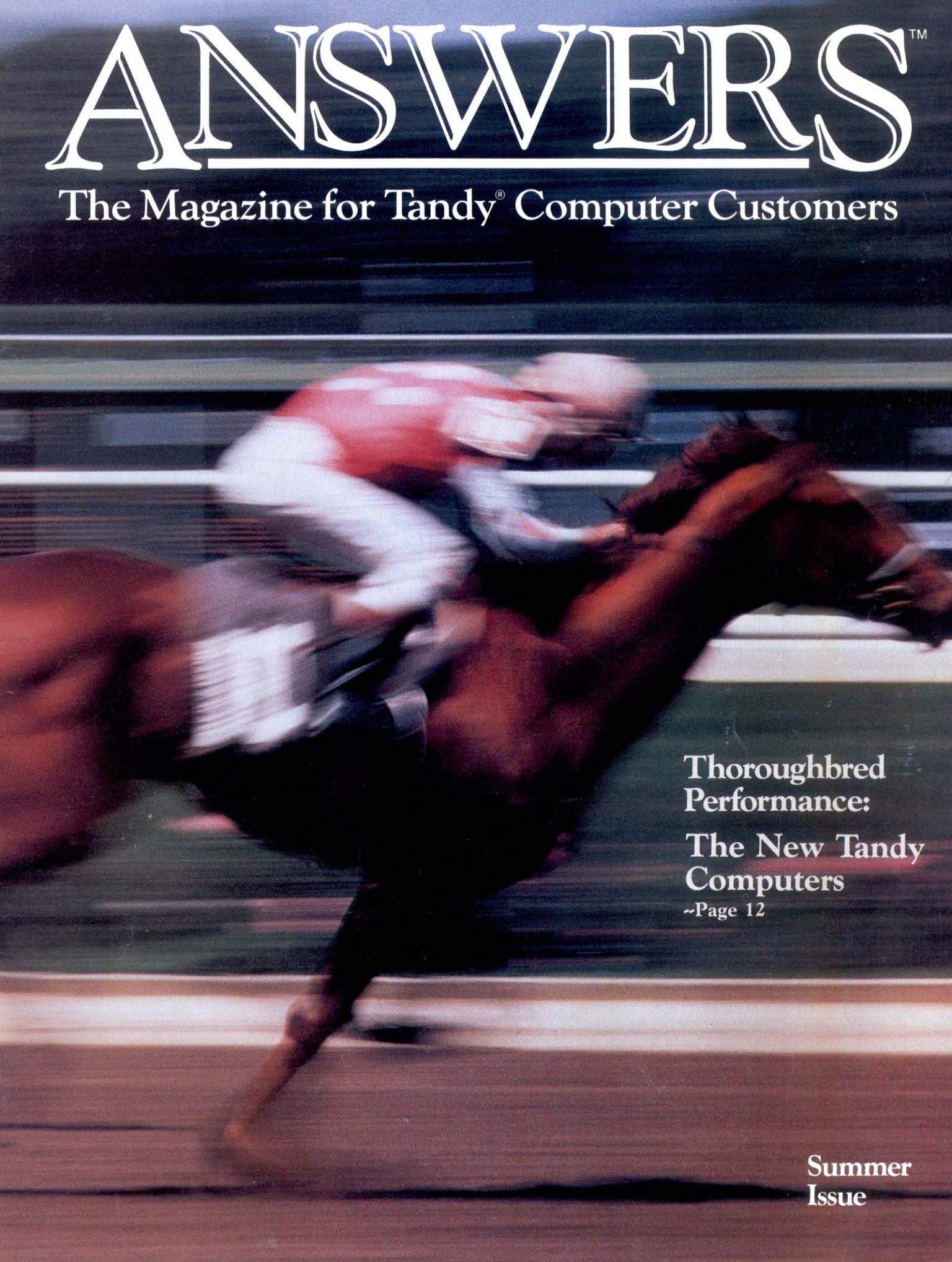
ANSWERS™

The Magazine for Tandy® Computer Customers



Thoroughbred Performance:

The New Tandy Computers

--Page 12

Summer Issue

NOTES

FROM THE EDITOR

Ever wonder where business users turn for information on how to enhance their operations? Many find answers through company membership in the Tandy Computer Business Users Group (TCBUG), a non-profit organization which recently marked its fourth anniversary.

Information is the foundation of TCBUG, and it is shared through quarterly newsletters, on-line forums and the group's annual meeting. Held each spring, this meeting offers TCBUG members the opportunity to interface directly with Tandy's top management, respected figures in the computer industry and each other.

Members attending this year's conference heard presentations from representatives of Lotus, Ashton-Tate, Software Publishing and ViaNetix, as well as other industry leaders who provided current information on technology and the future of the marketplace. Users gleaned more information through individual problem solving sessions with Tandy technical personnel and informal exchanges.

If you're looking for an information source, you may want to join TCBUG—formed *by* business users *for* business users. For more information, write Tandy Computer Business Users Group, P.O. Box 17580, Ft. Worth, TX 76102.

As much as we could say about our computers, the press often says it for us. We'd like to share some of their comments.

The Tandy 1000's utilization of MS-DOS gives educators access to the majority of business programs, while preserving the option to run a host of education-specific software. It's ability to run Apple software with the Trackstar board, however, is the cherry on the cake.

—Vaikko Allen
Electronic Learning
May/June 1986

. . . the Tandy 3000 . . is as close to an IBM AT doppelgänger as any machine currently available, while managing to preserve its own identity as a Tandy product. Running at the now-standard 8-MHz clock rate embraced by all AT-compatible manufacturers but IBM, the Tandy 3000 proved itself a serious contender.

The tests we did run on the Tandy 3000HD proved it to be more than a match for the AT compatible machines we've reviewed in past issues of PC Magazine and the best DOS computer Tandy has made yet.

—David Obregón
PC Magazine
May 27, 1986

The Tandy 3000 matched the AT package for package in a software compatibility showdown.

Benchmark test results indicate that the Tandy 3000 runs approximately three to four times faster than the standard PC, and that its floppy disk accessing is about twice as fast.

—Lamont Wood
PC Products
March 1986

Address your correspondence to:

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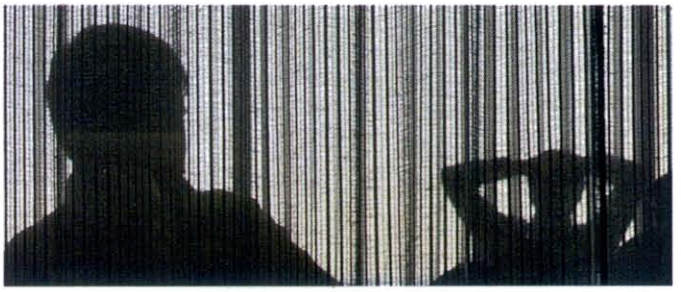
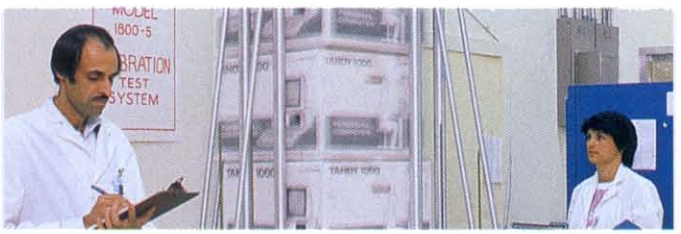
ANSWERS

Summer 1986 Vol. 1, No. 4





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Mountain Bell puts groupthink to work

Ken Meulemans, district staff manager.

Different makes of computers are now on speaking terms as Mountain Bell forges ahead with a Local Area Network: ViaNet.

Waiting for a light to change, Ed Sargent points to a nearby manhole cover. "That was put in by the phone company even before there was a Mountain Bell, right around the turn of the century, and it's still doing its job."

He is heading back to his office, across the street at the 54-story headquarters of Mountain Bell. The building is one of five tall microwave dish-festooned buildings in downtown Denver that houses a portion of the 32,000 Mountain Bell workers, who keep the phones working in seven states.

Sargent, who started with the company as a linesman and cable splicer in 1963, today is the Staff Manager, Financial Systems Mechanization/ Finance and Corporate Accounting. But Sargent dosen't look like the stereotypical accountant. For one thing, he has a thick salt and pepper beard. "I grew it for the Colorado centennial in 1976 and just never got around to shaving it off."

Back at the office Sargent and Julie Bish, manager of the nearby Radio Shack Computer Center, are shooting the breeze. Bish is a frequent visitor to Sargent's office because she helped Mountain Bell install Tandy's new local area network (LAN) called ViaNet. The network installed on the 29th floor of Mountain Bell's headquarters includes 26 personal computers—eight different models from three manufacturers.

The need for a dedicated file server is eliminated.

LANs allow the transmission of information and files between personal computers. This way users do not have to duplicate or swap disks to share files and can confer with each other quickly about projects they are working on. Moreover, LANs allow workers to share peripheral equipment such as disk drives and printers.

With ViaNet, Ed Sargent can check his people's progress right from his console.

Sargent bought Tandy's first computer product, the TRS-80 Model I, and has bought about every model Tandy has made since then for use in his office or at home.

"I even take my Tandy Pocket Computer 1 when I bowl. I am the league secretary," he said.

Sargent credited his success with the Tandy installation to the support he got from his boss, Ken Meulemans, District Staff Manager, Financial Analysis—Information Management.

Sargent and Meulemans are responsible for doing the financial analyses

Howard Armstrong, assistant staff manager, prepares a graphic presentation using data accessed on ViaNet.

that keep corporate management in the know about Mountain Bell's financial condition. And, their application needs vary. Meulemans' operation calls for a lot of graphics. Sargent's major need, on the other hand, is for numbers, lots of them.

"We here at Mountain Bell had our first revolution on 1/1/84," Sargent said, specifically noting the date. That was the day when the Bell System was broken up and the various operating companies of AT&T were split off to sink and swim on their own. Because of the breakup, Mountain Bell has had to become much more competitive and needs up-to-date information related to the company's performance.

With their Tandy 1000 and 2000 computers, as well as a melange of equipment from IBM, AT&T, Hewlett-Packard, and Wang, Sargent and Meulemans realized they needed a system to tie their various computers together.

Constantly focusing on their customers' problems, Tandy engineers have been working to develop such a networking system for the past several years. Tandy's answer—the ViaNet LAN. Mountain Bell, one of Tandy's first LAN customers, had planned its network with Radio Shack since last summer.

The addition of the network to Mountain Bell's operations has improved the company's productivity. For instance, one of the biggest time savers for Sargent is being able to call up work on his screen that someone else is having problems with. "Instead of having to leave my office and go to that person's desk, I can see whether it is simply the employee's problem or a system problem."

"On graphics, as many as four people could be working on a given project. Previously, people always had to go to different computers to compare their work. We don't have to do that anymore," Sargent said.

"ViaNet is intelligent," Sargent exclaimed. With a system of passwords, information is available to people who need it, but hidden from the eyes of those who do not have authorized access to confidential information. Complete record locking and file sharing are features of the LAN software.

With the network, Sargent noted system maintenance has become much easier. Updating one batch file or macro on the network takes the place of having to check individual files on 35 PC's. Also writing "user-friendly" macros allows first time or inexperienced users to perform complex commands with ease.

Sargent particularly likes ViaNet because it eliminates the added expense of a dedicated file server. With ViaNet the personal computer performing networking tasks can also perform other applications. This is one of the few network offerings that can do this.

As LAN pioneers at Mountain Bell, Sargent knew there would be glitches. "We've had some problems, but Bish has been great in finding fixes. If she doesn't know the answer, she gets on the phone to Tandy's headquarters in Fort Worth to find out," he said.

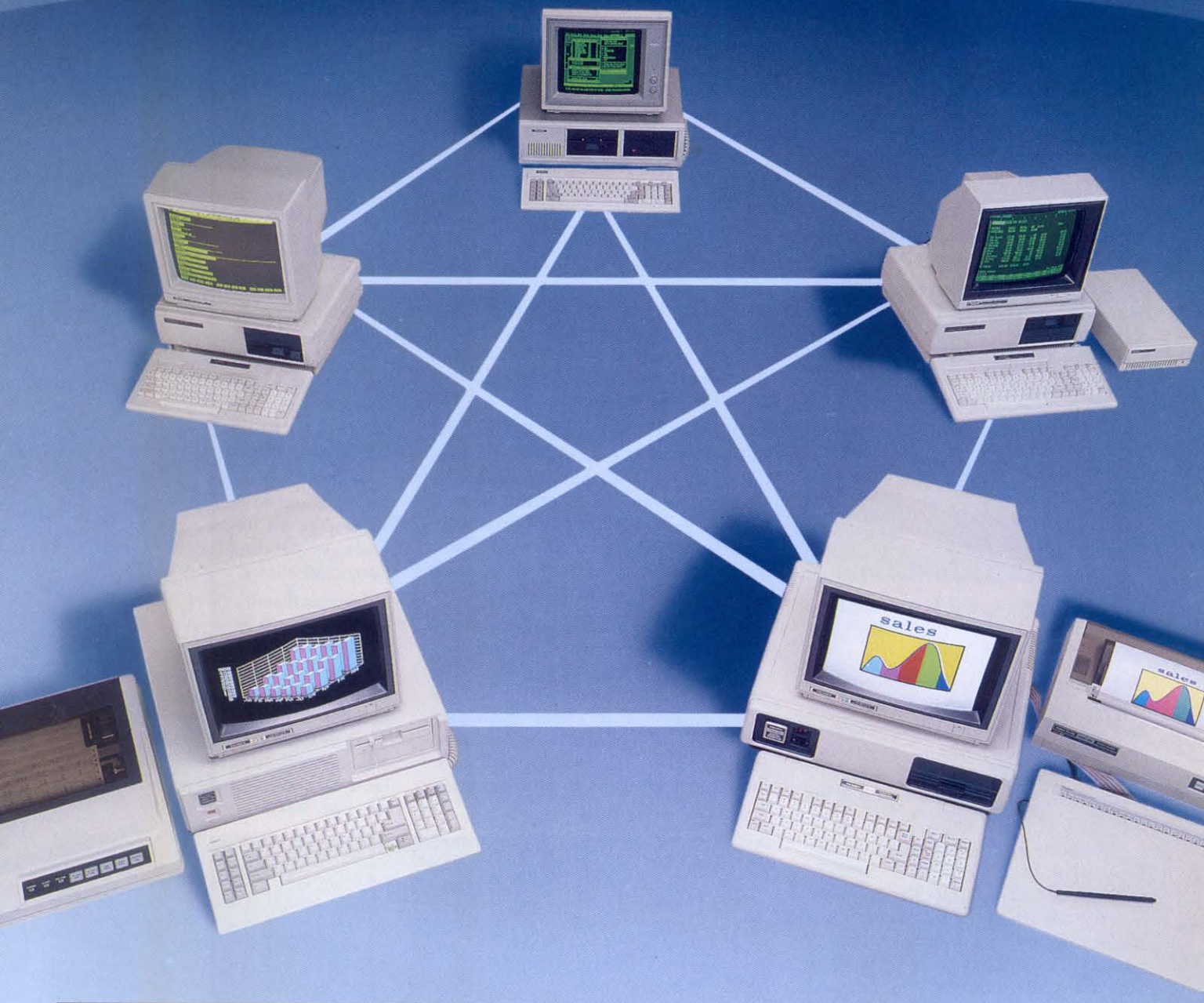
Sargent and Meulemans also realize that communications technology is evolving. "Voice communications are going to be taking a smaller and smaller role in Mountain Bell's future. The movement of data is growing. We are moving heavily into fibre optics, compressing space, but moving more data—and doing it at less cost," Meulemans observed.

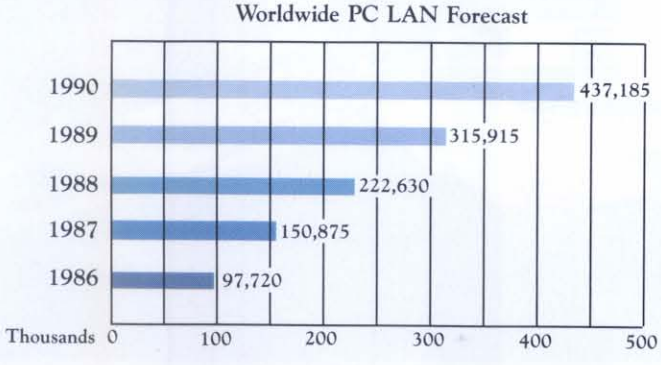
"Part of that choice is shown in our commitment to Tandy's ViaNet LAN. We realize we are pioneers, but Tandy is always standing by ready to help if things get sticky," he continued.

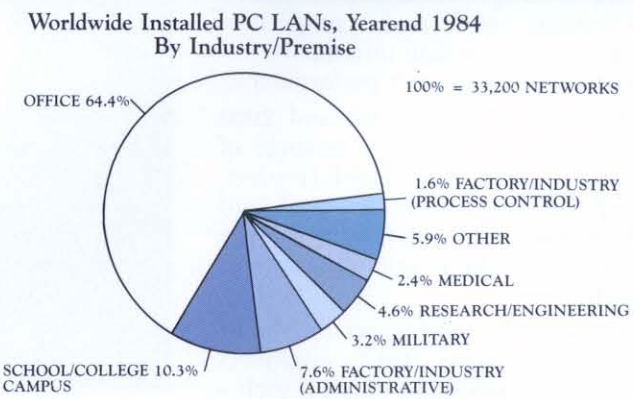
Sargent doesn't think Mountain Bell has dialed a wrong number with its decision either. "Tandy has proved to me through the years that it builds good products. It just amazes me that so many of the people that make purchase decisions fail to realize that. But they are beginning to, and with ViaNet Tandy is making itself a lot more visible. Positively."

At work preparing reports, Dorothy Gutierrez is proficient with a variety of makes and models of computers, all of which are connected together on ViaNet.

Communicating with LANs







Source: International Data Corp.

Personal computers are finding their way into offices everywhere. While these devices spur productivity, they also create a communications gap because users can't share information between devices. Local Area Networks (LANS) offer a solution to this communications stalemate.

During the past five years, the personal computer has captured the public eye on a scale enjoyed only by a few other inventions—the automobile, telephone and television. In fact, some experts say the computer has gained the acceptance in ten years that it took the telephone 75 years to achieve.

Attracted by their impressive productivity, many organizations have installed microcomputer systems. But in the past couple of years, many organizations have begun to realize that office automation involves more than installing personal computers. Because people work together in groups or departments, they need to communicate with one another. Yet personal computers are stand-alone devices—

The number of LAN installations is beginning to soar.

office appliances to process and analyze information. Personal computers were designed for a single user, so the information stored on one computer cannot be shared with the other personal computers in the company or work group unless disks are physically transferred from one device to another. This creates a delay in sharing information and has the potential of reducing hard-earned productivity gains.

Sharing is the solution

Fortunately, a solution to the personal computer communications bottleneck has arrived—the local-area network (LAN). In general, a LAN is a hardware and software product that links personal computers and electronic office equipment to form a high-speed, interoffice communications network operating in a limited geographic area, such as a department within a company.

LANs are most frequently used to share files and information among personal computer users and to share expensive peripheral devices such as high-speed printers or high-capacity hard disks. This technique is considered an excellent solution, because it allows the network to develop in increments as needed while still providing the flexibility of a decentralized system. LANs are best suited for environments where users do not constantly have to share information and where many discrete applications are performed as opposed to a few centralized tasks such as accounting.

"Our observation has shown that with the installed base of micros, LANs are growing at an exponential rate," said Kent Roberts, a buyer in Tandy's Computer Merchandising group.

What sets ViaNet apart from other LAN offerings is that it does not require a dedicated file server to coordinate networking functions. Rather, networking tasks are divided among the personal computers linked in the LAN. And its price is one of the most competitive in the industry. It costs about $500 to add another station to a ViaNet network, Roberts noted.

Currently, ViaNet is optimized for networks with up to eight personal computers. Although a dedicated file server is not required, a Tandy 2000 or Tandy 3000 in that role will enhance the performance of the network while permitting either computer enough capacity to handle other tasks.

Welcome to ViaNet

Always on the forefront of technology, Tandy recently introduced its ViaNet local-area network, which is in the process of being installed at many companies. Mountain Bell, one of the companies featured in this issue of ANSWERS, has implemented an extensive ViaNet network.

Now is the time

In the past, a great deal of confusion has surrounded LANs. Users were overwhelmed by LAN jargon such as network structures described as star, bus and ring; and cabling schemes, primarily broadband and baseband. In addition, there has been an enormous amount of speculation about LAN standards. Because of this, many users have been reluctant to implement networks because they feared their LANs would quickly become obsolete. Now it appears that more than one LAN standard is emerging. This means companies can feel comfortable about making a decision to implement a LAN.

As more and more LAN products are introduced, companies are becoming less concerned with technical jargon and more concerned with the efficiency the network delivers. Moreover, users now understand it is important for vendors to provide the support and service necessary to get the LAN up and running. Radio Shack's extensive service and support organization assures a rapid response to companies implementing a LAN. Mountain Bell credits one of Denver's Radio Shack Computer Centers with being instrumental in helping implementing its LAN.

Although the LAN is relatively young, its growth is astounding. A recent survey by *ComputerWorld*, a leading trade journal, found that 80% of the pc installations studied were used as stand-alone devices in 1985. However, within the next two years, companies reported that 70% of these systems will be used in either a LAN or a distributed processing environment.

The Information Age has begun: LAN is a natural evolution.

Market forecasts reveal that personal computer-based LANs will increase at an average compound growth rate of more than 53% until the end of the decade. At that time, there will be about 437,000 personal computer-based LANs installed, each with an average of 6.5 devices per network. The research indicates that the preponderance of those LANs, about 65%, will be used in office automation applications.

As the LAN market evolves, software makers will address the issue of developing versions of their programs to run in a LAN environment. This is one of the important problems that will be solved in the next stage of LAN development.

Whatever turns the computer industry takes, it is clear that a LAN is a major solution for sharing information among pc users. With its commitment to the LAN market, Tandy is constantly tracking the changing communications technology to deliver products that provide users with state-of-the-art computing capability.

Computer-Aided Design takes off in Tennessee

In two hours flying time, CDI can give a demonstration to a customer 500 miles away.

The sky's the limit for the partners in a young Design firm who'll beat a path to your door to show you their better mousetrap.

Kevin Dudley and Jerry Korrect grew up in Laurens, Iowa, but went their separate ways after high school, only hearing about each other's activities through an informal hometown network. Yet 15 years later they are partners in a high technology firm in Tennessee.

The two were united two years ago when Dudley dropped in on his boyhood pal for a visit. Korrect was general manager of Gambler Competition, one of the largest manufacturers of Sprint class racing cars. As fate would have it, Korrect was looking for a comptroller and Dudley's management and computer experience fit the bill.

AutoCad enters the picture

One of the first projects the newly reunited friends became involved with was implementing a computer aided design (CAD) system for designing steering mechanisms for Gambler's race cars. Korrect had purchased AutoCad, a personal computer-based CAD software package, and began the agonizing process of customizing the system to Gambler's specifications. The customization job took six months, but when it was finished Korrect realized that with a few modifications his system was applicable to most engineering businesses.

It didn't take too long before the duo realized that developing a turnkey CAD system for engineering and manufacturing companies was a hot idea. Their year-old company, Computer Design, Inc. (CDI), grew out of a consulting venture Korrect had started to provide product design services for companies too small to afford their own engineering staffs.

Today, CDI is a Fortune 1000 AutoCad dealer. Using AutoCad as the kernel of their system, the pair developed a software shell that preconfigured many engineering design tasks, such as shapes and borders. Although they originally started adapting AutoCad for Gambler on an IBM AT system, Korrect and Dudley discovered the expandability of the Tandy 3000 made it

the ideal choice as the processor for their system. They added a math co-processor to the fully-configured Tandy 3000 that significantly enhances the processing power and a graphics board that runs in conjunction with the Tandy CM-1 monitor. Monitors with high contrast like the CM-1 are critical for CAD applications, and the graphics board enhances the screen resolution.

"The number one thing you need in CAD is speed. People want to draw faster," Dudley explained.

Pure speed

The end result is a turnkey system called CustomCAD that allows engineers to produce original drawings many times faster than those produced manually.The added advantage is that engineers do not have to start each drawing from scratch. Because many designs are very similar, engineers can add to drawings that are stored on disk. The modification of existing drawings can yield a twenty-fold productivity improvement over manual techniques, Korrect explained.

Besides the design aspects of the system, Korrect and Dudley have incorporated a management information system into CustomCAD. Managers of engineering departments receive bill of materials reports extracted directly from the attributes portion of the drawings. "This eliminates transportation errors in reports," Korrect noted. Moreover, the system tracks revision levels so engineers can be certain they are working on the latest revision.

Communications features are also built into CustomCAD, allowing files to be exchanged between an engineering company's offices or even back and forth to client locations. This communications capability even allows CDI to troubleshoot customer problems over the telephone.

The combination of CDI's approach to the CAD market and the outgoing personalities and enthusiasm of the two partners have led to a unique arrangement with Radio Shack. Knowing that many of its customers are interested in CAD applications for the Tandy 3000, Radio Shack holds CAD seminars for prospective customers in conjunction with CDI. Consequently, CDI has become a value-added reseller for Radio Shack, selling CustomCAD as a turnkey package.

The art of engineering

"Getting engineers to use a CAD system is like taking musicians and teaching them a new instrument. Musicians can learn a new instrument easily because they know the basics of music," Korrect said.

Korrect and Dudley can get engineers in tune with CustomCAD quickly because they adapt every system to the way a particular customer does his drawing. Most CAD systems force engineers to learn a new way of drawing, but CustomCAD imitates a customer's existing drawing procedures, Korrect said. And CDI's training is a three-day program, most of which is devoted to working on design projects already in progress in the company where the training is taking place. Engineers often throw up their hands in despair after six months of trying to adapt an off-the-shelf system, but CustomCAD is usually in production within 10 days of installation.

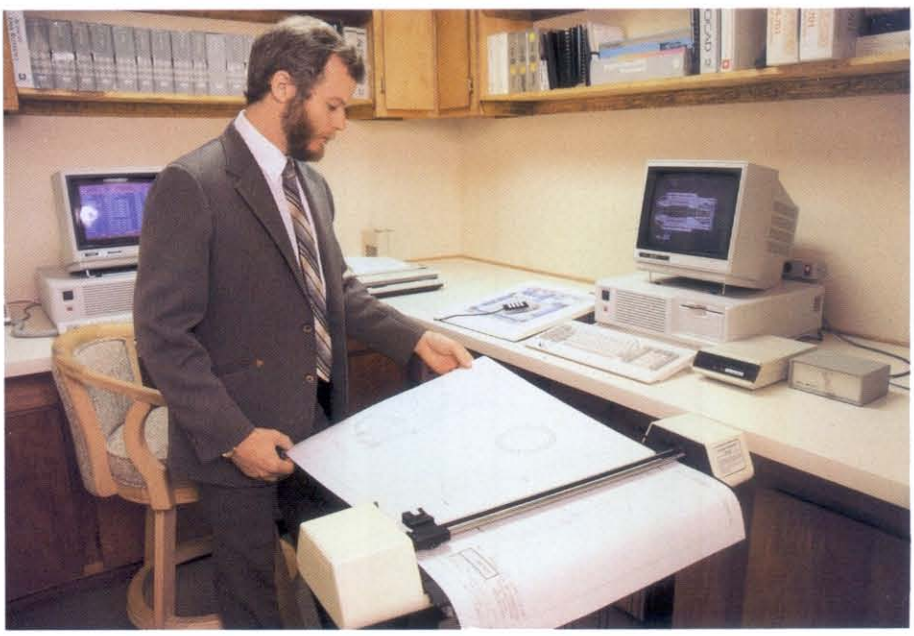
A down to earth success story

With such results, CDI's business has really taken off. As a matter of fact, the company recently acquired a small airplane and the partners log in about 10 hours a week visiting prospects and customers. They load the plane with the Tandy 3000, monitors, disk drives, plotters, digitizers and whatever else is needed for a demonstration, an installation or training session. "We can call on a customer 500 miles away in two hours," Dudley noted.

CDI works with the Radio Shacks closest to customer locations, often making sales calls jointly with Radio Shack sales personnel. Thus, CDI and its customers are assured of excellent local service.

Now that Korrect and Dudley have extended their boyhood friendship into a burgeoning entrepreneurship, they have brought their wives into the business to calculate estimates and track orders. And the company is adding installation staff.

In just about a year CustomCAD has gone from an idea to a reality. And as the airborne partners say—"The sky's the limit."



Jerry Korrect examines the end result of a CustomCAD system—a clean, precise engineering drawing plotted off a Tandy 3000 computer and professional-quality plotter.

Computing in Paradise

With its Computer Center in Hawaii, Radio Shack became the computer company of choice for the Mana Kai-Maui hotel

Thanks to computerized check-in, the front desk can be staffed with just two reservationists instead of five.

For 37 years, Jim Christman flew the friendly skies as a pilot for United Airlines, but today he is saying aloha to the guests vacationing at his condominium hotel in Maui, Hawaii.

The dream of owning such a hotel took hold in the late 1950's when Christman and his wife were on a vacation in Majorca staying in a condominium complex. Over the next few years, Christman slowly took steps to realize his dream. He talked at length to his friends in various building professions, including architects and contractors, about the requirements for developing such a project.

As a pilot and world traveler, Christman was convinced that Hawaii was the ideal spot for his hotel. However, he was shocked by the astronomical real estate prices in the Honolulu area, so he began scouting for land in Maui, which was relatively undeveloped at the time. In 1965, he acquired an option on the land for the project from a cattle farmer in the town of Kihei, later attracting investment partners. "I told my wife she would have to drive an old car instead of a Cadillac, because I just spent $10,000 on options on land," Christman recalled.

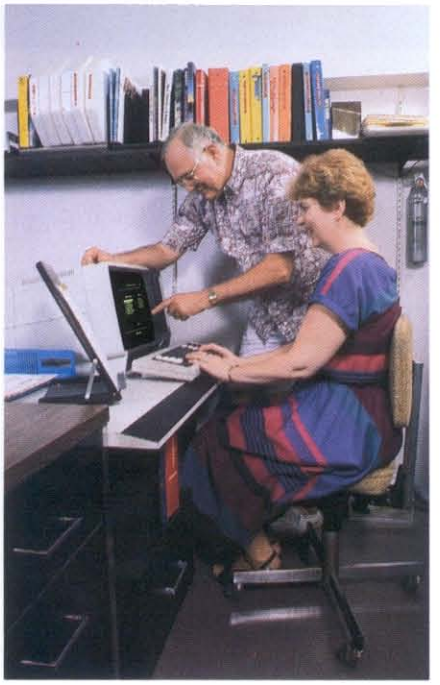
His idea was to build a complex of condominiums, sell the units to investors and then lease them back to an operating company that would run the property as a hotel and share all profits amongst the owners. Completed in 1973, that dream is the Mana Kai-Maui, which in Hawaiian means "the spirit of the sea and Maui", a 98-unit condominium hotel that sits on a stretch of white beach next to the blue Pacific.

Automation checks in

Like other hotels, the Mana Kai-Maui offers a full menu of hotel services including reservations, dining, housekeeping and social activities, which are managed by Christman's firm, Resort Apartments, Inc. With about 100,000 guests flowing through the hotel annually (each two-bedroom apartment can be split into two units), Christman knew that automating the front and back office operations was essential.

Automating the reservation system was particularly sticky because AT&T did not have 800 numbers in Hawaii until recently. Consequently, the company initially ran its reservation operation out of an office in Fort Collins, Colorado, communicating reservation and other information daily to the Maui office. This past June the entire company relocated to Maui.

Four years ago, Christman decided to learn everything he could about computers. "I read enough to be dangerous," he said. "We needed a company that would stay in business and support us in Maui." Christman decided on Radio Shack. At first the decision to automate was unpopular with his partners, but Christman prevailed and acquired a TRS-80 for word processing. From there, the company upgraded to six Tandy 6000 multiuser systems. Although the company only needs two 6000s since it has moved to Maui, Christman uses the other four systems as a "triple back-up". He is confident about the service Resort Apartments receives from the Radio Shack Computer Center in Honolulu, but as a pilot, he always had three alternative landing sites and wants the same redundancy for computers.



Jim Christman, president, oversees guest accounting with Nancy Knepper.

Christman was gun-shy when it came to computers. When the hotel first opened, he acquired an IBM System 3 that didn't deliver the solution his company needed. IBM refunded half of Resort Apartment's money, and the operation was handled manually by Christman's accounting office—until the Tandys arrived.

Consulting offers a headstart

Luckily, the company had the foresight to hire a top-notch consultant to develop the hotel's reservations system and guest accounting system. Working with Tandy's UNIFY data base management system, Richard A. Bilancia, president of Computer Guidance and Support of Littleton, Colorado, developed the system in less than three months. UNIFY has the best interface to the "C" language, which makes it suitable for developing complex systems, Bilancia said. "Complex systems can be developed in short time and cost-effectively with UNIFY and Tandy products. And because it's written for the UNIX operating system, Mana Kai-Maui's system is adaptable for other hotel businesses."

As designed, Mana Kai-Maui's system utilizes two 6000s, each configured for six users; one system is devoted to the reservations and guest accounting tasks, and the other is dedicated to the company's payroll and accounting jobs. These systems can interchange information easily with the communications facilities built into Tandy's XENIX operating system.

"It's important for a small business to work with a first-class consultant to get a system up and running quickly. Bilancia is that person," Christman said. He credited the Tandy system with not only streamlining the hotel's operation, but also freeing up employees to do less tedious, more creative work. Now that the system is totally operational, the front office runs with two reservationists instead of five. And just to keep in touch with the system, Bilancia now has his Tandy 6000 in his office communicate via telephone lines with the Mana Kai-Maui's system.

Jim Christman treats his customers with first-class style

An affable man, Christman is genuinely concerned about other people's happiness. Perhaps as a testimony to Christman's generous spirit, 40 of his friends bought seats to celebrate Christman's last United flight in 1982. "He landed that plane so smoothly, you couldn't feel it touch the ground," recalled Chuck Fasse, director of marketing for and a principal in Resort Apartments.

Since then, Christman has devoted full-time to the Mana Kai-Maui. He likes to keep abreast of the hotel operation from a terminal installed at his home that is connected to the 6000s at the hotel. Having all this information at his fingertips, Christman echoes the style of Lee Iacocca, whose management style he greatly admires. "We have the highest gross income per apartment on the island. If someone has a higher gross let him step forward and show us."

One of the major reasons for implementing the new reservations and guest accounting system was to serve customers better. "Our system cannot afford to be down. We have to make it convenient for customers. We want them to go home realizing they had a unique experience."

Christman is never far from a computer. At poolside, he uses a Model 100 portable.

Next on the Agenda

These days, Christman is considering using the hotel for innovative and educational purposes. As a result of his experience with learning about computers, he has become interested in teaching computer skills to business people. Because of his positive experience with Radio Shack, Christman is considering installing Tandy computers in some of the hotel rooms. With this added room feature, Christman is optimistic that he can develop a program to teach people how to operate a computer and to perform accounting applications. The relaxing setting at the hotel would be quite conducive to learning.

Like building his hotel, it may take Christman awhile to develop his computer skills project. But if anyone can do it, Jim Christman can.

Hopefully Tandy will be able to help, too. "I don't think we could have done better with anyone else. Tandy impressed us with its financial power and practical approach for using computers in business."

The New Tandy PC Compatibles:

In the Winner's Circle

MS-DOS comes home with the Tandy 1000 EX, shown here with second disk drive.

On July 30th, 1986, Radio Shack introduced four new MS-DOS® based computers. These computers are designed to meet the needs of virtually any computer user, using industry-standard software. Yet, unlike other PC compatibles, they perform at high speeds and offer more standard features. And like all Tandy computers, they are remarkable values.

Clearly, a closer look is in order.

Tandy 1000 EX: the lowest-priced PC compatible ever

Tandy wasn't playing "games" when they came out with the 1000 EX. They were interested in creating a versatile new computer that would allow for serious computing needs yet cost about what you'd expect to pay for a game-based computer.

One look at the Tandy 1000 EX's sleek one piece design tells you this is a unique computer. It becomes even more evident when you first slip the included DeskMate program into the built-in disk drive. The screen display is no ordinary DeskMate, but one designed for the ultimate in ease of use.

Perfect for home use, the new Personal DeskMate is graphics-oriented, and features pull-down menus and pop-up boxes for selecting functions. Applications include word processing, spreadsheet analysis, electronic filing, a planning calendar, telecommunications, and even a graphics painting package. Accessories like a calculator, phone directory, notepad and calendar can be accessed in any of the programs, too.

A true PC-compatible, the Tandy 1000 EX is ready to use the MS-DOS business software you bring home from the office. And since the EX operates 50% faster than the IBM® PC, it will help you get the job done faster—leaving you time to relax with games such as *Flight Simulator* and *One-on-One Basketball.*

Tandy 1000 SX: a bestseller, improved

Since its introduction, the Tandy 1000 went on to become the most popular IBM PC compatible ever. The Tandy 1000 SX is destined to continue this trend. By running the 8088 microprocessor at a higher speed (7.16 megahertz vs. the usual 4.77 megahertz), the 1000 SX is capable of running programs up to fifty-percent faster than they would run on an IBM PC. This high-speed operation calculates spreadsheets, sorts data and displays intricate charts and graphs faster than ever.

To complement this new level of sophisticated performance, the Tandy 1000 SX comes with 384K RAM, expandable to 640K on the main board, and two built-in 360K 5¼" floppy disk drives.

With five card slots it's easy to expand the SX. Expansion boards are user-installable, and range from memory expansions and 1200-baud autodial modems to a 20-megabyte hard disk card that simply slips into an empty expansion slot.

To take advantage of the speed of the 1000 SX, the popular DeskMate software has been improved. DeskMate II is compatible with ViaNet, making it ready to be used in a local area network. Also, with the special task-switching feature, you can exit DeskMate, enter an applications program, then return to DeskMate—all with just a few keystrokes.

Tandy 3000 HL: four times the power of an XT

The Tandy 3000 HL was created to be fully compatible with the IBM PC/XT. Then it was made even better.

With Intel's 16-bit 80286 chip operating at 8 MHz, the 3000 HL is over twice as fast as the XT. In actual operation, this improved throughput lets you complete projects up to four times as fast as an XT running the same program.

The 3000 HL comes with 512K standard memory and is expandable to 4 megabytes using the expansion slots. And speaking of expansion slots, the HL includes seven in all—four 8-bit/XT compatible slots and three 16-bit data bus slots.

Strictly business: the Tandy 3000 HL races through XT software like never before.

And for better office efficiency, the Tandy 3000 HL features a built-in real-time clock with battery backup for automatic date and time-stamping of all jobs, process control and other time-sensitive applications.

Because networking is becoming one of the biggest concerns of current computer owners, Tandy made the 3000 HL network compatible with all MS-DOS computers using the ViaNet local area network.

The Tandy 1000 SX is the high-performance version of America's favorite PC-compatible.

Tandy 3000 HD: pure power

For optimum performance, the Tandy 3000 HD is unparalleled. The 16-bit Tandy 3000 HD comes with a built-in 40-megabyte hard disk drive and is compatible with software designed for the IBM PC/AT. But there's more.

Power to share

With the XENIX™ multiuser operating system, three to six users throughout an office will be able to use the Tandy 3000 simultaneously. The high operating speed of the Tandy 3000 is available to all users, for the ultimate in network throughput.

When used in a network, the 3000 HD's massive storage capacity makes it an ideal file server. The Tandy 3000 HD can be expanded to 12 megabytes of memory under XENIX and features ten expansion slots, including 7 PC/AT compatible slots, 2 PC/XT compatible slots, and 1 PC/XT compatible half-slot for the serial/parallel adapter.

See them now

Whatever your needs, it's evident that Tandy has the computer you're looking for. See these performance machines today at your local Radio Shack Computer Center. If, that is, they haven't already sold out.

(Continued on Next Page)

With forty megabytes, what more could you want than a Tandy 3000 HD? For starters, add some terminals and XENIX to turn the 3000 HD into a multiuser system.

SYSTEM OVERVIEWS

TANDY 1000 EX

Microprocessor: Intel 8088.

Clock Speed: 7.16/4.77MHz.

Operating System: MS-DOS® 2.11 with GW-BASIC. Reference manuals extra.

Memory: 256K RAM, expandable to 640K. Includes power-up diagnostics.

Disk Drive: One double-sided, double-density, 360K (formatted) thinline 5¼" floppy. 48 tracks per inch.

Display: 80 or 40 characters per line by 25 lines, 640×200 graphics with optional color or monochrome monitor.

Internal Expansion: One "PLUS" style expansion board or two "PLUS" style expansion boards when used with Memory PLUS Expansion Adapter.

TANDY 1000 SX

Microprocessor: Intel 8088.

Clock Speed: 7.16/4.77 MHz.

Operating System: MS-DOS 3.2 with GW-BASIC. Reference manuals extra.

Memory: 384K RAM, expandable on main board to 640K. Power-up diagnostics.

Keyboard: 90-key, sculptured, including numeric-entry keypad.

Disk Drives: Two double-sided, double-density, 360K (formatted) thin-line 5¼" floppies. 48 tracks per inch.

Display: 80 or 40 characters per line by 25 lines, 640×200 graphics with optional color or monochrome monitor.

Internal Expansion: Five user-accessible IBM® PC-compatible card slots (10" max. length), 8087 Math Co-Processor.

External Connections: Standard parallel port, composite video, line-level audio, light pen port, joysticks, RGBI Color Monitor. AC outlet.

TANDY 3000 HL

Microprocessor: 8/4 MHz, 16-bit 80286.

Operating System: Optional Microsoft MS-DOS 3.2.

Memory: 512K RAM with parity, expandable to 640K.

Disk Drive: Built-in 5¼" floppy reads 360K formats.

Display: 80 or 40×25 text with optional high-resolution color or monochrome monitor.

Optional Graphics: 640×200 monochrome graphics and 320×200 in 16 colors, or 640×200 in 4 colors.

Internal Expansion: Seven card slots (three 16-bit, four PC/XT-compatible).

TANDY 3000 HD

Microprocessor: 8 MHz, 16-bit 80286.

Optional Operating Systems: MS-DOS 3.2, XENIX Multiuser.

Memory: 640K RAM, expandable to 12 megabytes under XENIX®.

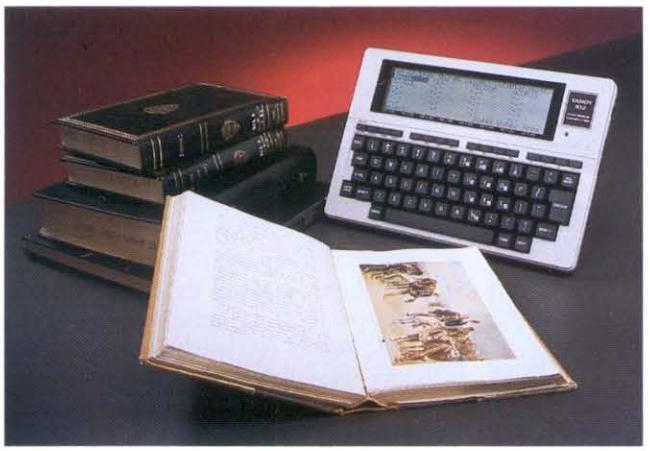
Keyboard: 84-key, sculptured, including numeric-entry keypad.

Disk Storage: One 1.2-megabyte floppy and one 40-megabyte hard disk drive. Also available with 1.2MB floppy and 20MB hard drive, and with one 1.2MB floppy only (both with 512K RAM).

Display: 80 or 40×25 text with optional high-resolution color or monochrome monitor.

Optional Graphics: 640×200 monochrome graphics and 320×200 in 16 colors, or 640×200 in 4 colors.

Internal Expansion: Seven PC/AT-compatible slots, 2 PC/XT-compatible slots, 1 PC/XT-compatible half-slot for a serial/parallel adapter (included at no charge). 80287 Math Co-Processor.



Hitting the books, high-tech style

Peter Balsamo, Director of Continuing Education and Associate Professor of Education at Radford University in Radford Virginia, believed the research findings. Word-processing software improved students' writing and motivation. In many cases, however, students described in research reports had access to desktop computers or terminals attached only to mainframes. By contrast, Balsamo lauded the portability of laptops—"they provide a way to compose documents at a time and place of convenience and comfort."

Balsamo spearheaded a project in which thirteen computer-literate faculty members were asked to translate hands-on laptop experience into new ideas for enriching student learning.

From February to April, these academicians used Tandy 200 laptop computers to experiment with basic word processing and, via an internal modem, applications such as electronic mail, computer conferencing and database searching on the Source Telecomputing Network.

In addition, Balsamo implemented a technique described in Portable 100/200 magazine to connect the laptop's RS-232 port with the communications port of a desktop computer. Now Tandy 200 files can be uploaded to more sophisticated word-processors with spelling and grammer checkers and thesaurus/dictionaries.

Now that the faculty members applaud laptops, Radford has applied to Radio Shack's Educational Grant program for ten Tandy 200's to rotate among various departments.

Re-enactment with a model.

Takes a Slaying, Keeps on Displaying

Never mind the attractive price, availability of local service and ability to run a backup in five minutes. Redwood Lumber and Products in Fort Worth, Texas, discovered the ultimate testimonial for its Radio Shack TRS-80 Model II computers quite by accident.

When the small lumber yard was burglarized two months ago, vandals ripped one of the terminals off the connector cables and threw it out a window. The CRT dropped four feet to the ground. Staffers recovered the unit, plugged it in and found—much to their surprise—that despite external damage, the system worked like a charm.

Redwood Lumber automated its financial operations in June 1984, when it installed six TRS-80's and 60-megabytes of hard disk storage. Under the manual system, only weekly or biweekly monitoring was possible. "We can keep tighter control over our money by keeping up with accounts daily," explained David Beckham, manager of the store.

And thanks to computer control, employees at the lumber yard can print a list of the number and value of items in stock at a moment's notice, automatically deduct products from inventory when they are sold and project what materials are needed.

Before enlisting the Model II hardware and software, staffers used to eyeball the yard to determine shortages—not always a foolproof method. "Now we have no excess buying and no big overstock," Beckham reported.

Are you using your Tandy/Radio Shack computer in an interesting manner? We'd like to hear about it. Just send us a brief description of your application, including the software and model number of the computer you're using. If we select your application for possible inclusion in our Techniques, Etc. column, we'll contact you—so be sure to include your address and phone number. Letters sent become property of the magazine. Sorry, we can't return any letters received (so don't include diskettes, photos, etc.). Address letters to: Techniques, Etc., *Answers* Magazine, 300 One Tandy Center, Fort Worth, Texas 76102.

In pursuit of perfection

Sample vibration tests are made each week for every computer manufactured.

Tandy's computer manufacturing operation is committed to producing the most reliable, trouble-free computers on the market.

A group of lab-coated technicians is hard at work destroying Tandy 1000 personal computers. They are dropping them, shaking them and making them run under demanding operating conditions of intense heat and cold for hours. The testers are purposely abusing the machines to learn any possible weaknesses in design or manufacture of the popular computer. They are following policies set by Kenji Andrew Nishikawa, who wants the products his 1,000 employees ship out to be ever more durable.

Kenji is taking a visitor through the plant in Fort Worth, Texas, where the Tandy 1000 is made. Kenji, who has a long list of titles on his business card, takes the visitor into a special department at the plant.

Join the tour

More technicians are working on a cardboard box which will hold computers. On two sides are push-in openings. One reveals the unit's serial number which allows stockers a handy way to record the numbers without opening the full box. The other push-in opening allows the manual to be removed, again without disturbing the special packaging needed to keep the computer damage-free.

Perhaps box technology seems an odd thing to be studied at a computer factory but it is an integral part of Tandy's commitment to quality.

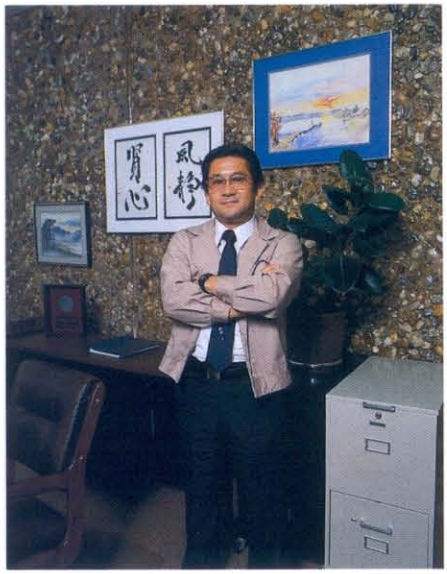
"We put our computers into packaging and then load them on to this machine," Kenji says pointing to a device made to emulate the wear a packaged computer would undergo in a freight truck running from Fort Worth to Los Angeles on the worst roads.

"Quality and reliability of products are our top priority," Kenji points out. "We built our first reliability laboratory here in the plant in 1980 and in 1984 reconstructed the lab with much more sophisticated testing machines."

Off to the side, a robot is busily automatically flipping electrical switches. It will turn the switches on and off 100,000 times, or until they break. If they pass the test they *may* be used on the Tandy 1000.

Near the robot sit shelf after shelf of 1000s. They are being electronically monitored to make sure they are bug-free.

"Eighty-five percent of our floor employees check and test the computers for quality and reliablity. Only 15 percent actually manufacture the Tandy 1000," Kenji noted.



After hours, Kenji relaxes by creating still more works of art which he proudly displays in his office.

The unconventional manager

Seventeen years ago Kenji emigrated to the United States from Tokyo, Japan. The automatic question: why?

"Since I was a little boy, America fascinated me. I wanted to see this land. I felt the need to be active and live in the U.S. It felt natural to move to America."

After graduating from college with a degree in electronic engineering, he decided one of the biggest challenges would be achieving success in America. His first job was working in a Radio Shack warehouse.

Seventeen years later he is still working for the company. He has the rather ungainly title of Group/General Manager of Tandy Home Computers, Tandy Advanced Products and Manufacturing Technology Center.

With three caps to wear, Kenji has installed a nontraditional management philosophy to run the three divisions under his command.

"At most places people work for a boss. I want everybody to be treated equally. I purposely don't wear a suit coat but a windbreaker like most of the men here. I don't want management to be separated from those on the assembly lines.

"Take our cafeteria. It is at the front of the building, right off the waiting room. In most places, the space up front would be for the executives. I want to give everybody a chance of sitting in the 'best' spot," Kenji says.

As part of his management approach, every part of the building is as open as possible. Kenji had two windows cut in the wall of his office so a passerby could see he was in. A conference table is placed in an area where participants are less than 10 feet away from their offices.

The art of manufacturing

For those people whose idea of an assembly line is the stereotype of clanging metal and dirt, the Tandy 1000 plant is a revelation. It is quiet, clean and bright. And it has lots of potted plants and shrubs.

"My management theories are like this," Kenji says, "first love the product. Put in lots of energy to make it superior. Continuously study, pray, and make it be the best there is.

"You have to prepare ahead. We must always be looking for our next customer with good products that satisfy the needs of our customers. To do this we must keep ourselves the best company to deal with and offer them a good price. We also have to make products in a clever, yet, cost-effective way."

Keeping these policies in place sometimes gives Kenji a headache and he has come up with his unique tension cure—art. He's an award-winning watercolorist but he finds the best way to unwind is to pick up his brush and create calligraphy, the centuries-old tradition of oriental penmanship.

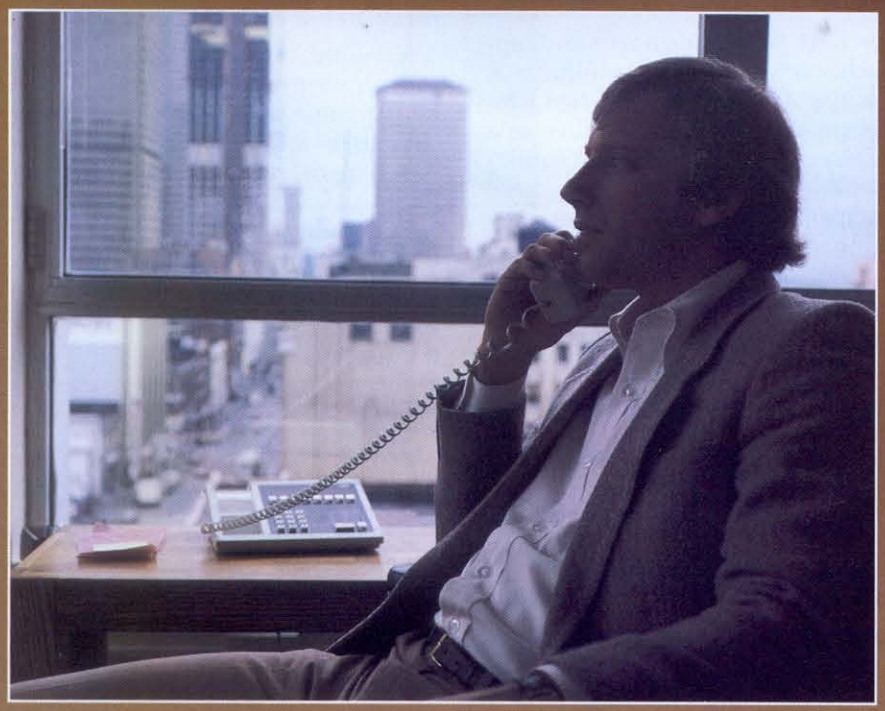
"To create a painting you must set your mind in a certain way, sometimes it might take two days, but with calligraphy, you can create a thing of beauty without pre-planning."

This is one of the few things that is unplanned by Kenji. His American success and that of his "baby" the Tandy 1000 personal computer are the results of study, hard work and striving to achieve the best.

Only 15 percent of Kenji's employees actually manufacture computers—the rest test for quality, aided by automated quality-assurance systems.

Replacing the phone with a business tool

When you design a phone system with features geared to larger businesses and price it for small businesses, you've got System 802. Backed with superb support, it's a powerful business partner.



Attorney David Sadick knows he spends a lot of time on the phone, as indicated by an elapsed timer built into System 802.

System 802 includes a speakerphone, camp on, speed dialing and other powerful features.

A year ago if you had asked Seattle Attorney David J. Sadick how he liked his telephone system, he would have shrugged his shoulders and responded "It's Okay." After all, a telephone was just another office appliance. Today if you asked the same question, there would be a smile on his face.

During the past couple of years the volume of telephone calls to Sadick's law office has picked up dramatically as the prepaid legal program he established several years ago has gained popularity as a feature of the benefit package offered by many employers in the state of Washington.

"When I first started the group legal service I sat at a coffee table in my office with two phones hooked to my ear," Sadick recalled. Certainly not an efficient way of doing business.

Yet the idea of acquiring a telephone system with advanced functions didn't occur to Sadick until the law firm ran out of space last year and rented new quarters in a totally refurbished office building.

At that time there were three attorneys associated with the firm and two more lawyers were set to join the practice. Each of these attorneys had his or her own law practice, but collectively provided services to the prepaid legal program, which is similar in concept to a prepaid medical program.

With the break up of AT&T in 1984, many companies have started marketing telephone systems. Competition for the telephone system sales is stiff in the state of Washington and the firm had been approached by several companies offering alternatives to AT&T's products, said Maryellen Walum, office manager of the firm.

Evaluating the facts

The prospect of owning their own phone system became more and more appealing to Sadick and Walum and they were very attentive to proposals from vendors. Quick to catch their ear was Bill Barnes, manager of the Radio Shack Telephone Center in Seattle.

Prior to submitting a final proposal to the firm, Radio Shack did a complete evaluation of the office's telephone needs. "We evaluate what a customer has now and what they would like to have and then do a presentation of the system we recommend at our telephone center," Barnes explained. For example, Radio Shack found that Sadick's office was in desperate need of an attendant console for the receptionist. The company had such a device, but for some reason it was on the floor and not being used, he said. "In a firm like this you don't want phones ringing in everyone's office all the time," Walum stressed.

After the presentation, Sadick's firm decided on a Radio Shack System 802 telephone system with five lines and two wide area telephone (WATS) lines. "We are a small to medium-sized business and want to stay that way. Perhaps we will add a couple more lawyers," Walum said. As the firm grows, so will its Radio Shack telephone system, which can be expanded to 8 lines and 16 stations. Barnes noted that 80% of the telephone systems in the U.S. have less than 21 lines. That segment of the market is Radio Shack's specialty.

Radio Shack coordinated the installation of the system with the telephone company, making sure the jacks were installed in the correct locations and unsightly cables were hidden from view so the office decorating process could proceed smoothly. Sadick's new office sports a beautiful view of the city and Puget Sound, a fine observatory of the constantly changing Seattle weather which often seems to span four seasons in a single day.

Moreover, Radio Shack returned "many, many times to train us," explained Walum. "They were really Johnny-on-the-spot," chimed in Sadick.

Easy access to lawyers is good practice

Now that the new system is up and running, Sadick's office is enjoying quicker routing of calls and a myriad of other functions that smooth telephone communications.

"The key to my practice is access to lawyers," stressed Sadick, who unlike many attorneys favors casual dress when he isn't seeing clients or making court appearances.

"We live in a society that is very complicated and 70% of the public do not use lawyers because they don't know how to find an attorney," he continued. Sadick provides group legal services in the state of Washington for the prepaid legal benefit program organized and marketed by Don Cadwell Corporation, one of the major prepaid legal plans in the U.S.

Incoming calls are routed much more quickly with System 802 than with the firm's previous system.

A major part of the benefit package, purchased by area employers such as the SEAFIRST National Bank of Seattle, fraternal organizations and labor unions is unlimited telephone consultations with attorneys. The five attorneys in the office spend about 40% of their time serving prepaid legal service clients.

As with computers, Tandy provides convenient financing for phone systems.

Professional features

With the System 802, incoming calls are routed to attorneys much more quickly than with the old phone system. This means attorneys can take more calls. Moreover, the elapsed time feature lets attorneys know how long they have spent on a particular call. Sadick said that when he looks down at the digital display on the telephone set he is often amazed to see that 10 minutes have elapsed. If needed, this elapsed time feature could help the attorneys shorten unnecessarily long calls to improve productivity. Although the firm does not yet have a need for call accounting, its Radio Shack phone system could be outfitted with a printer to give detailed information on calls.

"Camp on", another frequently used feature, assures office personnel will receive a ring back when a previously busy interoffice extension is free. Sadick said his favorite feature is a tossup between camp on and the speakerphone. "David likes to sit on the couch and talk across the room," Walum interjected. He also likes speed dialing, a feature that allows the storage of up to eight numbers and dials them automatically after touching a two digit code.

Conference calling is a particularly important function. "Lawyers often have to talk to one or two other attorneys about a case and being able to do it at the same time is great," Sadick added.

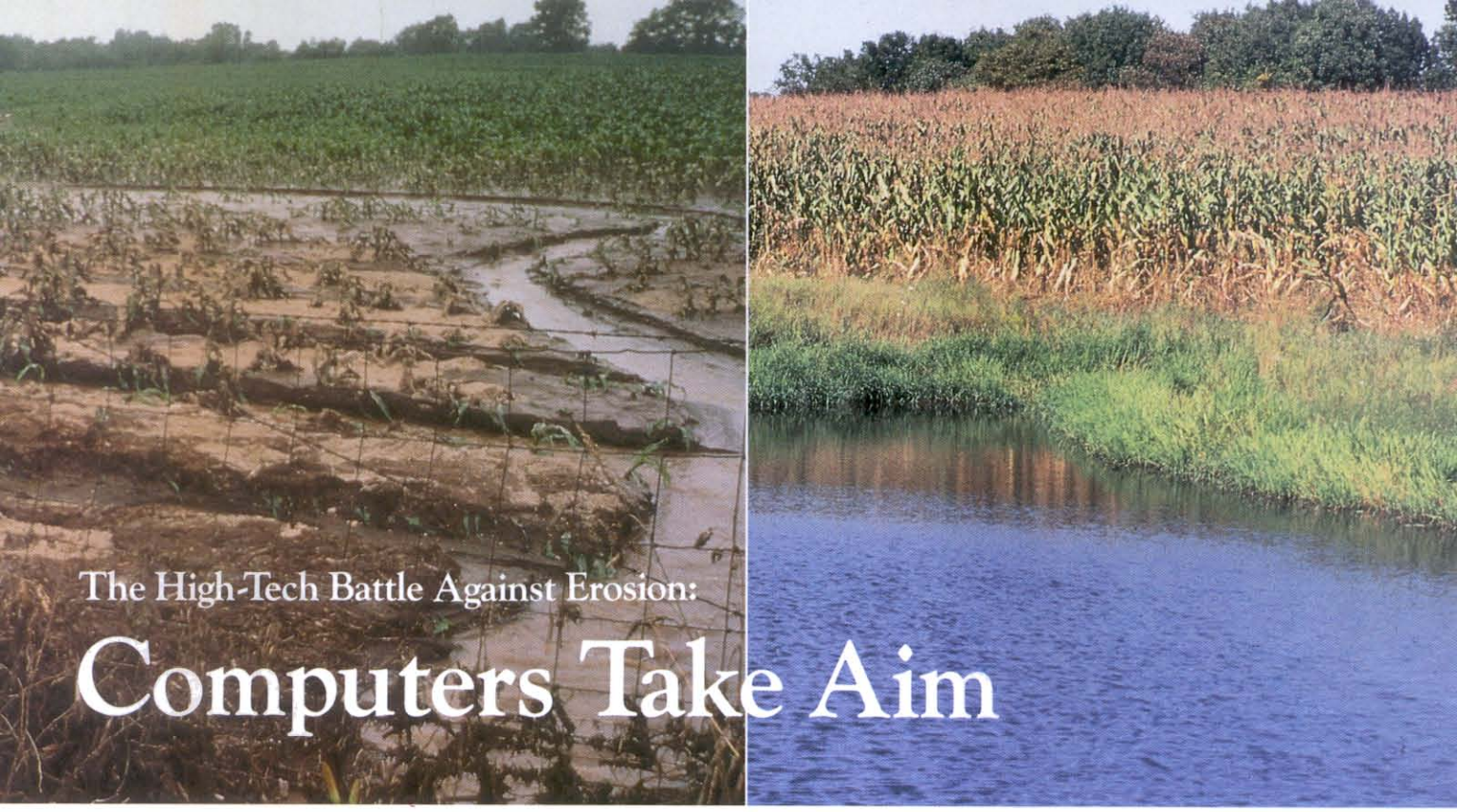
Always keeping an eye on office efficiency and expenses, Walum is thrilled with how much faster the people within the office can communicate with one another with the 802 phone system. "It's 100% faster. Nobody has to wait to talk with one another anymore, unless they are busy with an outside call."

Moreover, she is amazed at how many functions the Radio Shack phone system has. The functions available on the system are usually geared to much larger companies, Walum said, adding that the cost of Radio Shack's system is "considerably less" than similar systems offered by other vendors. And, Tandy has provided a convenient plan for financing the system.

Case closed

Owning its own telephone system has been an excellent business decision for Sadick's office even though people in the office still haven't mastered all the features of System 802.

Oh well, Radio Shack is just down the street and a speed dial away.



The High-Tech Battle Against Erosion:

Computers Take Aim

Microcomputers let local offices of the Soil Conservation Service in Indiana produce fast, accurate soil surveys. And that's pay dirt for area farmers.

The Indianapolis 500 race may draw tourists to Indiana in the spring, but it's corn, soybeans and wheat that really get the checkered flag in the state.

So much so that a new slogan heard in the state is "T by 2000".

That slogan is the basis of a campaign proposed by Indiana governor Robert D. Orr to reduce soil erosion to (T)olerable levels by the year 2000. Agriculture is big business in Indiana, contributing $12 billion to $15 billion annually to the state's economy.

The campaign is an outgrowth of a two-year study by a special commission that found 40% of Indiana's 13.5 million acres of crop land eroding at a rate that, if unchecked, will reduce agricultural productivity.

"The top 12 inches of soil is the productive layer of soil," explained Robert L. Eddleman, state conservationist for the Soil Conservation Service (SCS) of the United States Department of Agriculture. "Since people settled in the Midwest in the mid 1800's we've lost about half that layer on our sloping cropland," he said.

The war against erosion is one of the major battles facing SCS. Although part of the U.S. Department of Agriculture, SCS is not a federal program but rather a group of technical specialists that work as advisors to landowners in conjunction with state and local conservation units. "It's like a three-legged milking stool. All three legs have to be the same size for the program to work," Eddleman observed.

State conservation engineer Max Evans and supervisor of engineering design staff Eli Bloom review drawings prepared on a Tandy 2000 system.

SCS helps farmers determine the best farming method to use for their particular soil that will result in low erosion levels and the highest financial return. Working with the individual farmer requires a tremendous amount of information. One of the most critical pieces of information is a soil survey, which is an intricate analysis of the soil content of a particular farm. Based on this survey conservationists provide farmers with suggestions of the best method of crop production.

Ending manual labor

In the past, conservationists working with SCS did these calculations manually. But this process was repetitive, time consuming and begged for automation.

Fortunately, Indiana's SCS had an automation champion in Robert E. Mast, assistant state conservationist. Having been an agricultural engineer at SCS for many years, Mast had developed a certain amount of expertise with computer programs. Although SCS had used minicomputers in the past, Mast was convinced that microcomputers would enable the state's various local conservation offices to solve problems more quickly.

After receiving approval for his proposal in 1983, Mast sought the right computer company. Radio Shack impressed Mast, but he needed to be assured the company would be able to service the equipment over the long haul. After flying to Fort Worth and meeting with Tandy executives, Mast realized Tandy was the company that could provide the service and support his organization needed.

"We started with Model 12s, then went to Model

6000s. Radio Shack stood behind us on each upgrade," he said. The company provided a week-long training program for employees in the state office and five area offices.

Because of the quality of the training, professionals in the offices took to automation immediately. If they use numbers, part of their jobs can be automated, Mast said. The problem is developing applications fast enough for the agronomists, soil scientists, soil conservationists, geologists, engineers, economists and other professionals that make up the bulk of the SCS staff.

Using topographic data prepared on a Tandy 6000, SCS engineer Jim Sell develops soil profiles and cross-sections.

To date, Mast has installed eight Tandy XENIX-based multiuser 6000 systems and a full complement of peripherals—three in SCS' main office and one in each of the state's five area offices. Indiana SCS has acquired about $200,000 worth of Tandy hardware and software programs including SCRIPSIT, Multiplan, Profile and the relational data base system called UNIFY. Mast has also developed an informal network for acquiring application programs from other sources. "We're not proud; we'll get them anywhere we can," he said.

Mast credits Holly Hardsaw, manager of the Radio Shack Computer Center in Indianapolis, and Jane Irvine, Federal Contract Administrator, Tandy Special Marketing, with helping the SCS computer operation run smoothly.

One of SCS' most exciting projects involves using UNIFY on the 6000 to develop its Soil Resource Information System (SRIS) in conjunction with its SCS counterpart in Colorado. "Indiana and Colorado are the first to pilot this program in the country," Mast said. Tandy even flew in a data base specialist to help with the project.

SRIS determines the composition of a particular farm's soils. Once those soil properties are calculated, SCS staff can provide farmers with crop producing alternatives using another program called CAMPS, which stands for Computer Assisted Management and Planning System.

When these tasks were done manually, technical specialists could only give a farmer one alternative farming method, Mast explained. Using the programs designed with the Tandy system, SCS professionals can suggest three or four alternatives to farmers and let the landowners make the one that best suits them. "We estimate that we've increased time efficiency alone by 25% to 30%," Mast said, noting that data validity is also much higher. "We can make smarter decisions faster," added Eddelman.

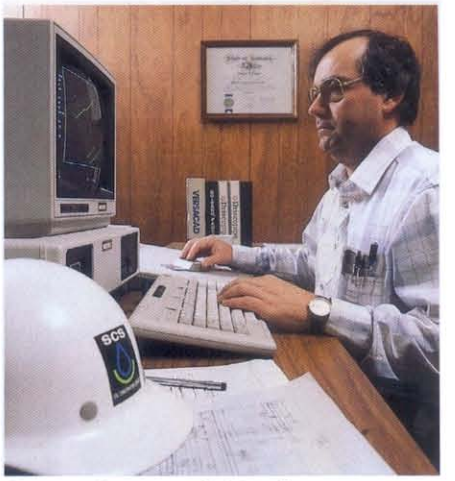
Conservation cuts costs up to $25 per acre

A major success SCS has had is introducing farmers to the concept of conservation tillage, a method of farming whereby residue from the previous year's harvest remains on the soil surface, acting as a mulch to protect the soil from wind and water erosion. Most farmers resisted this method initially because they were used to cleaning their fields after harvesting, noted Mast, who understands this mindset having spent all his childhood summers on his grandparents' farm.

As an added bonus, SCS has been able to automate economic information to show farmers the savings realized through conservation tillage. In some cases farmers can reduce costs by $5 to $25 an acre using this method of farming. Prior to installing Tandy micros, SCS didn't use the services of economists as extensively as it does now, Eddleman explained.

In addition to programs that directly influence farming techniques, SCS uses five Tandy 2000 systems with VersaCAD to do engineering drawings for various erosion-control and flood retarding structures.

"We have to automate," Mast said emphatically, noting pressure from the federal government to streamline operations while improving service. Mast believes in automation so strongly that



Dennis Carman of SCS designs erosion control structures using a Tandy 2000 with VersaCad software.

he serves on a national committee whose goal is to put micros in all local SCS offices nationwide by 1990. And these days, Mast and Eddleman travel to meetings in Indiana and elsewhere with their Tandy 200 portable computers. "I am never away from the office now," Mast said.

"An operation like the one at SCS requires assistance from the manufacturer," Mast said. "Tandy has provided us this technical help. They have given us good answers."

CLOSE-UP

Model 100: Perfect for Field Work

Out in the field, the U.S. Department of Agriculture soil conservation specialists use a Model 100 to gather information that will be used to develop contour maps. Engineers employ this information to design water erosion control devices such as terraces, rock shoots and dams.

Pictured here, soil conservationists read the vertical and horizontal elevations of the land with an instrument called an Omni, measuring the coordinates to some given point in the land. Through a communications link the information is fed into a Model 100 and is later transferred to the Tandy 6000 in the U.S.D.A. offices.

Keeping pace with the futures market without joining the crowd

William Eng stands apart from the rest.

After years trading in the "pit" at the Chicago Board of Trade, William Eng opted to trade from the quiet of his office . . . via computer.

The city of Chicago has many attractions and institutions that contribute to its unique allure as a major center of culture and commerce. Chicago boasts the bustle of O'Hare International Airport, the famous blues clubs, and Wrigley Field. And there's the Chicago Board of Trade.

The Board of Trade was organized in 1848 to serve as a central marketplace and clearinghouse for the agricultural commerce centered in Chicago. Today, the Board of Trade has expanded beyond agricultural products to become the world's largest futures and futures options market, accounting for about one-half of the worldwide trading volume.

The futures frenzy

The action "on the floor" is a curious mix of modern technology and arcane rituals, all played out at an incredibly fast pace. Traders, wearing the colored jackets of their individual firms, stand in the wooden pit furiously signalling their trades to brokers sitting at telephone banks. When trades are made and recorded, the prices are reflected on giant computerized boards, causing the pit traders to react to those prices, until the frenetic activity finally halts at the 2:00 p.m. closing bell. Billions of dollars change hands daily, and a trader can easily make or lose hundreds of thousands of dollars in a matter of minutes. Obviously, this is not a game for the weak of heart (or of pocketbook).

Billions of dollars change hands every working day.

William Eng also trades bond futures, but from the considerably more serene and comfortable surroundings of his office, which is only a few minutes walk from the Board of Trade. A former trader, and still a member of the Board, Eng has chosen to trade for the past 12 years on his own account (and to advise clients) from the privacy of his office, which also doubles as his residence. "Trading from the floor is a young man's game," he said.

A dependable computer was a "must" for Eng

A successful trader like Eng could afford any computer he wanted, but he felt that Tandy was the best choice. "I wanted a company that could repair any problem quickly and had a good reputation. Since I had been an early user of Tandy equipment (he bought—and still uses—the first TRS-80), when I needed a machine that would function in the MS-DOS world, Tandy was the natural choice."

Eng uses his Tandy equipment to keep up-to-date on prices, analyze trends and historical performance data, and run his consulting business.

"Obviously, I needed a dependable computer," Eng said. "I simply have to have my computer online without any interruption. Tandy has really delivered a fine product."

For much of the day, Eng uses his Tandy 1200 with a product called Signal (from Lotus), a sophisticated market data transmission program that receives market quotes virtually as they happen on the market floor. Signal is a combination hardware/software product that receives market information via an FM radio antenna and feeds that signal to the 1200 through a modem. Prices and other market data can be graphed, stored, printed and copied into other programs for further analysis.

Eng requires up-to-the-second price information.

Although he works in an atmosphere that is much calmer and less chaotic than the trading floor, the rewards and risks he faces are the same. These days one of Eng's key allies in the futures war is a Tandy 1200 computer. Eng requires up-to-the-second information on bond prices in order to buy and sell futures contracts at a profit. By the way, you read that right: it's up-to-the-second—not up-to-the-minute. Obtaining the prices within a few seconds from the trading floor is crucial for traders like Eng. Because the loss of information potentially results in the loss of money, Eng needed to find a system that was extremely reliable—a major reason he chose a Tandy computer.

This system affords Eng almost all the advantages of being at the Board of Trade, with almost none of the disadvantages. In fact, Eng feels that having a little distance from the "pit" is a real advantage. "I have my own trading methods based on both my experience from years of trading and on some intricate analysis of data and trends. Floor traders need to work solely on gut instinct. I have the advantage of adding computer-aided analysis and perspective, which is a big help."

Time is money

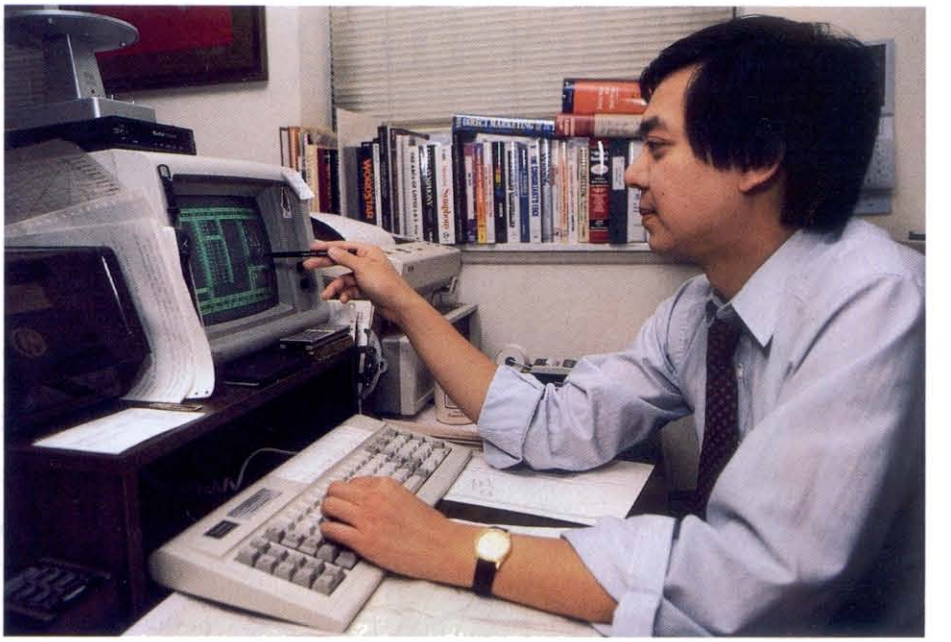
The whole object of trading is to have a "profitable bottom line," Eng noted. And traders will use all sorts of techniques to make the trade. Eng's strategy is to make only a few trades each day, but to strengthen his positions during the course of the day to gain the maximum benefit for each trade.

In order to trade in that manner, being able to quickly analyze the latest data is absolutely essential; it's the difference between being in business and looking for another line of work, he said. "If your only source of information is reading the prices in a newspaper, for example, you must naturally allot a greater amount of risk per position—you are simply too far behind the action. If you can narrow your time frame and get closer to the floor action, then you reduce your risk significantly, which is the name of the game. Because if you are wrong, holding one contract is too many," he added.

of tasks to keep Eng's 1200 running for a good portion of the week. Besides using it to receive stock quotes, Eng also uses the Tandy 1200 to capture on-line research information, produce mailings for his consultant business and print reports for his clients. Describing a typical day, Eng said "I wake up early, make coffee and turn on the machine. It runs about 16 hours a day receiving market information and then analyzing the trends after the close of the market to help me plan my strategy for the next day's trading."

Right on track

Interestingly, Eng had an experience with another manufacturer's product that helped reinforce his confidence in Tandy's reliability and integrity. He used to work with a different machine, but it malfunctioned every time the El train went by!



Using up-to-the-minute market data received via FM radio transmission, Eng can analyze trends before he commits to a trade. The silver dish atop his system is a Radio Shack amplified FM antenna connected to and resting on a Lotus Signal market-quote receiver.

In an occupation in which time is literally money, the ability to save time becomes a critical advantage. With the help of his Tandy 1200, Eng has been able to significantly reduce the amount of time required to analyze longer term trends. Charts that used to take three or four hours to prepare manually can now be prepared easily in less than one hour—and with greater accuracy. This allows Eng to spend more time analyzing trends and using the information to enhance his own trading method. There are plenty

Eng is an enthusiastic supporter of the use of computers in his profession. "The technology means you can trade from literally anywhere you have a phone. It's forcing the business to change, making it more competitive and allowing the depth of analysis that people on the floor simply can't do," he emphasized.

In fact, Eng is so happy with the positive benefits of using the Tandy 1200, he offered the ultimate compliment. "I'm thinking about getting a second one."

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ANS-886

Technology & Education: A Meeting of the Minds

Dr. Norman Bell, professor in the College of Education at Michigan State University and consultant to Radio Shack's Education Division, addressing attendees of the National Conference on Technology and Education.

The "baby boomer" generation may have grown up, but educators haven't forgotten about today's "tech children". In the third annual National Conference on Technology and Education sponsored by the University of Texas at Austin and Tandy Corporation, Educators from across the nation joined together to discuss the latest in new technology and how the knowledge of computers is imperative for today's students.

While those attending all agreed that classroom computing is essential, the different types of computers and software available was the subject of considerable discussion. And of course, choosing a computer system for the needs of a six-year old is quite different than choosing for the needs of a high school senior preparing for college or the working world. Thus, many of the speakers kept this in mind during their talks; Dr. P. Kenneth Komoski spoke on Evaluating Quality Software and Integrating it into the Curriculum, Dr. Victoria Williams discussed today's Technological Child and The Impact of Growing Up with Computers. Other speakers included Admiral B.R. Inman, President and Chief Executive Officer, Microelectronic Computer Corporation and John Roach, President, Chief Executive Officer and Chairman of the Board, Tandy Corporation.

For more information on upcoming events of special interest to educators, write to: Radio Shack Education Division, 1400 One Tandy Center, Fort Worth, Texas. To learn more about Radio Shack's classroom computing systems, call 800-433-5682 toll free for the name of the full-time Educational Coordinator in your area. In Texas, call 800-772-8538.