has a \$10,000 software system that will thoroughly check your hardware for PC compatibility and check the software for PC-DOS compatibility.

It's a very elaborate system and it's already being used by five of the clone makers. If you're making a clone you should call these guys.

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*Robert Hubert
Marketing Director
The Boston Ballet*

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